MAPPING MORAL JUDGMENTS OF FOOD WASTE: MOVING BEYOND TRUISMS

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Abstract

Why do people see wasting food as immoral? While previous studies on food-wasting behaviour have explored its moral significance, they often lacked a clear scientific operationalisation of morality. This project bridges the gap between research on food-wasting behaviour and moral psychology by mapping folk moral intuitions about food waste onto the theory-driven Morality-as-Cooperation (MAC) framework.

Across two studies, we identified common folk moral intuitions about why food wasting behaviour is considered immoral and compared them to MAC-based moral domains. We examined how these folk intuitions relate to MAC domains and tested how both influence food-wasting behaviours. The strongest folk predictors of food waste condemnation were concerns for nature, thriftiness, and world hunger, while the key MAC-based intuitions were Fairness (resource distribution), Deference (authority and tradition), and Group Loyalty (community commitment), with Fairness underpinning most folk intuitions. Both folk and cooperative moral intuitions predicted food wasting behaviours, such as discarding unpalatable foods, overshopping, meal planning, and food sharing. Folk intuitions also mediated the link between MAC-based moral concerns (Fairness and Reciprocity) and food-wasting behaviours.

These findings ground folk moral beliefs in a scientific framework, providing a more systematic understanding of food waste morality and offering new insights for more effective interventions.

Keywords: morality, food waste, Morality-as-Cooperation, food wasting behaviour, cooperation

1. Introduction

Food waste is a critical environmental, social, and ethical issue, and understanding how to effectively reduce it remains a challenge (Principato, 2018; Quested et al., 2013). Neglecting this issue contributes to deforestation, water contamination, and climate change, which in turn negatively affects people's lives globally (Intergovernmental Panel on Climate Change, 2023). Leading international organizations are working to mitigate these impacts—for example, the United Nations aims to halve global household and retail-level food waste per capita by 2030 (United Nations, 2020), while the European Commission promotes awareness campaigns to shift consumer behaviour (European Commission, 2021). Addressing food waste involves a range of behaviours, from carelessly discarding edible food to consuming spoiled food out of guilt. Given the ethical and social dimensions of these behaviours, understanding their psychological underpinnings can help inform more effective interventions.

One potential mechanism for reducing food-wasting behaviour is through the appeal to morality (van Geffen et al., 2020). Research shows that individuals who perceive food waste as immoral tend to waste less (e.g., Bretter et al., 2023; Graham-Rowe et al., 2015; Misiak et al., 2020; Stancu et al., 2016; Stefan et al., 2013; Talwar et al., 2022). However, despite this promising connection, research on the link between morality and food-wasting behaviour remains conceptually underdeveloped. Our analysis identified two primary gaps contributing to this limitation.

Firstly, scientific studies on morality often focus on a narrow aspect of it. For example, major reviews on household and consumer food waste emphasize the importance of social norms (Boulet et al., 2021; Principato et al., 2021; Vittuari et al., 2023) and a sense of community (Attiq et al., 2021; Schanes et al., 2018). Another line of research suggests that food waste induces feelings of guilt (Neff et al., 2015; Qi & Roe, 2016) or a 'bad conscience' (Richter & Bokelmann, 2018; Stefan et al., 2013). Some studies show that people fail to reduce food waste because they are motivated to preserve their identity as a 'good provider'—someone who purchases and prepares food to ensure family and friends are well cared for (Wang et al., 2021). Although these concepts are diverse and stem from different fields of psychology, they all ultimately relate to being a good cooperator, whether through social norms, a sense of community, guilt, conscience, or the notion of being a good provider. While these constructs are rooted in moral psychology, they reflect only a small fraction of the broader scope of morality.

Secondly, inconsistent definitions and measures of morality across studies create challenges in synthesizing results and situating them within established moral psychology frameworks. For example, several researchers have broadly defined morality as behaviours simply judged as "good"

or "bad (Misiak et al., 2024; Talwar et al., 2022), or as adherence to unspecified principles (Aydin & Yildirim, 2021). Others take a pluralistic approach, recognizing that morality consists of different categories (Graham-Rowe et al., 2014; Misiak, et al., 2020). However, this unsystematic approach risks conflating morality with broader concerns about food waste, such as environmental degradation, global hunger, or violations of religious and traditional values. As a result, rather than studying morality itself, this approach creates a disconnect from established theories in moral psychology and instead focuses on people's lay conception of morality, so-called folk morality.

1.1. Folk morality

Folk morality refers to the everyday, common-sense moral judgments and beliefs held by ordinary people, as opposed to those developed in academic or philosophical contexts (Sarkissian et al., 2011). The issue with folk conceptions of morality in the context of food waste is that they often blend moral concerns with other constructs, such as environmental or religious considerations. Additionally, they may omit moral domains that are less likely to be spontaneously recalled by participants, such as concerns about property rights or reciprocity. While some folk moral concepts may align with scientifically understood morality, certain folk intuitions may be more closely linked to morality than others. It's also possible that some folk moral intuitions about food waste are merely cultural truisms—widely shared beliefs that are rarely questioned (Maio & Olson, 1998). For example, the belief that food waste is immoral because people in developing countries are starving (Graham-Rowe et al., 2014) could be one such truism. Does this belief reflect a broader theory of morality? If not, what moral values underlie this belief? And does it have the power to change people's behaviour? These discrepancies can be addressed through better operationalization of morality, grounded in a solid theoretical framework. To determine whether morality influences food-wasting behaviour, we must first establish what morality is and what it encompasses.

While studies based on folk moral intuitions provide valuable insights into the psychological factors influencing food waste, their focus on constructs like social norms and guilt often overlooks other moral-psychological mechanisms that could potentially shape food wasting behaviour. This fragmented approach leaves gaps in understanding the full moral landscape. By adopting a more systematic taxonomy, such as Morality-as-Cooperation (MAC; Curry et al., 2019), we can address these limitations and offer a more cohesive, comprehensive framework that captures a wider range of moral principles influencing food-wasting behaviour.

1.2. Morality-as-Cooperation

Morality as Cooperation (MAC) argues that morality is not a single phenomenon but rather a collection of cooperative rules shaped by social challenges throughout human history (Curry, 2016). As humans encountered various cooperative dilemmas, they developed distinct moral rules to resolve these problems. MAC, grounded in game theory and evolutionary biology, offers a systematic taxonomy of moral domains. According to MAC, there are (at least) seven key domains of morality: Family values, Group loyalty, Reciprocity, Heroism, Deference, Fairness, and Property rights.

Each domain addresses specific cooperative challenges. For example, Family values encompass the obligation to care for family members, especially children, while Group loyalty involves prioritizing mutual interests and offering preferential support to group members. Reciprocity refers to the need to repay favours and punish free riders, while Heroism includes acts of bravery and generosity that signal power and status. Deference requires showing respect to dominant or prestigious individuals, and Fairness pertains to the impartial division of contested resources. Lastly, Property rights involve respecting prior possession and avoiding theft. MAC predicts that if people perceive food-wasting behaviour as immoral, it must violate at least one of these cooperative principles.

While MAC is not the only attempt to systematically categorize human morality, it offers a broader and more detailed alternative to earlier approaches, such as Moral Foundations Theory (MFT; Graham et al., 2009). Both frameworks aim to map moral judgments, but MAC includes additional moral categories that provide a wider perspective on cooperative behaviour. For instance, food-wasting behaviour has been studied through the lens of MFT (Bretter et al., 2023), though the focus has primarily been on the care and purity foundations. Some researchers have raised concerns about the conceptual limitations of these particular foundations in capturing the full moral dynamics at play. While MFT has contributed significantly to understanding certain moral aspects, its narrower focus may leave out key cooperative principles that are highly relevant to behaviours like food waste. Although this paper highlights the limitations of MFT, more extensive critiques have been presented elsewhere (for discussions on MFT's scope, see Curry et al., 2019; Fitouchi et al., 2022; Gray et al., 2022). Our primary aim is not to challenge MFT but to provide a comprehensive framework for exploring the moral aspects of food-wasting behaviour.

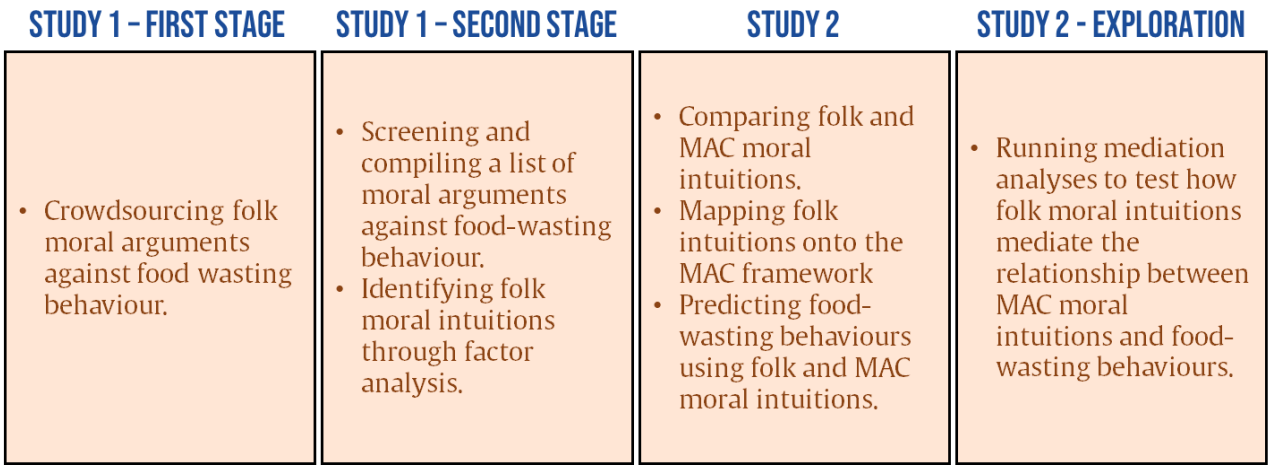
1.3. Current Studies

This project bridges the gap between research on food-wasting behaviour and the science of morality by mapping folk moral intuitions about food waste onto the theory-driven framework of Morality-as-Cooperation (MAC). By systematically examining moral judgments of food waste, we aim to move beyond folk intuitions and establish a clearer framework focused on key moral domains that shape food-wasting behaviour.

We conducted two studies within the Polish population. The first study aimed to establish a list of folk moral intuitions commonly associated with food-wasting behaviour. Previous research identified at least two types of folk moral intuitions: externally oriented (concerns for the environment, social issues, and for future generations) and internally oriented (concerns for ones' financial situation, social approval, and going by traditional norms; Misiak et al., 2020). We hypothesized that similar patterns would emerge in our sample. In the second study, we extended the analysis by combining these folk moral intuitions with the seven moral domains specified by MAC. This design allowed us to systematically compare intuitive, everyday moral judgments with theory-driven moral categories. The methods, analyses, and hypotheses for both studies were preregistered (https://osf.io/xgf3a and https://osf.io/vab7x), and the data are publicly available (https://osf.io/t73v8/).A diagram presenting the steps taken in this project is shown in Figure 1.

Figure 1

Diagram presenting the steps carried out in the project



Note. MAC moral intuitions – moral intuitions derived from the Morality-as-Cooperation framework

This study aims to systematize moral judgments of food-wasting behaviours. We mapped common folk moral intuitions onto a scientifically developed system of moral principles based on the Morality-as-Cooperation (MAC) framework (Curry et al., 2019). We also examined how these folk moral intuitions compare to MAC moral principles in predicting self-reported food-wasting tendencies. While previous research has focused on constructs such as guilt and social norms, it remains unclear which moral concerns truly drive perceptions of food waste as wrong. By applying the MAC framework, we aimed to identify the specific moral principles—such as loyalty, deference, fairness, or reciprocity—that matter most. We did not propose specific a priori hypotheses; rather than assuming all moral concerns are relevant, we aimed to pinpoint those with the strongest influence and compare them. Beyond theory, this research has practical value: targeted interventions that emphasize specific cooperative principles could be far more persuasive than vague moral appeals. By systematically mapping moral judgments of food waste, we hope to uncover insights that advance both scientific understanding and real-world strategies.

2. Study 1

2.1. Methods

To establish which folk moral intuitions lead people to believe that food wasting is immoral, we conducted a two-stage study. Both stages were conducted in accordance with the Declaration of Helsinki and received approval from the Institutional Ethics Committee. All participants provided informed consent before participating.

In the first stage, we used snowball sampling on social media to survey participants about why they believe food waste is considered immoral.

We used the following instruction:

> *People make moral judgments on a variety of topics. Some behaviours are met with strong moral condemnation by society. Some individuals also believe that wasting food is immoral. In this section, we would like to ask you to list the arguments and reasons you are aware of that people use to justify the claim that wasting food is immoral. Please provide these reasons and arguments in a bullet-point list.*
>
> *List the arguments and reasons why people consider wasting food to be immoral.*
> *[Open-ended text box]*

We did not provide participants with a predefined definition of food waste, as doing so could have anchored their responses, narrowing the range of ideas they generated. This approach allowed participants to express their spontaneous and diverse perspectives without being influenced by external framing. At this stage, we aimed to crowdsource as many potential reasons for judging

food-wasting behaviour as immoral as possible. The survey was completed by 139 participants (119 women, 19 men, 1 non-binary; age M = 28.99, age SD = 8.13). The responses (per person: M = *2.73; Mdn* = 2) were then gathered and reformulated into 104 original folk moral arguments.

In the second stage, we reformulated the arguments into a list of items (for example, *Food wasting behaviour is immoral, because: …. It offends God*; *… It has a negative impact on the environment*, *… it is a sign of extreme consumerism)*. The complete list of the folk moral arguments is listed in the Supplementary Material (Table S1). We then distributed a questionnaire through social media, asking participants to indicate their level of agreement with each moral argument against food wasting using a 7-point Likert scale (1 – *totally disagree,* 7 – *totally agree*). The participants were instructed that if they do not agree that food wasting behaviour is immoral at all, they can answer with 1 (*totally disagree*) to all items. At this stage, we aimed to test each folk moral argument to determine whether they form distinct groups and whether they can be explained by underlying factors.

We aimed to gather a sample suitable for conducting exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), to verify whether the folk moral arguments cluster in separate factors — folk moral intuitions. According to Goretzko and colleagues (2019), the lower bound of 300 cases for conducting EFA and another 300 cases for conducting CFA could be sufficient, so we aimed to gather a sample of at least 600 people. The initial sample consisted of 810 participants, but we excluded the responses of 6 inattentive participants (in the comment section, they spontaneously indicated that they did not pay attention to the study). The final sample comprised 804 participants (592 women; 209 men; 3 non-binary; age M = 27.9, SD = 8.89). The sample was divided into halves to obtain two independent groups with similar characteristics. First, the data were ordered by participants' gender and age. Second, participants with even case-numbers formed Sample 1 (n = 402), and participants with odd case-numbers formed Sample 2 (n = 402). Both samples were near-identical in the distribution of gender and mean age (Sample 1: 300 women, 99 men, 3 non-binary, age M = 27.94; Sample 2: 292 women, 110 men, age M = 27.85).

We conducted EFA on the first half of the sample with the principal axis factoring and Promax rotation (Goretzko et al., 2019). The factors retention was decided using parallel analysis, scree test, the variance accounted for each factor, and thematic consistency. After establishing the items that best reflected the factor structure, we measured the internal consistency of each factor. In the second half of the sample, we conducted a CFA with maximum likelihood estimation. We used multiple cut-off criteria (CFI, RMSEA, SRMR). All the analyses were performed using the Jamovi software (version 2.0; The jamovi project, 2021).

2.2. Results

2.2.1. Exploratory Factor Analysis

The KMO test for sampling adequacy indicated that the correlation matrix of 104 items was suitable for factor analysis (KMO = .97; Kaiser & Rice, 1974). The scree test analysis suggested that there were five factors, and the parallel analysis suggested that there were eight factors. The thematic analysis of the items suggested, however, that there are seven coherent factors, and we decided to conduct an analysis for seven fixed factors. Finally, we extracted four items per factor that best fitted the thematical structure. The results of the reliability analyses for these seven factors are presented in Table 1.

Table 1

The list of folk moral intuitions and the results of the reliability analyses

	Folk moral intuition	Cronbach's α
1.	Concerns for hungry people	.95
2.	Respect for religion	.93
3.	Concerns for nature	.91
4.	Duty toward kin	.90
5.	Praise for thriftiness	.89
6.	Gratitude for the people who produced food	.87
7.	Obedience toward authorities	.85

2.2.2. Confirmatory Factor Analysis – Folk-FWQ

All indicators showed a good model fit: $\chi^2(329) = 603.35$, $p < .001$; CFI = 0.97; TLI = 0.96; RMSEA = 0.05; SRMR = 0.05 (Brown, 2015; Hu & Bentler, 1999). The final list of items measuring folk moral intuitions about food wasting is presented in the Supplement (Table S1). Further in this paper, the questionnaire that measures these intuitions will be referred to as Folk Food Wasting Questionnaire (Folk-FWQ).

3. Study 2

3.1. Methods

Study 2 built upon the findings of Study 1 by systematically assessing specific food-wasting behaviours and their moral underpinnings. In Study 1, we identified 104 folk moral reasons for judging food-wasting behaviour as immoral and demonstrated that these reasons are shaped by seven underlying folk moral intuitions. While Study 1 focused on generating a broad range of folk moral intuitions, Study 2 examined how these intuitions align with theory-driven moral principles outlined in the Morality-as-Cooperation (MAC) framework. Additionally, we tested how both types of moral intuitions predict self-reported food-wasting tendencies.

We distributed our questionnaire through social media, using the snowball sampling method. The sample included 336 participants (242 women, 86 men and 8 non-binary; age M = 30.44; SD = 9.50). We found no reasons to exclude any of the respondents from the database. Among the participants, 35% were vegan or vegetarian, and 59% took care of a pet. The mean household size was 2.58; SD = 1.28, Mdn = 2. The participants estimated the proportion of their engagement in day-to-day chores in their households. On average, they declared responsibility for 70% of groceries, 68% of cooking and 66% of cleaning after meals.

This study was conducted in accordance with the Declaration of Helsinki and received approval from the Institutional Ethics Committee. All participants provided informed consent before participating.

3.1.1. MAC Food Wasting Questionnaire (MAC-FWQ) and Folk-FWQ

To measure moral concerns about food wasting, which are consistent with Morality-as-Cooperation, we developed a questionnaire similar to Folk-FWQ. However, instead of directly asking people what they believe are the moral arguments against food-wasting behaviour, we based the items on the MAC framework. We also did not provide participants with a definition of food waste. This approach aligns with standard practices in moral psychology, where researchers typically avoid providing precise definitions for complex concepts (e.g., abortion, euthanasia, or cloning) to preserve participants' natural, intuitive moral judgments and to prevent overly deliberate reasoning influenced by rigid definitions (Malle et al., 2021).

We jointly constructed the scale in relation to theoretical work on MAC (for example, Curry, Mullins et al., 2019). We also drew inspiration from the MAC-Q, a general questionnaire for measuring moral values (Curry, Chesters et al., 2019). We developed three items per MAC category which, on a Likert scale (0 – *totally disagree,* 100 – *totally agree*), were measuring people's intuitions about food wasting behaviour. Here are some example items: *Throwing food away is*

immoral because: … *it is neglectful of the family* (Family); … *it harms other people in the community* (Group); … *it shows ingratitude* (Reciprocity); … *it is a sign of cowardice* (Heroism); … *it demonstrates hubris* (Deference); … *it is unfair* (Fairness); … *it is a kind of theft* (Property). The scale, MAC Food Wasting Questionnaire (MAC-FWQ), is presented in Table S2 in the Supplement. The scales demonstrated acceptable internal consistency: Family (a = .84), Loyalty (a = .76), Reciprocity (a = .73), Heroism (a = .54), Deference (a = .64), Fairness (a = .72), Property (a = .75). It could be argued that reliability of Heroism is too low — however, we decided to include this scale in further analyses for theoretical consistency (to avoid Type I error, we would also highlight this problem if in further analyses Heroism was found to be a significant predictor in confirmatory analyses).

To measure folk moral intuitions about food wasting behaviour we used the scale developed in the previous study but with a wider range (0-100). The participants were instructed that if they do not agree that food wasting behaviour is immoral at all, they can answer with 0 to all items.

3.1.2. Food Wasting Behaviours Questionnaire

To measure food wasting behaviour we used the Food Wasting Behaviours Questionnaire (FWBQ), measuring the frequency of five types of behaviours associated with food wasting (Misiak, Sobol-Kwapińska et al., 2023). Using a Likert-type scale (*0 – Never*, *100 – Always*), the participants estimated how often they behave in a given way. Food-wasting behaviours can take various forms, each driven by different psychological, demographic, and socioeconomic factors. FWBQ assess the frequency of five major categories of behaviours that contribute to food waste.

Discarding unpalatable foods refers to behaviours where individuals dispose of food they find unappetizing or undesirable. This includes throwing away food they dislike, food that has dried out, wilted produce, or anything that appears visually unappealing.

Buying food as needed reflects an individual's effort to purchase only what they will consume. This involves buying small amounts of food, avoiding over-shopping, and purchasing just enough at a given time.

Planning meals describes behaviours where individuals organize their meals and grocery shopping in advance. This includes making shopping lists, planning meals for the next day, preparing food that can be eaten later, and structuring grocery trips to match future consumption needs.

Sharing food refers to behaviours where individuals distribute surplus food rather than discarding it. This includes giving away food they cannot eat to friends, family, or those in need, whether through informal sharing or structured food donation.

Feeding animals with food scraps is often perceived as a waste-reducing strategy, though it comes with nutritional risks for pets and wildlife. This behaviour includes feeding leftovers to pets, giving excess food to animals, and using uneaten food to feed hungry animals. It is important to note that people often engage in this practice because they perceive it as a way to minimize food waste. However, feeding animals with food scraps should be done with caution to avoid potential harm (Heuberger & Wakshlag, 2011).

3.1.3. Statistical analyses

First, we conducted CFA and reliability analyses, to see whether the data we obtained recreated the factor structure of each concept used in the study. In our preregistration, we proposed testing our hypotheses with structural equation modelling, gathering a sample of at least 330 people, according to a popular rule of thumb for conducting SEM analyses which argues that 300 cases might be sufficient (Comrey & Lee, 2013). The models, however, did not converge properly and we decided to conduct a set of corresponding regression analyses based on raw scores.

For descriptive purposes, we conducted repeated measures ANOVAs to examine differences between folk and MAC moral intuitions. We specifically analysed how each type of intuition relates to moral condemnation of food-wasting behaviour.

Given that MAC describes fundamental moral domains, we expected that they will, to some extent, fuel folk moral intuitions. To test what part of variance of folk intuitions (Folk-FWQ) is explained by MAC moral categories (MAC-FWQ), we conducted a set of regressions with folk intuitions as dependent variables.

To test our hypothesis on the relationship between moral intuitions and food-wasting behaviour, we conducted regression analyses. FWBQ scores served as the outcome variables, while MAC and Folk categories were included as predictors. The sensitivity analysis suggested that our sample allowed to conduct multiple linear regressions with seven predictors, power of .80, alpha level of .05, and to identify small effects of $f^2 = 0.02$, which equals to R^2 of .065 (Faul et al., 2009).

For exploratory purposes, we took the findings from the regression analyses, and we tested mediation models (path analysis) to see whether relationships between MAC intuitions and their relationships to food wasting are mediated by Folk moral intuitions.

To control for multiple comparisons (23 tests), we used a Bonferroni correction, and we deemed significant only effects with $p < .002$. All the analyses were performed using the Jamovi software (version 2.0; The jamovi project, 2021).

3.2. Results

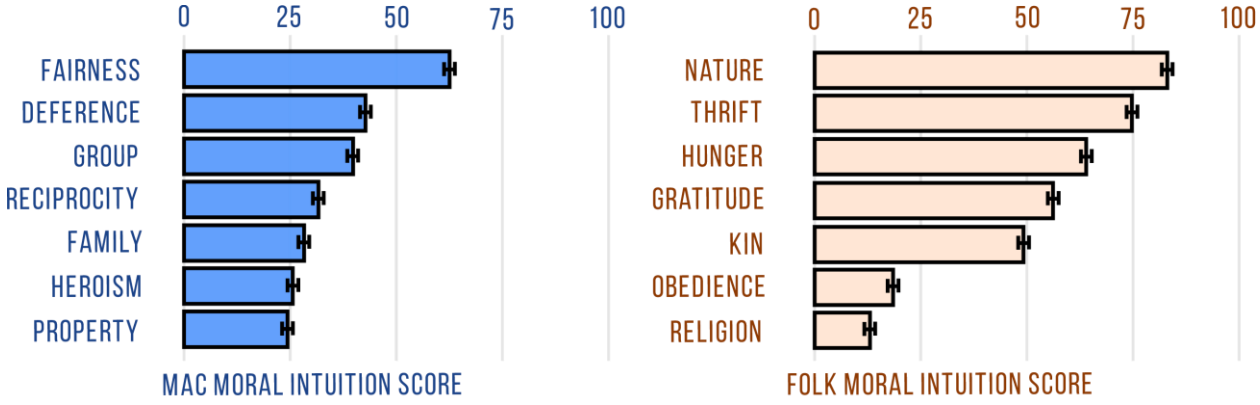
The correlations between the variables of MAC-FWQ, Folk-FWQ, and FWBQ are presented in Table S3 in the Supplement.

Confirmatory Factor analysis demonstrated that the MAC-FWQ model fit statistics fell just below the conventional thresholds (CFI = .89, TLI = .86, SRMR = .06, RMSEA = .08). The initial model of seven folk moral factors presented a good fit (CFI = .95, TLI = .95, SRMR = .06, RMSEA = .05), as well as the model for FWBQ (CFI = .92, TLI = .91, SRMR = .07, RMSEA = .07). The details of the CFA are presented in Tables S4 and S5 in the Supplement.

The scores for the MAC-FWQ and Folk-FWQ are presented in Figure 2. The repeated measures ANOVA models were significant (MAC-FWQ $F(6,2010) = 232.91$, $p < .001$, $\eta^2G = 0.21$; Folk-FWQ $F(6,2010) = 581.90$, $p < .001$, $\eta^2G = 0.48$). All the domains differed significantly from each other except for Family – Reciprocity, Family – Heroism, Family – Property, Group – Deference, and Heroism – Property pairs (the details are presented in Table S6 and S7 in the Supplement).

Figure 2

The morality of food wasting according to the mean scores for the MAC moral intuitions (MAC-FWQ) and the folk moral intuitions (Folk-FWQ). The categories are ranked from those that were considered the most important for moral judgments of food wasting



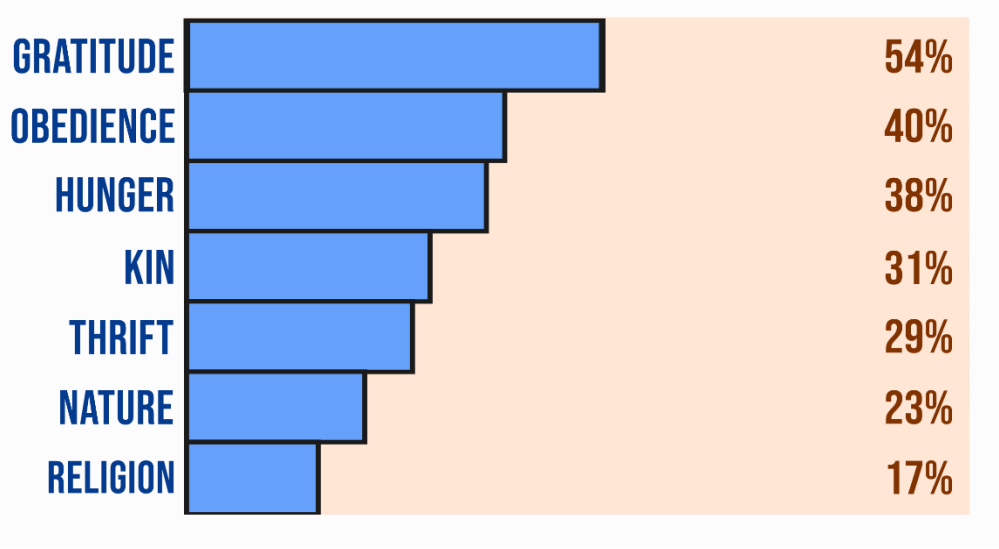
Note. The pairs of Deference – Group, Reciprocity – Family, Family – Heroism, Family – Property, and Heroism – Property did not differ significantly.

3.2.1. MAC moral intuitions about food wasting predicting folk moral intuitions

The results of regression models demonstrated the degree to which MAC-FWQ predicted Folk-FWQ (Figure 3 and Tables S8-S14).

Figure 3

Folk moral intuitions of food wasting (Folk-FWQ) and the degree to which multiple regression models based on the Morality-as-Cooperation (MAC-FWQ), explained their variance (R^2)



Note. Predictors: moral intuitions of food wasting based on the seven MAC moral categories: Family, Group, Reciprocity, Heroism, Deference, Fairness, and Property.

We found that all models were significant ($p < .001$). In the Gratitude model ($F(7, 328) = 55.93$) we found that Reciprocity ($\beta = 0.36$, $p < .001$, 95% CI [0.24, 0.49]) , Deference ($\beta = 0.37$, $p < .001$, 95% CI [0.26, 0.48]) and Fairness significantly predicted folk moral intuitions scores ($\beta = 0.23$, $p < .001$, 95% CI [0.12, 0.33]). In the Obedience model ($F(7, 328) = 35.44$) we found Reciprocity ($\beta = 0.25$, $p < .001$, 95% CI [0.11, 0.40]) and Deference ($\beta = 0.28$, $p < .001$, 95% CI [0.15, 0.41]) predicted the scores. In the Hunger model ($F(7, 328) = 28.83$) we found that Fairness ($\beta = 0.51$, $p < .001$, 95% CI [0.39, 0.64]) predicted the scores. In the Kin model ($F(7, 328) = 21.05$) we found Family ($\beta = 0.24$, $p < .001$, 95% CI [0.11, 0.37]) and Fairness ($\beta = 0.37$, $p < .001$, 95% CI [0.24, 0.50]) predicted the scores. In the Thrift model ($F(7, 328) = 19.36$) we found that Fairness ($\beta = 0.26$, $p < .001$, 95% CI [0.13, 0.40]) predicted the scores. In the Nature model ($F(7, 328) = 14.14$) we found that Fairness ($\beta = 0.31$, $p < .001$, 95% CI [0.17, 0.45]) predicted the scores. Although the Religion model was significant, we found no significant MAC predictors of folk moral intuition scores ($p > .001$; but see Table S3 in Supplementary materials for simple correlations—Religion correlates positively with each MAC category to similar extent).

3.2.2. MAC moral intuitions and folk intuitions predicting food wasting behaviour

All the estimates of each regression model are presented in Supplementary Material (Tables S15-S19 for MAC-FWQ, and Tables S20-S24 for Folk-FWQ). Models based on MAC-FWQ predicted Sharing food with others ($F(7, 328) = 9.10$, $p < .001$, $R^2 = 0.16$; people who were more likely to share food were those who saw wasting food as a violation of Reciprocity ($\beta = 0.28$, $p < .001$, 95% CI [0.11, 0.45]). Other MAC-FWQ models did not significantly predict the treatment of unpalatable foods; buying as needed; planning meals and groceries; and feeding animals.

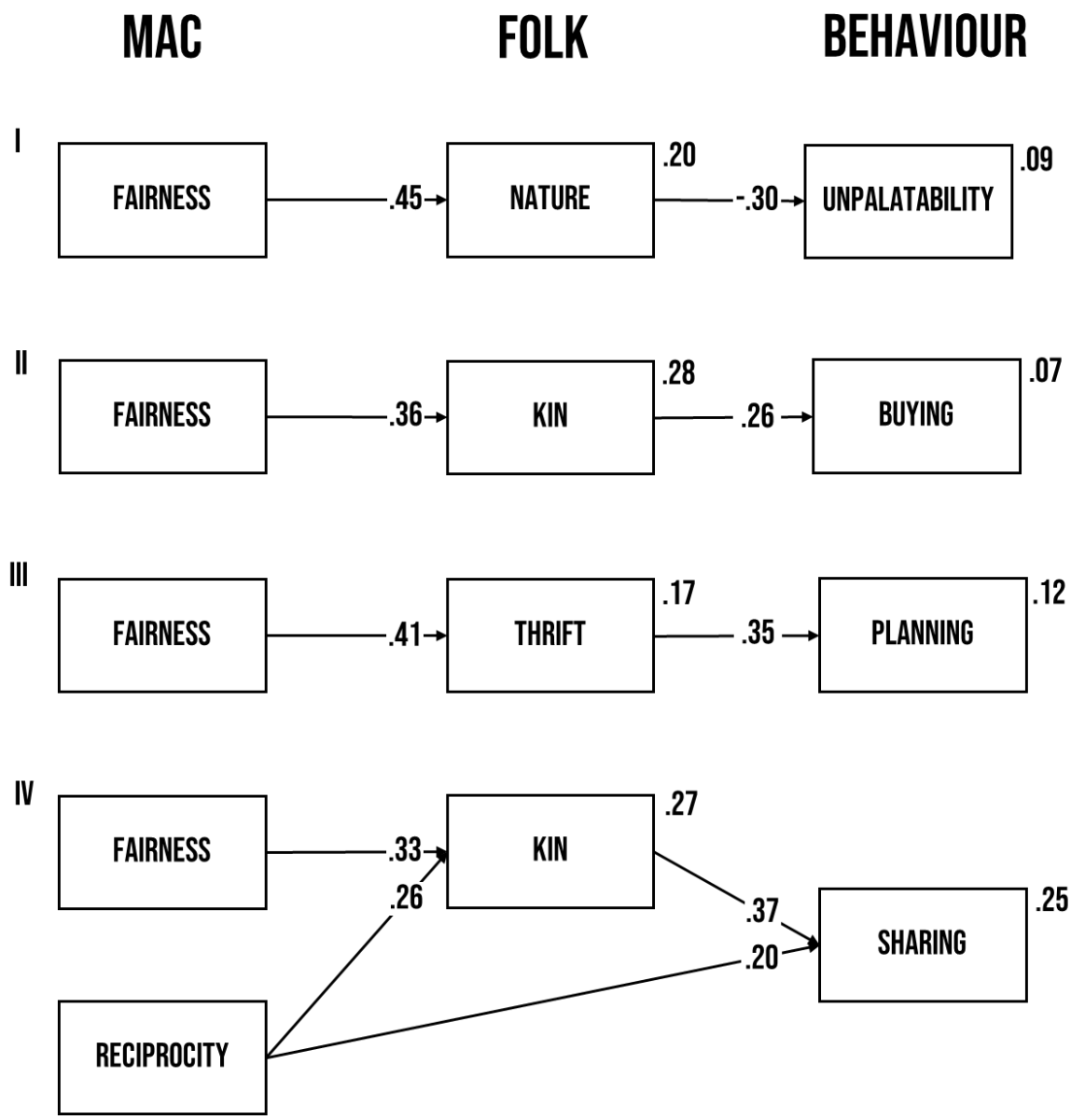
A model based on Folk-FWQ predicted treatment of unpalatable foods ($F(7,328) = 7.85$, $p < .001$, $R^2 = 0.14$; people were less likely to throw away unpalatable foods if they believed wasting food is harming nature ($\beta = -0.27$, $p < .001$, 95% CI [-0.39, -0.16])). It also predicted buying as needed ($F(7, 328) = 4.26$, $p < .001$; people were more likely to limit overshopping if they believed wasting food is a failure to support kin ($\beta = -0.27$, $p < .001$, 95% CI [0.14, 0.42])). Folk-FWQ model predicted also planning meals and groceries ($F(7,328) = 10.65$, $R^2 = 0.19$; people were more likely to plan their meals and groceries if they believed that wasting food shows the lack of thriftiness ($\beta = -0.25$, $p < .001$, 95% CI [0.12, 0.37])). It also predicted sharing food with others ($F(7, 328) = 16.26$, $p < .001$, $R^2 = 0.26$; people who were more likely to share their foods with others believed that wasting food is a failure to support kin ($\beta = -0.37$, $p < .001$, 95% CI [0.25, 0.50])). However, feeding animals was the only FWBQ category that was not predicted by folk moral intuitions ($F(8, 327) = 10.28$, $p < .001$, $R^2 = 0.20$; only having a pet was a significant predictor of feeding animals ($\beta = 0.70$, $p < .001$, 95% CI [0.50, 0.90])).

3.2.3. Mediation analyses

In this set of analyses, we used path analysis to examine whether folk moral intuitions (mediators) explain the relationship between MAC-based moral intuitions about food wasting (predictors) and self-reported food-wasting behaviour (FWBQ; outcome; Figure 4). We found four significant ($p < .001$) models predicting food wasting behaviours, reflecting previous multiple linear regressions. The models present the relationships between moral intuitions and food wasting behaviours: wasting food due to its unpalatability (RMSEA = .03, SRMR = .02), buying as needed (RMSEA = .03, SRMR = .05), planning meals and groceries (RMSEA = .03, SRMR = .10), and sharing food with others (RMSEA = .01, SRMR = .05).

Figure 4

Folk moral intuitions mediate the relationship between MAC moral intuitions and (I) wasting food due to its unpalatability, (II) buying as needed, (III) planning meals and groceries, and (IV) sharing food



Note. Standardized parameters. The percentage of explained variance (R^2) is presented in the top right corners.

4. Discussion

This project establishes a conceptual foundation for understanding moral judgments of food-wasting behaviour. To achieve this, we distinguished between folk moral intuitions and moral intuitions mapped onto the MAC scientific framework of morality (Curry et al., 2019). The results enabled us to examine the extent to which these distinct types of moral intuitions explain people's moral judgments related to food waste. Our objectives were to identify differences between these moral intuitions, explore how theoretically-mapped cooperative moral intuitions influence folk moral intuitions, and assess the degree to which moral intuitions can predict food-wasting behaviours.

We asked people to judge which concerns make them believe food wasting is immoral. Among the folk intuitions, the strongest predictors of food wasting moral condemnation were concerns for nature, thriftiness, and concerns for world hunger. Among cooperative moral intuitions, the strongest predictors were the concerns that food wasting behaviour violates the values of Fairness, Deference and Group Loyalty. Overall, people were judging the violations of folk moral intuitions more harshly than the cooperative ones. It could mean that folk moral intuitions are to some degree caused by cultural truisms (Maio & Olson, 1998) – they were judged as more important due to their greater prevalence in the media, or public education. It could also be a result of folk moral relativism and naming 'immoral' behaviours that we are not in favour of, even if they are not linked to morality (Sarkissian et al., 2011). No matter what the exact reasons for treating folk moral intuitions as more important are, our study emphasized that through improperly defining morality we risk including some noisy constructs that are not associated with morality. To be able to understand the impact of morality on behaviour, we need to use a precise theoretical operationalization—even if it reveals that morality may have a weaker influence on food-wasting behaviour than previously assumed.

Folk moral intuitions were influenced by cooperative moral intuitions. The folk intuition most strongly associated with the MAC domains was Gratitude—the belief that wasting food is an ungracious act toward those who produced it. Although the Gratitude folk intuition was explained by MAC to an extent of 54%, it is important to emphasize that the remaining variance is likely shaped by factors unrelated to morality, such as psychological proximity to individuals involved in food production (Mentovich et al., 2016). The MAC domain that most strongly explained folk moral intuitions was Fairness, which was associated with five out of seven folk moral intuitions. This suggests that at the core of many folk moral intuitions lies the belief that food waste violates the principle of fair resource distribution.

Finally, we demonstrated that both folk moral intuitions and cooperative moral intuitions are associated with food wasting behaviour. Among the folk moral intuitions, we found that those who believe food wasting is immoral due to environmental concerns were less likely to waste unpalatable foods, those who believed that it is a failure to support kin were more likely to avoid overbuying and more likely to share food with others, and those who believed that food wasting shows a lack of thriftiness were more likely to plan meals and groceries. When it comes to MAC, we only found one direct relationship – those who believed that food-wasting behaviour violates the rule of reciprocity were more likely to share food. Also, in a series of mediational analyses, we found that the folk intuitions that predicted food wasting behaviour mediated the relationship between food wasting behaviour and Fairness and Reciprocity.

4.1. Theoretical implications

Food-wasting behaviour was perceived as a moral violation and, therefore, uncooperative. However, relying only on folk conceptions of morality can be misleading, leading to the attribution of morality to food waste through imprecise operationalization. To better understand the link between morality and food-wasting behaviour, a principled theoretical approach is needed. This led to our major theoretical advancement—only certain moral domains, particularly Fairness, play a significant role in food-wasting behaviour.

Fairness emerged as the dominant moral domain in relation to food waste: it was the strongest predictor of folk moral intuitions, showed the strongest association with food-wasting behaviour, and was perceived as the moral principle most severely violated by wasting food. Fairness is a moral domain based on the non-zero-sum game known as the bargaining problem. When contested resources are divisible and the parties are equally powerful, this game should result in equal shares—a strategy that helps humans avoid costly conflicts over resources (Brams et al., 1996). The tendency to share resources equally is prevalent across cultures (Henrich et al., 2005). If people perceive food-wasting behaviour as a violation of this principle, it may suggest that food wasters are seen as taking more resources than they need, leaving others with less than they should receive. This perception is grounded in at least two major cooperative problems. First, by wasting food, we indirectly contribute to undernourishment, as surplus food could be redirected to those who need it but cannot afford it (Lai et al., 2022). Second, food waste contributes to environmental degradation, with the environment viewed as a common good that should not be abused (FAO, 2019). The correlation between Fairness and concerns for world hunger and nature, observed in the second study, supports this hypothesis.

Grounding food-wasting studies in established moral theories enables the generation of new, testable hypotheses. When research is anchored in a well-defined theoretical framework, such as Morality-as-Cooperation, it moves beyond merely describing patterns of behaviour and instead

predicts and explains why certain moral intuitions drive food-wasting decisions. For example, researchers can now formulate novel hypotheses based on our understanding of the bargaining problem and intuitions about fair resource distribution, such as: (1) people will be more likely to tolerate food waste if they believe the problem is to be resolved in the future (Brosnan & de Waal, 2014); (2) as population complexity increases, it becomes more likely that punishment mechanisms will be introduced to reduce food waste (Henrich et al., 2010); and (3) observing food-wasting behaviour will elicit anger, which in turn will motivate people's retributive tendencies (Seip et al., 2014). Without a theoretical foundation, studies may merely document surface-level associations—such as people linking food waste to guilt or social norms—without uncovering the deeper psychological mechanisms driving these judgments. A theory-driven approach not only clarifies why people moralise food waste but also guides interventions, informs policy, and expands our understanding of the moral dimensions of consumption and sustainability.

4.2. Practical implications

The results of our project suggest that only certain moral domains, like Fairness and Reciprocity, are linked to food-wasting behaviour. This offers a valuable insight for those designing persuasive messages aimed at minimizing food waste (Stöckli et al., 2018). Rather than invoking vague moral concerns, practitioners could target specific values to influence particular behaviours, such as food purchases or meal planning. Instead of simply telling people that wasting food is bad, immoral, or unethical, practitioners might focus on more concrete moral categories like Fairness: *The food you waste could be shared with others. The best place to store excess food is in other people's stomachs!* To avoid blaming the consumer (Evans, 2011), such messages could also be directed toward companies or institutions.

The process by which a behaviour previously seen as neutral acquires moral significance is known as moralisation (Rhee et al., 2019). Food wasting behaviour appears to be undergoing this process, particularly in relation to Fairness violations. Education and media increasingly frame food waste as an issue of resource injustice, linking it to environmental degradation, global hunger, and inequitable food distribution (e.g., Stuart, 2009). Documentaries such *as Just Eat It: A Food Waste Story* and *Wasted! The Story of Food Waste* reinforce this perspective, portraying food waste as not just wasteful but ethically wrong. By emphasizing its broader societal impact, these narratives reinforce the view that food waste constitutes a misuse of shared resources and, consequently, a violation of Fairness principles.

Morality-as-Cooperation shows that other domains of cooperation can also be used to frame food-wasting behaviour, offering additional pathways for its moralisation. Practitioners could apply these domains, in line with the moral reframing paradigm, to enrich communication by emphasizing additional cooperative principles that food waste violates (Feinberg & Willer,

2019). For example, they could frame the issue in terms of Group loyalty, portraying sustainable behaviours—like shopping with a list or donating food—as beneficial to the community or even patriotic. MAC could also address the 'good provider' identity problem, where people overbuy food to better care for their family and guests (Werkman et al., 2025). The Family domain could be used to reframe food-wasting behaviour as harmful to the family by highlighting that parents who waste food set a poor example for their children, reinforcing irresponsible consumption habits.

To effectively implement morality-based messaging aimed at reducing food waste, practitioners should first conduct pilot tests within the specific context, population, and behaviour they intend to influence. A Morality-as-Cooperation (MAC)-inspired approach to moral persuasion has already highlighted potential challenges associated with morality-based framing (Misiak, Curry & Tureček, 2023). While our findings identify Fairness as a key moral concern, this may not be universal, making context-specific testing essential. For example, in more collectivistic cultures, people may view food-wasting behaviour as more immoral, perceiving it as a violation of different moral principles, such as Family or Loyalty—where wasting food equates to failing to share food with ones' community or loved ones (Uskul & Oyserman, 2010).

Additionally, practitioners should be mindful of potential backfire effects, where certain messages may be counterproductive. As demonstrated by Misiak, Curry and Tureček (2023), MAC-based persuasive messages can lead to unintended consequences—for instance, Deference-based messages may cause individuals to perceive food waste reduction efforts as a restriction on personal freedom, contradictorily leading to increased food-wasting behaviour. To mitigate these risks, small-scale trials and iterative refinements should be conducted before large-scale implementation. Collaboration with NGOs, policymakers, and commercial organizations can help ensure that interventions are practical, audience-specific, and adaptable. Future initiatives should prioritize real-world experimentation, collecting empirical data on effective strategies rather than relying solely on theoretical models (Trafimow & Osman, 2022).

4.3. Limitations and future directions

Future studies on morality and food waste would benefit from an improved study design. First, they should aim to use larger samples, which would allow for more advanced statistical methods, such as structural equation modelling, which are more precise than traditional score-based models. Additionally, researchers should strive for greater gender balance. Our samples in both studies were skewed toward women, which was reflected in disproportionate declarations of household food-related responsibilities. This likely stems from culturally sustained traditional

household gender roles (Lee et al., 2020). Including more men in future studies could yield different results, as men in societies with traditional gender roles might be less involved in grocery shopping, cooking, and cleaning after meals. As a result, they may be less concerned about food waste in general. Moreover, future studies measuring food-wasting behaviour should consider methods beyond self-reporting to avoid potential social desirability bias (Krumpal, 2013). For studies involving folk moral intuitions, it would be helpful to include measures that capture noisy constructs unrelated to morality, such as concerns for nature or religiosity, to further test our argument that folk moral intuitions blend morality with other psychological constructs.

Although our project illustrated how moral concerns relate to food-wasting behaviours, we cannot definitively say that acting on these concerns will shift people's food-related habits. It is possible that people adjust their moral concerns according to their behaviour, and that appealing to morality may have a backfire effect—eliciting negative emotions and avoidance-oriented behaviour. For instance, someone might believe that food waste violates their moral values but, upon reflecting on their behaviour, realize they are being hypocritical. This realisation could make them feel bad, leading them to avoid thinking about their own food-wasting habits (Russell et al., 2017). To rule out this possibility, it would be necessary to conduct an experimental study in which participants are exposed to both moral and morally neutral arguments.

We demonstrated that the Fairness domain was particularly relevant to food-wasting behaviour. However, it is important to note that our sample represents an industrialized and democratic country with a public education system. This population is regularly exposed to messages condemning food-wasting behaviour due to its environmental and global social consequences. Public education, policy priorities, and environmental activism may have associated the values of Fairness with food waste. In countries with different social and ecological conditions, food-wasting behaviour may be linked to other moral domains. For example, in populations experiencing greater food insecurity, food-wasting behaviour could be seen primarily as a violation of Family values or Group loyalty, where wasting food means failing to support undernourished family members or the local community (Gurven, 2004; Misiak et al., 2018).

Moreover, in some cultural contexts, food waste could even be perceived as morally good, as in the case of potlatches—feast-like ceremonies held by indigenous peoples of the Pacific Northwest Coast of present-day Canada (Gadacz, 2019). During potlatches, food was deliberately wasted as a display of status, aligning with the Heroism moral domain, which centres on demonstrations of wealth and prestige. Therefore, we recommend not assuming that food-wasting behaviour is universally perceived as a violation of Fairness and suggest exploring how social and ecological factors may lead people to associate food waste with different moral domains.

4.4. Conclusions

Overall, our project shows the importance of a systematic scientific approach in understanding the relationship between morality and food-wasting behaviour. It highlights that conceptualizing morality based on folk intuitions increases the risk of misattributing other noisy psychological concepts to morality. Broadly, this work supports the claim that those who consider food waste immoral are less likely to waste food—particularly those who view it as a violation of the Fairness moral domain, which is associated with the fair division of resources. Finally, this project provides a theoretical benchmark for future studies on the relationship between morality and food-wasting behaviour and offers insights for practitioners and advocates seeking to apply moral psychology to discourage people from wasting food.

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Table S1

The list of folk moral intuitions that made people regard food wasting as immoral behaviour

Item ID	Folk-FWQ	PL (original)	ENG
	Instruction	Wyrzucanie jedzenia jest niemoralne, ponieważ:	Throwing away food is immoral because:
1.	Religion	… obraża to Boga.	It offends God.
2.		… jest to brak szacunku do natury.	It is a disrespect for nature.
3.	Religion	… jedzenie jest święte.	Food is sacred.
4.		… jest to dar od Boga.	It is a gift from God.
5.	Religion	… jest to wbrew religii.	It is against religion.
6.		… jest to nieczyste zachowanie.	It is a filthy behaviour.
7.		… marnowane jedzenie jest konsumowane przez szczury, które przenoszą choroby.	Wasted food is consumed by rats that carry diseases.
8.		… marnowane jedzenie jest pożywką dla bakterii.	Wasted food is a breeding ground for bacteria.
9.		… jest to zanieczyszczanie środowiska.	This is environmental pollution.
10.		… jest to niszczenie środowiska.	This is the destruction of the environment.
11.		… produkcja żywności jest szkodliwa dla środowiska.	Food production is harmful to the environment.
12.	Nature	… świadczy to o braku troski o planetę.	It's a sign of a lack of concern for the planet.
13.	Nature	… to szkodzi środowisku.	it harms the environment.

14.		… ma to negatywny wpływ na środowisko.	it has a negative impact on the environment.
15.		… powoduje to koszty środowiskowe.	It causes environmental costs.
16.	Nature	… przyczynia się to do wytwarzania gazów cieplarnianych.	This contributes to the production of greenhouse gases.
17.		… przyczynia się to do zaśmiecania środowiska.	It contributes to littering the environment.
18.		… inni ludzie nie mają pieniędzy.	Other people do not have money.
19.		… na świecie jest bieda.	There is poverty in the world.
20.	Hunger	… inni ludzie głodują.	Other people are starving.
21.		… inni ludzie umierają z głodu.	Other people are starving to death.
22.		… inni ludzie nie mają co jeść.	Other people have nothing to eat.
23.		… inni ludzie nie mają jedzenia.	Other people have no food.
24.		… lepiej oddać jedzenie potrzebującym.	it is better to give food to those in need.
25.		… w innych rejonach Ziemi nie ma pożywienia.	There is no food in other parts of the world.
26.		… przyczynia się to do głodu na świecie.	This contributes to world hunger.
27.	Hunger	… niektórzy ludzie są niedożywieni.	Some people are undernourished.
28.		… ludzie w innych krajach nie mają jedzenia.	people in other countries do not have food.
29.	Hunger	… inni ludzie nie mają pieniędzy na jedzenie.	Other people do not have money for food.

30.		… należy oddawać nadmiar jedzenia osobom, którym go brakuje.	You should give excess food to people who lack it.
31.		… przyczynia się to do wykorzystywania ograniczonych zasobów.	There is poverty in the world. this contributes to the use of scarce resources.
32.		… nadwyżkami można nakarmić innych.	The surpluses can be fed to others.
33.		… jest to brak szacunku do zwierząt.	It is a lack of respect for animals.
34.		… lepiej oddać bezdomnym.	It is better to give it to the homeless.
35.	Hunger	… inni ludzie mają ograniczony dostęp do pożywienia.	Other people have limited access to food.
36.		… wiąże się to z daremną śmiercią zwierzęcia.	It is associated with the futile death of an animal.
37.		… jest to niepotrzebne wykorzystanie zwierząt.	It is an unnecessary use of animals.
38.		… świadczy to o braku szacunku dla osób, które nie mają co jeść.	This is a sign of disrespect for people who have nothing to eat.
39.		… jest to brak szacunku dla biednych ludzi.	It is a lack of respect for poor people.
40.		… jest to niesprawiedliwe względem osób, które nie mają jedzenia.	this is unfair to people who do not have food.
41.		… odbieramy innym możliwość najedzenia się.	We're taking away the opportunity for others to eat.
42.		… jest to brak szacunku dla głodujących ludzi.	It is a lack of respect for hungry people.
43.		… nie każdy może sobie pozwolić na wyrzucanie.	Not everyone can afford to throw food away.

44.		… przyczyna się to do wspierania niesprawiedliwej dystrybucji pożywienia.	It contributes to promoting the unfair distribution of food.
45.		… może to prowadzić do konfliktu.	This can lead to conflict.
46.		… tradycja zakazuje marnowania jedzenia.	Tradition forbids wasting food.
47.	Obedience	… to zachowanie wbrew tradycji.	This is against tradition.
48.	Gratitude	… jest to brak szacunku do żywności.	It is a lack of respect for food.
49.		… jest to brak szacunku do pracy włożonej w produkcję tego jedzenia.	It shows a lack of respect for the work put into the production of this food.
50.		… jest to brak szacunku do ludzi, którzy poświęcli swój czas.	It is a lack of respect for the people who have devoted their time to it.
51.	Obedience	… jest to nieposłuszeństwo względem autorytetów.	This is disobedience to authority.
52.	Obedience	… jest to nieposłuszeństwo względem zaleceń rodziców.	It is disobedience to the recommendations of parents.
53.		… jest to brak szacunku do jedzenia, który został przekazany nam przez poprzednie pokolenia.	It is a lack of respect for food that has been passed on to us by previous generations.
54.		… ludzie mają obowiązek oddać nadmiar jedzenia innym.	People have a duty to give away excess food to others.
55.		… dostęp do jedzenia jest przywilejem.	Access to food is a privilege.
56.		… marnowane jedzenie mogło kogoś nakarmić.	Wasted food could have fed someone.
57.	Thrift	… jest to tracenie pieniędzy.	It is a money loss.

58.		… jest to marnowanie własnych pieniędzy.	It's a waste of your own money.
59.		… jest to przejaw skrajnego konsumpcjonizmu.	This is a sign of extreme consumerism.
60.		… świadczy to o braku odpowiedzialności.	It is a sign of irresponsibility.
61.		… jest to przejaw słabej woli.	This is a sign of weak will power.
62.		… świadczy to o niedojrzałości.	It indicates immaturity.
63.		… ulegały wtedy konsumpcjonizmowi.	We succumb to consumptionism when we waste food.
64.		… jest to przejaw lekkomyślności.	This is a sign of recklessness.
65.	Thrift	… świadczy to o nierozsądności.	it's a sign of foolishness.
66.	Thrift	… jest to przejaw braku gospodarności.	This is a manifestation of a lack of efficiency.
67.		… jest to robienie czegoś, czego nie zaakceptują nasi znajomi.	It is something that our friends will not accept.
68.	Gratitude	… powinniśmy okazywać wdzięczność za to, że mamy co jeść.	We should be grateful that we have something to eat.
69.	Gratitude	… jest to niewdzięczność wobec osób, które wyprodukowały to jedzenie.	It is ingratitude to the people who produced the food.
70.		… jest to brak szacunku dla ludzi, którzy kupili nam jedzenie.	It is a lack of respect for the people who bought us food.
71.		… jest to brak szacunku do rzeczy, które się posiada.	It is a lack of respect for the things you have.
72.	Gratitude	… świadczy to o niewdzięczności.	It is a sign of ungratefulness.

73.		… jest to nielojalne względem przyjaciół.	It is disloyalty to friends.
74.		… ponieważ szkodzi to mojemu krajowi.	It harms my country.
75.	Kin	… należało nakarmić nim swoje dzieci.	You should have fed your children with it.
76.	Kin	… nalażało nakarmić nim głodnych członków swojej rodziny.	It should have been fed to the hungry members of your family.
77.		… szkodzi to naszym przyszłym potomkom.	This is detrimental to our future descendants.
78.		… szkodzi to przyszłym pokoleniom.	It harms future generations.
79.	Kin	… należało podzielić się nadmiarem jedzenia z rodziną.	You ought to share the excess food with your family.
80.	Kin	… ponieważ to pożywienie mogło zostać przekazane naszej bliskiej rodzinie.	because this food could have been given to our close family.
81.	Religion	… jest to grzech.	It is a sin.
82.		… przyczynia się to do produkowania śmieci.	It contributes to the production of garbage.
83.		… jedzenie daje życie.	Food gives life.
84.		… świadczy to o egoizmie.	It is a sign of selfishness.
85.	Obedience	… jest to źle widziane w towarzystwie.	This is not welcome among people.
86.		… wzmacnia szkodliwą normę kulturową.	It reinforces a harmful cultural norm.
87.		… jest to wbrew wychowaniu.	It is against upbringing.
88.		… rolinicy ponoszą straty.	Farmers suffer losses.

89.		… łamie się tym normy społeczne.	It breaks the social norms.
90.		… to zaburza zrównoważony rozwój ekonomiczny.	it disturbs sustainable economic development.
91.		… lepiej nakarmić głodne zwierzęta.	It is better to feed hungry animals.
92.		… jest to brak szacunku do pieniądza.	It is disrespectful for the money.
93.		… jest to niszczenie naszych własności.	It is the destruction of our property.
94.		… kiedyś może zabraknąć jedzenia.	We may run out of food someday.
95.		… jest to niepotrzebne wykorzystanie pól uprawnych.	This is an unnecessary use of farmland.
96.		… jest to haniebne zachowanie.	It's a disgraceful behavior.
97.		… świadczy to o czyjejś słabości.	It is a sign of someone's weakness.
98.	Thrift	… świadczy to o małej gospodarności.	This is a sign of lack of thriftiness.
99.		… jest to niedocenienie tego co się ma.	This is an underestimation of what you have.
100.		… przyczynia się to do wydzielania toksycznych gazów.	This contributes to the release of toxic gases.
101.		… kiedyś może nie być cię stać na jedzenie.	You may not be able to afford food one day.
102.	Nature	… zwiększa ekologiczne koszty transportu.	It increases the ecological costs of transport.
103.		… jest to brak szacunku do siebie.	This is a lack of self-respect.
104.		… pojawiają się wyrzuty sumienia.	It leads to bad conscience.

Table S2

The list of items that constitute Morality-as-Cooperation Food Wasting Questionnaire

MAC Category	PL (original)	ENG
Instruction	Wyrzucanie jedzenia jest niemoralne, ponieważ:	Throwing food away is immoral because:
	... to szkodzi rodzinie.	… it harms the family.
Family	... jest to zaniedbywanie rodziny.	… it is neglectful of the family.
	... jest to niedobre względem członków rodziny.	… it is unkind to other family members.
	... to szkodzi wspólnocie.	… it is against the community.
Group	... szkodzi to innym osobom w mojej wspólnocie.	… it harms other people in the community.
	... dzieli to moją społeczność.	… it divides the community.
	... okazuje się tym samym brak wdzięczności.	… it shows ingratitude.
Reciprocity	... świadczy to o byciu osobą niegodną zaufania.	… it is a sign that someone is not trustworthy.
	... świadczy to o tym, że nie można polegać na takiej osobie.	... this shows that such a person cannot be relied upon.
	... jest to oznaka tchórzostwa.	… it is a sign of cowardice.
Heroism	... świadczy to o głupocie.	… it shows stupidity.
	... okazuje się przez to skąpstwo.	… it demonstrates miserliness.
Deference	... jest to wyraz braku szacunku.	… it is disrespectful.
	... jest to oznaka próżności.	… it demonstrates hubris.

	... świadczy to o braku szacunku dla autorytetu.	… it is disrespectful to people in authority.
	... jest to niesprawiedliwe.	… it is unfair.
Fairness	... świadczy to o tym, że ktoś wziął więcej niż potrzebował.	… it means that someone has taken more than they need.
	... przyczynia się to do nierówności.	… it contributes to inequality.
	... jest to rodzaj kradzieży.	… it is a kind of theft.
Property	... świadczy to o tym, że ktoś wziął coś, do czego nie miał prawa.	… it means someone has taken something to which they had no right.
	... jest to niszczenie czegoś, co powinno należeć do innej osoby.	… it is destroying something that should belong to someone else.

Table S3

Correlations between the variables used in Study 2

			1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
Folk-FWQ	1. Hunger	r	—																	
		p	—																	
	2. Nature	r	0.36																	
		p	< .001																	
	3. Thrift	r	0.31	0.41																
		p	< .001	< .001																
	4. Obedience	r	0.33	0.21	0.44															
		p	< .001	< .001	< .001															
	5. Gratitude	r	0.57	0.38	0.51	0.56														
		p	< .001	< .001	< .001	< .001														
	6. Religion	r	0.26	0.10	0.23	0.64	0.42													
		p	< .001	0.069	< .001	< .001	< .001													
	7. Kin	r	0.52	0.30	0.45	0.39	0.56	0.26												
		p	< .001	< .001	< .001	< .001	< .001	< .001												
MAC-FWQ	8. Family	r	0.32	0.25	0.37	0.48	0.44	0.31	0.42											
		p	< .001	< .001	< .001	< .001	< .001	< .001	< .001											
	9. Group	r	0.43	0.38	0.30	0.40	0.46	0.28	0.35	0.64										
		p	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001										
	10. Reciprocity	r	0.43	0.34	0.43	0.56	0.66	0.37	0.44	0.60	0.61									

		p	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001								
	11.Heroism	r	0.32	0.34	0.44	0.47	0.46	0.29	0.33	0.57	0.49	0.64							
		p	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001							
	12. Deference	r	0.37	0.31	0.44	0.56	0.66	0.37	0.41	0.51	0.56	0.70	0.59						
		p	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001						
	13. Fairness	r	0.60	0.45	0.41	0.38	0.54	0.24	0.47	0.44	0.63	0.54	0.48	0.54					
		p	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001					
	14.Property	r	0.42	0.30	0.28	0.35	0.46	0.24	0.31	0.42	0.53	0.59	0.47	0.47	0.61				
		p	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001				
FWBQ	15. Unpalatability	r	-0.20	-0.30	-0.07	-0.00	-0.20	-0.09	-0.19	-0.12	-0.14	-0.13	-0.12	-0.15	-0.18	-0.18			
		p	< .001	< .001	0.230	0.955	< .001	0.103	< .001	0.028	0.008	0.013	0.032	0.006	< .001	< .001			
	16. Buying	r	0.12	0.12	0.12	0.03	0.13	0.08	0.26	0.19	0.19	0.14	0.05	0.12	0.19	0.16	-0.19		
		p	0.023	0.034	0.022	0.599	0.020	0.146	< .001	< .001	< .001	0.013	0.387	0.031	< .001	0.004	< .001		
	17. Planning	r	0.26	0.27	0.35	0.12	0.31	0.13	0.29	0.21	0.22	0.24	0.17	0.21	0.24	0.16	-0.17	0.22	
		p	< .001	< .001	< .001	0.024	< .001	0.015	< .001	< .001	< .001	< .001	0.002	< .001	< .001	0.003	0.001	< .001	
	18. Sharing	r	0.34	0.28	0.23	0.23	0.32	0.24	0.46	0.20	0.28	0.36	0.25	0.29	0.33	0.26	-0.29	0.23	0.25
		p	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001
	19. Feeding	r	0.13	0.02	0.13	0.14	0.15	0.22	0.22	0.11	0.07	0.15	0.19	0.19	0.02	0.07	-0.11	0.09	0.11	0.26
		p	0.017	0.765	0.015	0.011	0.005	< .001	< .001	0.038	0.197	0.007	< .001	< .001	0.722	0.217	0.051	0.090	0.042	< .001

Table S4

The results of Confirmatory Factor Analysis for MAC Food Wasting Questionnaire

				95% Confidence Interval				
Factor	Indicator	Estimate	SE	Lower	Upper	Z	p	Stand. Estimate
FAMILY	MAC_FAM_1	26.02	1.42	23.24	28.80	18.34	< .001	0.85
	MAC_FAM_2	19.93	1.28	17.42	22.44	15.58	< .001	0.76
	MAC_FAM_3	24.92	1.47	22.04	27.80	16.95	< .001	0.81
GROUP	MAC_GROUP_1	23.31	1.83	19.73	26.89	12.76	< .001	0.67
	MAC_GROUP_2	25.87	1.70	22.54	29.20	15.21	< .001	0.77
	MAC_GROUP_3	20.14	1.42	17.37	22.92	14.22	< .001	0.72
RECIPROCITY	MAC_RECIP_2	23.86	1.23	21.45	26.27	19.40	< .001	0.89
	MAC_RECIP_3	21.59	1.17	19.29	23.88	18.45	< .001	0.86
DEFERENCE	MAC_DEFER_1	21.98	1.94	18.17	25.79	11.31	< .001	0.64
	MAC_DEFER_2	21.28	2.04	17.29	25.27	10.44	< .001	0.60
	MAC_DEFER_3	13.83	1.33	11.23	16.44	10.39	< .001	0.59
FAIRNESS	MAC_FAIR_1	28.22	1.71	24.87	31.58	16.47	< .001	0.80
	MAC_FAIR_2	11.31	1.44	8.49	14.13	7.86	< .001	0.44
	MAC_FAIR_3	29.20	1.74	25.78	32.61	16.74	< .001	0.82
PROPERTY	MAC_PROP_1	18.99	1.29	16.46	21.52	14.71	< .001	0.75
	MAC_PROP_2	16.78	1.24	14.34	19.21	13.49	< .001	0.70
	MAC_PROP_3	24.76	1.79	21.25	28.28	13.80	< .001	0.72

Table S5

The results of Confirmatory Factor Analysis for Folk Food Wasting Questionnaire

				95% Confidence Interval				
Factor	Indicator	Estimate	SE	Lower	Upper	Z	p	Stand. Estimate
Unpalatable	UNPALATABLE_1	18.06	1.60	14.93	21.20	11.29	< .001	0.63
	UNPALATABLE_2	26.01	1.62	22.83	29.18	16.06	< .001	0.82
	UNPALATABLE_3	23.89	1.63	20.70	27.08	14.66	< .001	0.75
	UNPALATABLE_4	15.62	1.44	12.80	18.45	10.84	< .001	0.61
Buying	BUYING_1	15.70	1.30	13.16	18.24	12.11	< .001	0.65
	BUYING_2	19.27	1.55	16.22	22.31	12.40	< .001	0.68
	BUYING_3	21.76	1.36	19.09	24.42	16.03	< .001	0.84
	BUYING_4	19.48	1.89	15.78	23.17	10.32	< .001	0.59
Planning	PLANNING_1	13.43	1.58	10.33	16.53	8.49	< .001	0.47
	PLANNING_2	27.49	1.34	24.87	30.12	20.50	< .001	0.96
	PLANNING_3	10.08	1.45	7.23	12.92	6.93	< .001	0.38
	PLANNING_4	22.73	1.34	20.11	25.35	17.01	< .001	0.82
Sharing	SHARING_1	27.75	1.60	24.62	30.89	17.35	< .001	0.81
	SHARING_2	26.27	1.36	23.60	28.95	19.26	< .001	0.86

				95% Confidence Interval				
Factor	Indicator	Estimate	SE	Lower	Upper	Z	p	Stand. Estimate
	SHARING_3	29.68	1.37	26.99	32.37	21.59	< .001	0.93
	SHARING_4	24.05	1.69	20.75	27.36	14.27	< .001	0.71
Feeding	FEEDING_1	31.58	1.62	28.41	34.76	19.50	< .001	0.86
	FEEDING_2	33.85	1.48	30.95	36.75	22.84	< .001	0.95
	FEEDING_3	31.71	1.52	28.73	34.68	20.89	< .001	0.90
	FEEDING_4	30.15	1.52	27.17	33.13	19.83	< .001	0.87

Table S6

Post-hoc comparisons for the Folk-FWQ moral domains

Comparison							
Folk Category		Folk Category	Mean Difference	SE	df	t	p_{tukey}
Nature	-	Thrift	8.35	1.33	335.00	6.30	< .001
	-	Hunger	19.11	1.78	335.00	10.72	< .001
	-	Gratitude	26.93	1.59	335.00	16.96	< .001
	-	Kin	33.89	1.71	335.00	19.85	< .001
	-	Obedience	64.60	1.39	335.00	46.50	< .001
	-	Religion	70.04	1.55	335.00	45.16	< .001
Thrift	-	Hunger	10.75	1.87	335.00	5.74	< .001
	-	Gratitude	18.57	1.45	335.00	12.79	< .001
	-	Kin	25.53	1.56	335.00	16.40	< .001
	-	Obedience	56.24	1.23	335.00	45.69	< .001
	-	Religion	61.69	1.49	335.00	41.31	< .001
Hunger	-	Gratitude	7.82	1.61	335.00	4.86	< .001
	-	Kin	14.78	1.71	335.00	8.66	< .001
	-	Obedience	45.49	1.77	335.00	25.63	< .001
	-	Religion	50.93	1.88	335.00	27.08	< .001
Gratitude	-	Kin	6.96	1.54	335.00	4.53	< .001
	-	Obedience	37.67	1.34	335.00	28.02	< .001
	-	Religion	43.11	1.54	335.00	28.07	< .001
Kin	-	Obedience	30.71	1.57	335.00	19.58	< .001
	-	Religion	36.15	1.74	335.00	20.75	< .001
Obedience	-	Religion	5.44	0.93	335.00	5.82	< .001

Table S7

Post-hoc comparisons for the MAC-FWQ moral domains

Comparison			Mean Difference	SE	df	t	p_{tukey}
MAC Morality		MAC Morality					
Family	-	Group	-11.538	1.212	335.000	-9.518	< .001
	-	Reciprocity	-3.381	1.204	335.000	-2.808	0.077
	-	Heroism	2.686	1.169	335.000	2.298	0.248
	-	Deference	-14.465	1.338	335.000	-10.814	< .001
	-	Fairness	-34.273	1.494	335.000	-22.941	< .001
	-	Property	3.908	1.431	335.000	2.730	0.094
Group	-	Reciprocity	8.157	1.211	335.000	6.737	< .001
	-	Heroism	14.223	1.295	335.000	10.981	< .001
	-	Deference	-2.928	1.294	335.000	-2.263	0.265
	-	Fairness	-22.735	1.237	335.000	-18.372	< .001
	-	Property	15.445	1.322	335.000	11.685	< .001
Reciprocity	-	Heroism	6.066	1.003	335.000	6.047	< .001
	-	Deference	-11.084	1.007	335.000	-11.005	< .001
	-	Fairness	-30.892	1.304	335.000	-23.696	< .001
	-	Property	7.289	1.153	335.000	6.320	< .001
Heroism	-	Deference	-17.151	1.080	335.000	-15.886	< .001
	-	Fairness	-36.958	1.292	335.000	-28.616	< .001
	-	Property	1.222	1.184	335.000	1.032	0.946
Deference	-	Fairness	-19.808	1.310	335.000	-15.120	< .001
	-	Property	18.373	1.324	335.000	13.876	< .001
Fairness	-	Property	38.181	1.194	335.000	31.974	< .001

Table S8

Regression model for MAC-FWQ predicting folk moral intuitions regarding Hunger

						95% Confidence Interval	
Predictor	Estimate	SE	t	p	Stand. Estimate	Lower	Upper
R^2 = 0.38, p <.001							
Intercept	16.54	4.00	4.13	< .001			
Family	0.01	0.08	0.11	0.915	0.01	-0.12	0.13
Group	0.02	0.09	0.20	0.844	0.01	-0.12	0.15
Reciprocity	0.23	0.10	2.25	0.025	0.17	0.02	0.31
Deference	-0.03	0.09	-0.29	0.774	-0.02	-0.15	0.11
Fairness	0.66	0.08	8.11	< .001	0.51	0.39	0.64
Property	0.06	0.09	0.65	0.515	0.04	-0.08	0.16
Heroism	-0.09	0.11	-0.83	0.407	-0.05	-0.17	0.07

Table S9

Regression model for MAC-FWQ predicting folk moral intuitions regarding Nature

						95% Confidence Interval	
Predictor	Estimate	SE	t	p	Stand. Estimate	Lower	Upper
$R^2 = 0.23$, $p < .001$							
Intercept	59.21	2.86	20.72	< .001			
Family	-0.06	0.06	-1.08	0.281	-0.08	-0.21	0.06
Group	0.12	0.06	1.99	0.048	0.15	0.00	0.30
Reciprocity	0.06	0.07	0.78	0.435	0.06	-0.10	0.23
Deference	-0.01	0.06	-0.17	0.867	-0.01	-0.16	0.13
Fairness	0.26	0.06	4.46	< .001	0.31	0.17	0.45
Property	-0.04	0.06	-0.60	0.547	-0.04	-0.17	0.09
Heroism	0.16	0.08	2.08	0.039	0.14	0.01	0.28

Table S10

Regression model for MAC-FWQ predicting folk moral intuitions regarding Thriftiness

						95% Confidence Interval	
Predictor	Estimate	SE	t	p	Stand. Estimate	Lower	Upper
R^2 = 0.29, p <.001							
Intercept	47.66	2.97	16.07	< .001			
Family	0.12	0.06	1.95	0.052	0.13	-0.00	0.26
Group	-0.14	0.06	-2.18	0.030	-0.16	-0.30	-0.02
Reciprocity	0.12	0.08	1.61	0.109	0.13	-0.03	0.28
Deference	0.17	0.07	2.51	0.012	0.18	0.04	0.31
Fairness	0.24	0.06	3.92	< .001	0.26	0.13	0.40
Property	-0.09	0.06	-1.45	0.149	-0.09	-0.22	0.03
Heroism	0.22	0.08	2.65	0.009	0.17	0.04	0.30

Table S11

Regression model for MAC-FWQ predicting folk moral intuitions regarding Obedience

						95% Confidence Interval	
Predictor	Estimate	SE	t	p	Stand. Estimate	Lower	Upper
R^2 = 0.40, p <.001							
Intercept	-2.64	2.25	-1.18	0.240			
Family	0.15	0.05	3.27	0.001	0.20	0.08	0.32
Group	-0.07	0.05	-1.45	0.147	-0.10	-0.23	0.03
Reciprocity	0.20	0.06	3.47	< .001	0.25	0.11	0.40
Deference	0.22	0.05	4.37	< .001	0.28	0.15	0.41
Fairness	0.04	0.05	0.95	0.342	0.06	-0.06	0.18
Property	-0.03	0.05	-0.53	0.600	-0.03	-0.15	0.09
Heroism	0.06	0.06	1.02	0.310	0.06	-0.06	0.18

Table S12

Regression model for MAC-FWQ predicting folk moral intuitions regarding Gratitude

						95% Confidence Interval	
Predictor	Estimate	SE	t	p	Stand. Estimate	Lower	Upper
R^2 = 0.54, p <.001							
Intercept	12.58	3.04	4.14	< .001			
Family	0.06	0.06	0.89	0.372	0.05	-0.06	0.15
Group	-0.13	0.06	-1.95	0.052	-0.11	-0.23	0.00
Reciprocity	0.45	0.08	5.74	< .001	0.36	0.24	0.49
Deference	0.45	0.07	6.54	< .001	0.37	0.26	0.48
Fairness	0.26	0.06	4.16	< .001	0.23	0.12	0.33
Property	0.02	0.07	0.25	0.803	0.01	-0.09	0.11
Heroism	-0.12	0.08	-1.45	0.149	-0.08	-0.18	0.03

Table S13

Regression model for MAC-FWQ predicting folk moral intuitions regarding Religion

						95% Confidence Interval	
Predictor	Estimate	SE	t	p	Stand. Estimate	Lower	Upper
R^2 = 0.17, p <.001							
Intercept	-1.13	2.91	-0.39	0.697			
Family	0.08	0.06	1.42	0.156	0.10	-0.04	0.25
Group	0.01	0.06	0.13	0.897	0.01	-0.14	0.16
Reciprocity	0.14	0.08	1.83	0.067	0.16	-0.01	0.33
Deference	0.17	0.07	2.56	0.011	0.19	0.04	0.34
Fairness	-0.01	0.06	-0.24	0.807	-0.02	-0.16	0.13
Property	0.01	0.06	0.12	0.902	0.01	-0.13	0.15
Heroism	0.02	0.08	0.26	0.797	0.02	-0.12	0.16

Table S14

Regression model for MAC-FWQ predicting folk moral intuitions regarding Kin

						95% Confidence Interval	
Predictor	Estimate	SE	t	p	Stand. Estimate	Lower	Upper
R^2 = 0.31, p <.001							
Intercept	12.17	3.83	3.18	0.002			
Family	0.29	0.08	3.67	< .001	0.24	0.11	0.37
Group	-0.15	0.08	-1.88	0.060	-0.13	-0.28	0.01
Reciprocity	0.25	0.10	2.55	0.011	0.20	0.05	0.35
Deference	0.14	0.09	1.63	0.104	0.11	-0.02	0.25
Fairness	0.43	0.08	5.50	< .001	0.37	0.24	0.50
Property	-0.10	0.08	-1.23	0.218	-0.08	-0.20	0.05
Heroism	-0.13	0.11	-1.19	0.234	-0.08	-0.21	0.05

Table S15

Regression model for MAC-FWQ predicting discarding unpalatable foods

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.04$, $p = .036$					
Intercept	42.12	3.48	12.09	< .001	
Family	-0.02	0.07	-0.35	0.728	-0.03
Group	0.00	0.07	0.01	0.989	0.00
Reciprocity	0.03	0.09	0.38	0.706	0.03
Deference	-0.06	0.08	-0.77	0.440	-0.06
Fairness	-0.09	0.07	-1.24	0.216	-0.10
Property	-0.11	0.08	-1.46	0.145	-0.11
Heroism	0.01	0.10	0.13	0.897	0.01

Table S16

Regression model for MAC-FWQ predicting buying-as-needed

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.07$, $p = .002$					
Intercept	55.43	3.20	17.31	< .001	
Family	0.14	0.07	2.12	0.035	0.16
Group	0.04	0.07	0.54	0.589	0.05
Reciprocity	0.01	0.08	0.13	0.897	0.01
Deference	0.00	0.07	0.05	0.962	0.00
Fairness	0.11	0.06	1.64	0.101	0.13
Property	0.05	0.07	0.74	0.460	0.05
Heroism	-0.19	0.09	-2.16	0.032	-0.16

Table S17

Regression model for MAC-FWQ predicting planning meals and groceries

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.08$, $p < .001$					
Intercept	61.72	3.11	19.86	< .001	
Family	0.06	0.06	0.97	0.332	0.07
Group	0.02	0.07	0.32	0.747	0.03
Reciprocity	0.11	0.08	1.39	0.166	0.12
Deference	0.02	0.07	0.34	0.731	0.03
Fairness	0.13	0.06	2.05	0.041	0.16
Property	-0.05	0.07	-0.67	0.502	-0.05
Heroism	-0.04	0.09	-0.44	0.659	-0.03

Table S18

Regression model for MAC-FWQ predicting sharing food with others

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.16$, $p < .001$					
Intercept	12.80	3.99	3.21	0.001	
Family	-0.08	0.08	-1.05	0.296	-0.08
Group	0.03	0.08	0.40	0.687	0.03
Reciprocity	0.34	0.10	3.23	0.001	0.28
Deference	0.03	0.09	0.28	0.778	0.02
Fairness	0.21	0.08	2.63	0.009	0.19
Property	-0.02	0.09	-0.20	0.844	-0.01
Heroism	0.01	0.11	0.07	0.948	0.00

Table S19

Regression model for MAC-FWQ predicting feeding animals

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.19$, $p < .001$					
Intercept [a]	9.24	4.98	1.85	0.065	
Family	0.07	0.09	0.72	0.473	0.05
Group	-0.05	0.10	-0.49	0.626	-0.04
Reciprocity	-0.03	0.12	-0.29	0.768	-0.03
Deference	0.26	0.10	2.52	0.012	0.19
Fairness	-0.15	0.09	-1.68	0.095	-0.12
Property	-0.02	0.10	-0.17	0.867	-0.01
Heroism	0.26	0.13	2.05	0.041	0.15
Pet:					
1 – 0	23.65	3.35	7.07	< .001	0.72

[a] Represents reference level

Table S20

Regression model for Folk-FWQ predicting discarding unpalatable foods

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.14$, $p < .001$					
Intercept	57.59	5.35	10.76	< .001	
Hunger	-0.03	0.05	-0.61	0.543	-0.04
Nature	-0.30	0.06	-4.66	< .001	-0.27
Thrift	0.11	0.07	1.74	0.083	0.11
Obedience	0.28	0.09	2.99	0.003	0.23
Gratitude	-0.11	0.06	-1.83	0.068	-0.14
Religion	-0.15	0.08	-1.96	0.051	-0.13
Kin	-0.09	0.05	-1.72	0.086	-0.11

Table S21

Regression model for Folk-FWQ predicting buying-as-needed

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.08$, $p < .001$					
Intercept	50.92	5.15	9.89	< .001	
Hunger	-0.01	0.04	-0.30	0.768	-0.02
Nature	0.05	0.06	0.83	0.407	0.05
Thrift	0.03	0.06	0.50	0.618	0.03
Obedience	-0.19	0.09	-2.09	0.038	-0.16
Gratitude	-0.01	0.06	-0.09	0.932	-0.01
Religion	0.11	0.07	1.50	0.134	0.10
Kin	0.20	0.05	4.07	< .001	0.28

Table S22

Regression model for Folk-FWQ predicting planning meals and groceries

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.19$, $p < .001$					
Intercept	41.36	4.75	8.70	< .001	
Hunger	0.05	0.04	1.11	0.268	0.07
Nature	0.10	0.06	1.74	0.083	0.10
Thrift	0.23	0.06	3.93	< .001	0.25
Obedience	-0.22	0.08	-2.67	0.008	-0.20
Gratitude	0.08	0.05	1.55	0.122	0.12
Religion	0.10	0.07	1.49	0.138	0.10
Kin	0.07	0.05	1.47	0.144	0.10

Table S23

Regression model for Folk-FWQ predicting sharing food with others

Predictor	Estimate	SE	t	p	Stand. Estimate
$R^2 = 0.26$, $p < .001$					
Intercept	0.55	6.10	0.09	0.928	
Hunger	0.07	0.05	1.32	0.188	0.08
Nature	0.20	0.07	2.72	0.007	0.15
Thrift	-0.05	0.08	-0.63	0.528	-0.04
Obedience	-0.09	0.11	-0.86	0.391	-0.06
Gratitude	0.00	0.07	0.01	0.994	0.00
Religion	0.21	0.09	2.48	0.013	0.16
Kin	0.35	0.06	6.04	< .001	0.37

Table S24

Regression model for Folk-FWQ predicting feeding animals

Predictor	Estimate	SE	t	p	Stand. Estimate
R^2 = 0.20, p <.001					
Intercept [a]	5.05	7.58	0.67	0.505	
Hunger	0.04	0.06	0.59	0.559	0.04
Nature	-0.09	0.09	-1.08	0.279	-0.06
Thrift	0.09	0.09	0.99	0.322	0.06
Obedience	-0.02	0.13	-0.17	0.867	-0.01
Gratitude	-0.02	0.08	-0.25	0.801	-0.02
Religion	0.27	0.10	2.64	0.009	0.17
Kin	0.16	0.07	2.30	0.022	0.15
Pet:					
1 – 0	23.13	3.34	6.93	< .001	0.70

[a] Represents reference level