

# Researching moral foundations using the Bayesian approach

Kristina Rakinić

<sup>a</sup>*University of Ljubljana, Faculty of Social Sciences, Ljubljana, Slovenia*

---

## Abstract

Moral foundations theory describes a complex space of human morality along five moral foundations: care/harm, fairness/cheating, loyalty/betrayal, and sanctity/degradation. The first aim of this study is to explore the role of socio-demographic variables in endorsing the five moral foundations and to provide insight into the role of moral foundations in attitudes towards homeless people. The second objective of the study is to provide an example of employing the Bayesian statistical approach. There were 162 participants in our study (27 % male, mean age 36 years). Convenience sampling method was used. Age and education found to be the most important predictors of moral foundations, with Bayesian factors showing the strongest evidence for age as a positive predictor of moral foundations. Gender, political affiliation, care and authority were found to be important predictors of attitudes towards homeless people, with Bayesian factors showing much stronger evidence for moral foundations than sociodemographic variables. This study lays the groundwork for research on moral foundations in Slovenian samples and provides a practical example of Bayesian approach application in social science.


*Keywords:* moral foundations, sociodemographic variables, attitudes, Bayesian statistics

---

## 1. Introduction

In its essence, morality delineate the distinctions between right and wrong. However, even within a shared cultural framework, individuals exhibit variations in discerning specific actions as morally right or wrong. Moreover, these judgements can be fluid, subject to shifts and changes over time and context dependent. These study wants to address the endorsement of moral foundation in evaluating immoral behaviours. The theory of moral foundations has so far been applied to numerous contexts and societies, however its application in the Slovenian samples is absent. The aim of these study is to test the applicability in the Slovenian context using a relatively underutilised, although promising, Bayesian approach.

---

Email address: [kristina.rakinic@fdv.uni-lj.si](mailto:kristina.rakinic@fdv.uni-lj.si) (Kristina Rakinić)  
ORCID iD:  (Kristina Rakinić)

### 1.1. Moral foundations theory

One of the most widely cited authors in moral psychology is Kohlberg (1969), who developed the six-stage theory of moral development. Kohlberg understood morality as justice, that which is just is also moral. Gilligan (1977) criticised Kohlberg for sample bias (his theory was developed based on studies including only boys) and argued that girls, because of their socialisation, are more oriented towards the moral aspect of care rather than justice. Whereas Kohlberg emphasised the rational part of morality, Gilligan emphasised the emotional part. Later, based on evolutionary and anthropological theories, Haidt and Joseph (2004) broaden these notions and developed Moral Foundations Theory, a descriptive theory of moral behaviour that includes five foundations that are universal and generalisable across cultures.

Haidt and Joseph (2004) have identified five universal moral foundations: care/harm, fairness/cheating, loyalty/betrayal, authority/subversion and sanctity/degradation. The moral foundations theory rests on four assumptions. First, nativism asserts that the initial structure of the moral mind is innate. Second, cultural learning posits that the universal initial form of the moral mind is completed and shaped by cultural influences. Thirdly, intuitionism suggests that moral judgments are based on moral intuitions that arise quickly, spontaneously and associatively. Fourth, pluralism asserts that there is more than one moral foundation. Drawing on the model of social intuition, the authors argue that our moral judgements are always intuitive first; rationalisation and reasoning come later and serve to justify the original, intuitive moral judgements.

The care/harm foundation is based on our innate ability to care for our offspring. In the course of evolution, we have passed this care on to other members of our society. This foundation is activated when we perceive that someone else is suffering and in need; it represents our compassion for victims of psychological or physical violence. The fairness/cheating foundation is about responding to perceived unfair actions that may arise directly from interaction with another person or through objects or third parties. This foundation stands for the maintenance of justice, equality and trust. The loyalty/betrayal foundation stems from evolutionary assumptions of cooperation and group formation and competition with other groups for survival. It refers to our sacrifice, affiliation and support for the group to which we belong. Today, this foundation is found in loyalty to athletes or teams and loyalty to brands (Graham et al., 2013). The authority/subversion foundation stems from the evolutionary fact that we mammals have always lived in some kind of social hierarchy. In the past it was the alpha males, today it is the laws, modern institutions (e.g., the police) authority figures (e.g., leaders, teachers, parents). This foundation is linked to respect and submission to tradition (e.g., Graham et al., 2013). Sanctity/degradation is based on the moral emotion of disgust, which had a survival function in evolution but now accompanies, for example, our reactions to immigrants and sexual deviance. Attempts have been made to add other foundations (freedom/repression Iyer et al., 2012 and dividing fairness foundation into equality and proportionality Atari et al., 2023, but only the original five foundations can be considered universal. Care/harm and fairness/cheating represent moral behaviours that give more weight to individual rights, whereas loyalty/betrayal, authority/subversion and sanctity/degradation give more weight to group rights Graham et al., 2013, representing both individual-oriented morality, i.e., our moral actions in direct interactions with other individuals, and group-oriented morality, i.e., our moral actions within the social group in which we live. Haidt, 2008 has extended morality to the group level, arguing that morality is not only about how we behave towards each other, but also about group cohesion, support for basic institutions and living a holy and noble life.

### 1.2. Unveiling the role of sociodemographic variables in shaping moral foundations

Numerous studies have shown that there is an important interplay between sociodemographic variables and the endorsement of moral foundations. Graham et al. (2011) reported that in a sample of 49 228 women and 68 812 men, women rated the foundations of care, fairness and sanctity higher, while men rated the foundations of loyalty and authority higher, while Miles (2014) reported that women valued care and sanctity more than men. The results of a meta-analysis (Jaffee & Hyde, 2000) showed that women valued only the foundation of care more. Research has also shown a significant relationship between moral foundations and age. In a study involving members of three different generations, oldest generation rate all five moral foundations higher than the two younger generations (Friesen, 2019). All five moral foundations were found to be positively correlated with age (Sağel, 2015). Moreover, older individuals tend to assign higher rating to the foundations of justice, loyalty, authority and sanctity higher in comparison to younger (Miles, 2014). These findings collectively indicate a positive association between age and moral foundations.

Compared to gender and age, education is much less researched, and the results are much more mixed. This is mainly because most samples consist of students, which makes it impossible to study the effects of different levels of education on the acceptance of moral foundations. Nevertheless, some authors have addressed this issue. Foundation of care demonstrates a positive relationship with education, as does fairness (Efferson et al., 2017; van Leeuwen et al., 2014). Findings regarding the foundation of authority exhibit mixed pattern: individual with lower education tend to endorse the foundation of authority more strongly (Erceg et al., 2018), while concurrently, individuals with higher education endorse authority more strongly (Efferson et al., 2017). Similarly, loyalty demonstrates contradictory findings; some studies report a positive relationship (Efferson et al., 2017), whereas others indicate a negative relationship (van Leeuwen et al., 2014).

The moral foundations were analysed in different cultures. Participants from Eastern cultures (East Asia, South Asia) rated loyalty and sanctity higher than participants from Western cultures (Graham et al., 2011), who rated care and fairness higher. This can be explained through individualism—collectivism distinctions and culture orientations (Triandis, 2001). Moral Foundations Theory was founded in cultural psychology to explore cultural differences in moral orientations, but quickly proved useful for exploring the differences between liberals and conservatives in the United States. Numerous studies with different samples and using different methods have shown that liberals are more likely to accept the care and fairness foundations compared to the other three foundations than conservatives, who value all five foundations similarly (e.g., Dodd et al., 2012; Haidt et al., 2009). McAdams et al. (2008) also conducted a qualitative study in which they found that when defining their moral principles, conservatives talked about respecting authority and order, showing loyalty to family and country, and acting in ways that keep oneself pure and good, while liberals talked about their moral obligations primarily in terms of not harming others and caring about fairness, justice, and equality. A similar pattern was found among religious people, who were more likely than non-religious people to refer to the moral foundations of loyalty, authority and sanctity (Haidt et al., 2009). Moral foundations theory states that political attitudes are the result of the acceptance of moral foundations, but empirical evidence is insufficient. The question remains whether moral beliefs lead to a particular political orientation or whether the relationship is inverse or reciprocal. Hatemi et al. (2019) provided one answer to this question. Using a cross-lagged panel analysis for three different samples, they concluded that political ideology predicts moral foundations, which could mean that moral foundations represents some situational judgements that

justify pre-existing ideological beliefs, rather than the other way round.

### *1.3. Moral foundations as basis for attitudes formulation*

The acceptance of moral foundations correlates with various psychological traits and behaviours, including emotions (Horberg et al., 2009), moral identity (Dawson et al., 2021) and even recreational drug use (Kurzban et al., 2010). In our study, we focus on attitudes, which denote a positive or negative evaluation of a particular object and are often based on moral intuitions. According to moral foundation theory, moral judgements are rapid, effortless and intuitive and as such have an impact on our further evaluations. Koleva et al. (2012) demonstrated the connection between moral foundations and attitudes toward different pressing social issues, such as same-sex marriage, abortion etc. To be more precise, higher ratings of care and fairness moral foundations predicted more favourable attitudes towards homosexuals, while the foundation of sanctity inversely influenced attitudes (Rosik et al., 2013). Similarly, positive attitudes towards the poor were associated with higher ratings of care and fairness, while negative attitudes were associated with the remaining three foundations (Low & Wui, 2015). Loyalty, authority, and sanctity were positively associated with group hostility and discriminatory tendencies (Kugler et al., 2014). Our study, however, delves into attitudes towards homeless people. We selected this group as the focal point of our research due to its widespread familiarity and the apparent absence of research concerning attitudes toward homelessness from the perspective of moral foundations.

### *1.4. Bayesian approach to analysing data*

In the quantitative social sciences, the statistical inference approach dominates, and despite many advantages and increasing calls for its use, the Bayesian approach is still relatively uncommon in the social sciences (van de Schoot et al., 2017). Bayesian statistics has many advantages over “classical” statistics. It allows the analysis of smaller samples, prior knowledge can be included in the analyses, and it allows the estimation of a far more complex models (Wagenmakers, 2007). Hypothesis testing with Bayes factors (BFs) is increasingly proposed as a concrete and practical alternative to hypothesis testing with  $p$  values (Jeffreys, 1961; Kass & Raftery, 1995). Hypothesis testing with Bayes factors compares the predictive power of two competing statistical models, ranking the evidence provided by the data on a continuous scale and quantifying the change in belief that the data produce for the two models under consideration. Bayes factors have several practical advantages: they allow quantification of evidence, and this evidence can be continuously monitored as the data accumulate (Rouder, 2014; Wagenmakers, 2007). Frequentist hypothesis testing allows for only two outcomes. The null hypothesis may or may not be rejected, which does not mean it is accepted, whereas Bayesian statistics can be used to assess the relative plausibility of one or the other hypothesis. However, the use of Bayesian methods comes with some costs. The first relates to the question of prior distributions. Sometimes deciding which prior distributions to use can be difficult (Faulkenberry et al., 2020). Bayesian methods are available in specialised statistical programmes such as R or JASP and may require additional (programming) knowledge (Baldwin & Larson, 2017). Bayesian analysis does not automatically lead to correct or better estimates. We can just as easily mislead ourselves with Bayesian methods as with other techniques (e.g., playing around with prior distributions until we get the result we want or that can be published; Simmons et al., 2011). Nevertheless, we have chosen to present an example of a study that uses the Bayesian approach to promote knowledge in the social sciences that different approaches to analysing data are possible and valid.

### 1.5. Aims of the study

This study has two main objectives. Firstly, we aim to assess the applicability of the moral foundations theory in the Slovenian context. Secondly, we seek to demonstrate the application of Bayesian statistical approach within the realm of social sciences. Our aim is to determine whether the structure of moral foundations identified in previous research can also be recognised in the Slovenian cultural environment. Furthermore, majority research has shown that sociodemographic variables play an important role in the endorsement of moral foundations. We aim to investigate this within the Slovenian sample, specifically examining which sociodemographic variables influence moral foundations endorsement and in what way. In addition, we want to explore the relationship between moral foundations and attitudes, as we are interested in whether and how endorsement of different moral foundations predicts attitudes towards homeless people. As a secondary objective, we aim to demonstrate the practical application of Bayesian approach in social science using a relatively simple example. In doing so, we aim to illustrate how different statistical approaches can be employed to derive meaningful and informative conclusions.

## 2. Methods

### 2.1. Study design

We conducted a quantitative, non-experimental cross-sectional study based on a questionnaire method. The questionnaire contained questions on sociodemographic data, vignettes on moral foundations and a scale on attitudes towards homeless people.

*2.1.1. Moral Foundations Vignettes.* The purpose of the Moral Foundations Vignettes (Clifford et al., 2015) is to measure endorsements of moral foundations. Each vignette represents a behaviour that violates a particular moral foundation. Vignettes begin with the description “You see [...]” and continues with “[...] an employee lying about how many hours she worked during the week” (violation of the fairness/cheating foundation). Participants answer on a five-point scale ranging from 1 (*not at all wrong*) to 5 (*extremely wrong*). The original scale was translated from English using a back translation process by two independent translators. A final version was formulated based on mutual agreement. The questionnaire also measures the added sixth moral foundation of liberty/repression. The six-factor structure of the questionnaire was confirmed in our sample,  $\chi^2(153) = 739.94$ ,  $p < 0.001$ , TLI = 0.91, CFI = 0.88, RMSEA = 0.05, SRMR = 0.06. The  $\omega$  reliability coefficient for the liberty/oppression subscale was 0.40, so we decided to include only the other five moral foundations in the analysis. The  $\omega$  coefficients for the other five scales ranged from 0.59 to 0.74. We confirmed the new five-factor structure of the questionnaire,  $\chi^2(105) = 618.26$ ,  $p < 0.001$ , TLI = 0.91, CFI = 0.89, RMSEA = 0.07, SRMR = 0.06.

*2.1.2. Survey of Attitudes Toward Homeless People.* Survey of Attitudes Toward Homeless People (Snow-Hill, 2019) measures negative attitudes towards homeless people on a six-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), with higher overall mean scores indicating more negative attitudes towards homeless people. An example of an item is “Homeless people are lazy.” Snow-Hill (2019) reported high internal reliability and construct validity of the questionnaire. The original scale was translated from English using a back translation process by two independent translators. A final version was formulated based on mutual agreement. The one-factor structure of the scale was also confirmed in our sample,  $\chi^2(27) = 52.61$ ,  $p < 0.001$ , TLI = 0.95, CFI = 0.93, RMSEA = 0.08, SRMR = 0.05. The  $\omega$  reliability coefficient was 0.89 in our sample.

*2.1.3. Sociodemographic variables.* The participants indicated their level of education, which ranged from primary school to a doctorate. Political orientation was measured on an 11-point scale, with a score of 0 indicating a left-wing political orientation and a score of 11 indicating a right-wing political orientation. Participants were also asked about their religious affiliation, with the options of choosing a specific religion (e.g., Catholic, Jewish, Islamic, Buddhist, etc.), stating no religious affiliation or selecting “other” as an alternative. The question was recoded for the purpose of analysis, where a value of 0 indicates not being religious and a value of 1 indicates being religious.

## *2.2. Data collection*

The data collection took place in April and May 2023. The questionnaire was made available through the 1KA online application (Centre for Social Informatics, 2023). Participants received a link to the questionnaire in the invitation to participate in the survey. At the end of the questionnaire, each participant was able to leave their contact details (email address) if they wished to be entered into a prize draw for a chance to win a cinema ticket to see the film of their choice. Each participant was guaranteed anonymity of their data. The data is presented in anonymised form and only at group level.

## *2.3. Sampling and sample description*

The convenience sampling method was used. Individuals who were of legal age were invited to participate. The invitation to participate in the study was sent through the researcher’s personal network and posted on various online forums.

The study involved 162 participants, most of whom were female (69%). Five participants did not want to indicate their gender and chose the option “other”. The participants’ average age was 36 years (SD = 15, min = 18, max = 84). The sample was dominated by students (30.2%), followed by employees in the public sector (25.9%) and in private companies (25.3%), with 7.4% retired and less than 4% of participants in the other category (unemployed, other, self-employed). Most participants in the sample had a four-year finished secondary school (37%) and a university degree (33.3%). Five of the sample had a Ph.D., while four participants had completed primary school or less. Most participants grew up in a rural place, a village (41.4%), followed by participants in a large (24.1%) or small town (23.5%). Slightly more than half of the participants in the sample reported not belonging to any religion (54.6%), while 35.8% identified themselves as Catholic.

## *2.4. Data analysis*

Data were analysed using SPSS (IBM Corporation, 2020), R (R Core Team, 2022) and JASP (JASP Team, 2023). First, descriptive statistics were calculated for the variables included in the analysis. Further we perform Bayesian paired samples t-test, correlation analysis and linear regression. We used noninformative priors due to lack of solid knowledge of investigated phenomena in Slovenian context. In our interpretation of the results, we adhered to Jeffreys’s (1939) guidelines, where a Bayes factor between 1 and 3 signifies weak evidence, between 3 and 10 indicates moderate evidence, above 10 represents strong evidence, and beyond 30 suggests very strong evidence. These classifications are used only as general rules to facilitate communication and interpretation of the strength of evidence. Indeed, one of the advantages of the Bayes factor is that it allows the assessment of evidence on a continuous scale (van Doorn et al., 2021).

### 3. Results

#### 3.1. Descriptive statistics

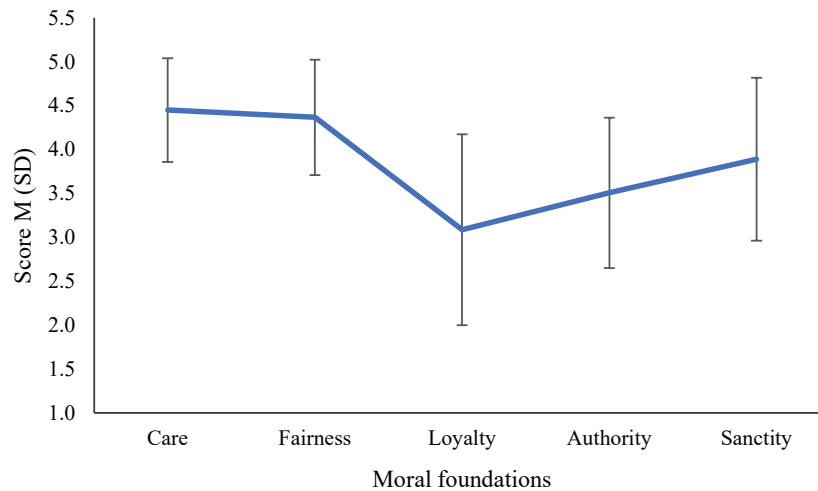
On average, participants rated as the most morally wrong the statements relating to the foundation of care/harm (the boy throwing stones at the cows) and fairness/cheating (the referee making unfair decisions in favour of his favoured team). On average, participants found the statement that referred to the foundation of loyalty/betrayal, namely that the wife helps her husband's opposing team, to be the least morally wrong (Table 1).

**Table 1.** Descriptive statistics of Moral Foundations Vignettes

| Factor    | You see [...]  | Min | Max | M (SD)      |
|-----------|--|-----|-----|-------------|
| Care      | [...] a boy telling a woman that she looks just like her overweight bulldog.                                     | 1   | 5   | 4.34 (0.84) |
|           | [...] a boy throwing rocks at cows that are grazing in the local pasture.  | 2   | 5   | 4.72 (0.57) |
|           | [...] woman spanking her child with a spatula for getting bad grades in school.                                  | 1   | 5   | 4.29 (1.07) |
| Fairness  | [...] a runner taking a shortcut on the course during the marathon in order to win.                              | 2   | 5   | 4.45 (0.80) |
|           | [...] a referee intentionally making bad calls that help his favoured team win.                                  | 1   | 5   | 4.72 (0.62) |
|           | [...] an employee lying about how many hours she worked during the week.   | 1   | 5   | 3.93 (1.09) |
| Loyalty   | [...] a former Army General from your country saying publicly he would never buy any of your country's products. | 1   | 5   | 3.05 (1.41) |
|           | [...] a head cheerleader booing her high school's team during a homecoming game.                                 | 1   | 5   | 3.28 (1.28) |
|           | [...] the coach's wife sponsoring a bake sale for her husband's rival team.                                      | 1   | 5   | 2.93 (1.37) |
| Authority | [...] a teenage girl coming home late and ignoring her parents' strict curfew.                                   | 1   | 5   | 3.14 (1.16) |
|           | [...] a staff member talking loudly and interrupting the mayor's speech to the public.                           | 1   | 5   | 3.94 (0.98) |
|           | [...] a man turns his back and walk away while his boss questions his work.                                      | 1   | 5   | 3.43 (1.16) |
| Sanctity  | [...] a drunk elderly man offering to have oral sex with anyone in the bar.                                      | 1   | 5   | 4.14 (1.23) |
|           | [...] a man in a bar using his phone to watch people having sex with animals.                                    | 1   | 5   | 4.43 (1.01) |
|           | [...] a story about a remote tribe eating the flesh of their deceased members.                                   | 1   | 5   | 3.10 (1.40) |

On average, participants rated the most morally wrong actions expressing the moral foundation of care/harm ( $M = 4.45$ ;  $SD = 0.59$ ) and fairness/cheating ( $M = 4.36$ ;  $SD = 0.66$ ).

In contrast, actions expressing the foundation of loyalty/betrayal ( $M = 3.09$ ;  $SD = 1.10$ ) were rated as least morally wrong, followed by the foundation of authority/subversion ( $M = 3.51$ ;  $SD = 0.86$ ), and the foundation of sanctity/degradation ( $M = 3.89$ ;  $SD = 0.92$ ) being in the middle. We tested for differences between all ten pairs of moral foundations. Bayesian paired samples  $t$  tests (with Cauchy prior  $r = 0.71$ ), show strong support ( $BF_{10} > 100$ ) for differences between nine pairs of moral foundations (Figure 1), for example, participants endorse the care foundation more than the authority foundation. There was no support for the difference between care and fairness foundations, indicating that participants in our sample value these two foundations equally.



**Figure 1.** Endorsement of moral foundations presented as  $M$  ( $SD$ )

### 3.2. Sociodemographic variables as predictors of moral foundations

Table 2 shows the correlations (using a noninformative prior; any value between  $-1$  and  $1$  is equally likely) between sociodemographic variables and moral foundations. The strongest evidence for a correlation is found between female gender and care and age and fairness, authority and loyalty.

**Table 2.** Correlations between sociodemographic variables and moral foundations

| Variable | Care  |           | Fairness |           | Authority |           | Loyalty |           | Sanctity |           |
|----------|-------|-----------|----------|-----------|-----------|-----------|---------|-----------|----------|-----------|
|          | $r$   | $BF_{10}$ | $r$      | $BF_{10}$ | $r$       | $BF_{10}$ | $r$     | $BF_{10}$ | $r$      | $BF_{10}$ |
| Gen      | -0.30 | 168.35    | -0.02    | 0.10      | -0.17     | 0.93      | -0.10   | 0.22      | -0.02    | 0.10      |
| Age      | 0.23  | 5.99      | 0.40     | 89360.80  | 0.38      | 25675.15  | 0.31    | 307.89    | 0.10     | 0.20      |
| Edu      | -0.13 | 0.37      | -0.11    | 0.24      | 0.01      | 0.10      | -0.11   | 0.25      | -0.19    | 1.85      |
| Rel      | 0.01  | 0.10      | 0.14     | 0.51      | 0.21      | 3.20      | 0.24    | 10.12     | 0.20     | 2.57      |
| PolOr    | -0.14 | 0.47      | 0.21     | 3.66      | 0.15      | 0.29      | 0.06    | 0.17      | 0.09     | 0.17      |

*Legend:* Edu = Education Level, Gen = Gender, PolOr = Political Orientation, Rel = Religiosity.

*Notes:* Baseline levels for categorical variables are *Female* (Gen), *More right-wing orientation* (PolOr), and *Not being religious* (Rel). See text for further details.

Further, we performed Bayesian linear regression, to understand the role of important sociodemographic predictors in moral foundations. We used a uniform prior model, which assumes that each model has the same prior probability, regardless of the number of variables



included in the model. We also used the Jeffreys-Zellner-Siow (JZS) prior distribution to estimate the regression coefficients (Liang et al., 2008; Zellner & Siow, 1980). The selected models were also tested for convergence. We assess the  $\hat{R}$  values and the effective sample size. The  $\hat{R}$  values were 1 showing that the chains converged to the same posterior (Gelman & Hill, 2007). Furthermore, the effective sample sizes (ESSs) were above 5000, showing that our estimates are stable (Baldwin & Larson, 2017).

*3.2.1. Care.* The model with the variables gender, age, education and political orientation proved to be the most plausible. The results showed that this model could explain the data 12 times better than the empty model, these predictors explained 22 % of the variance in the foundation. The  $BF_{10}$  score was above 100, indicating strong support for this model. We can be 95 % confident that the true value of care foundation decreases between  $-0.57$  and  $-0.21$  ( $M = -0.41$ ) for men, increases between  $0.01$  and  $0.02$  ( $M = 0.01$ ) for every one unit increase in age, decreases between  $-0.10$  and  $0.00$  ( $M = -0.05$ ) for every one unit increase in education, and decreases between  $-0.07$  and  $0.00$  ( $M = -0.02$ ) for every one unit increase in more right-wing political orientation. Gender and age show very strong support for inclusion in the model ( $BF_{Inc} > 100$ ), while education ( $BF_{Inc} = 2.96$ ) and political orientation ( $BF_{Inc} = 1.22$ ) show rather weak support for inclusion in the model.

*3.2.2. Fairness.* The model that proved to be the most plausible in predicting fairness foundation contained the predictors age, education and political orientation. This model can explain the data 13 better than the null model, explaining 22 % of the variance in the fairness foundation.  $BF_{10} > 100$ , indicating strong support for this model. We can be 95 % confident that the true value of the fairness foundation increases between  $0.01$  and  $0.02$  ( $M = 0.02$ ) with an increase of one unit in age, decreases by between  $-0.12$  and  $0.00$  ( $M = -0.06$ ) for an increase of one unit in education, and increases by between  $0.00$  and  $0.09$  ( $M = 0.04$ ) for each increase in a more right-wing political regime. The age variable shows very strong support for inclusion in the model ( $BF_{Inc} > 100$ ), while the education ( $BF_{Inc} = 4.30$ ) shows moderate and political orientation ( $BF_{Inc} = 2.48$ ) week support for inclusion in the model.

*3.2.3. Authority.* The model that proved the most plausible in predicting the authority foundation contained predictors gender, age and religiosity. This model can explain the data 27 times better than the null model, explaining 23 % of the variance in the fairness foundation.  $BF_{10} > 100$ , indicating strong support for this model. We can be 95 % confident that the true value of the authority foundation decreases between  $-0.59$  and  $0.00$  ( $M = -0.35$ ) for males, decreases by between  $-0.10$  and  $0.01$  ( $M = -0.01$ ) for a one unit increase in education and increase between  $0.00$  and  $0.52$  ( $M = 0.28$ ) for religious individuals. The age shows very strong support for inclusion in the model ( $BF_{Inc} > 100$ ), gender ( $BF_{Inc} = 12.08$ ) strong and religiosity moderate ( $BF_{Inc} = 7.00$ ) support for inclusion in the model.

*3.2.4. Loyalty.* The model that proved the most plausible in predicting the loyalty included predictors for gender, age, education and religiosity. This model can explain the data 15 times better than the null model, explaining 19 % of the variance in the fairness foundation,  $BF_{10} > 100$ , indicating strong support for this model. We can be 95 % confident that the true value of the fairness foundation decreases between  $-0.57$  and  $0.01$  ( $M = -0.19$ ) for males, increases between  $0.01$  and  $0.03$  ( $M = 0.02$ ) for each year more of age, decreases by between  $-0.20$  and  $0.00$  ( $M = -0.09$ ) for a one-unit increase in education, and increases by between  $0.00$  and  $0.69$  ( $M = 0.41$ ) for the religious. The age shows very strong support for inclusion in the model ( $BF_{Inc} > 100$ ), religiosity ( $BF_{Inc} = 12.38$ ) strong evidence, education shows moderate support ( $BF_{Inc} = 3.49$ ), and the gender week ( $BF_{Inc} = 1.49$ ) support for inclusion

in the model.

**3.2.5. Sanctity.** The model that proved to be the most plausible in predicting sanctity contained education and religiosity. The model predicted the data nine times better compared to the null model and explained 9% of the variance.  $BF_1 = 27.58$  shows strong support for this model compared to the null model. We can be 95% confident that the true value of the sanctity decreases between  $-0.21$  and  $0.00$  ( $M = -0.12$ ) as education increases by one unit and increases between  $-0.01$  and  $0.51$  ( $M = 0.18$ ) for religious individuals. The predictor of education shows strong support for inclusion in the model ( $BF_{Inc} = 20.27$ ), as religiosity shows weak support ( $BF_{Inc} = 1.83$ ).

Table 3 summarises the results of the Bayesian linear regression. In the Slovenian context, sociodemographic variables such as female gender, older age and lower education show robust evidence supporting their inclusion as predictors of endorsement of moral foundations. In addition, religiosity proves to be a positive predictor of binding moral foundations. The sociodemographic variables considered together account for a considerable amount of the variance in moral foundations, explaining between 9% and 23% of the observed variability.

**Table 3.** Summary of Bayesian regression results showing evidence of sociodemographic variables as predictors

| Variable | Care | Fairness | Authority | Loyalty | Sanctity |
|----------|------|----------|-----------|---------|----------|
| Gen      | ++++ |          | --        | -       |          |
| Age      | ++++ | ++++     | ++++      | ++++    |          |
| Edu      | -    | --       |           | --      | ----     |
| PolOr    | +    | +        |           |         |          |
| Rel      |      |          | ++        | +++     | +        |

*Legend:* Edu = Education Level, Gen = Gender, PolOr = Political Orientation, Rel = Religiosity.

*Notes:* Baseline levels for categorical variables are *Female* (Gen), *More right-wing orientation* (PolOr), and *Not being religious* (Rel). The number of signs represents the strength of evidence for the variable as a predictor (ranging from weak to very strong). Positive signs (+) indicate a positive predictor, while negative signs (-) indicate a negative predictor.

### 3.3. Attitudes towards homeless people

Having first explored how sociodemographic variables predict moral foundations, we were also interested in how moral foundations, as intuitive, quick judgments about right and wrong, might predict more specific judgments, namely attitudes towards homeless people. On average, participants in our sample expressed low negative attitudes toward homeless people ( $M = 2.53$ ,  $SD = 0.90$ ,  $min = 1$ ,  $max = 5.44$ ). We ran a linear Bayesian regression. We used a uniform prior model, which assumes that each model has the same prior probability, regardless of the number of variables included in the model. We also used the JZS prior distribution to estimate the regression coefficients (Liang et al., 2008; Zellner & Siow, 1980). We tested the convergence of the model, which showed that our results are stable ( $\hat{R}$  values of predictors  $\cong 1$ ,  $ESS > 5000$ ). The results showed that the best model was the one with the predictors gender, political orientation, moral foundation care and authority, which explained 23% of the variance in attitudes towards homeless people ( $BF_{10} > 100$ , Table 4). Gender, political orientation and authority show moderate evidence of support for inclusion

as predictors, while care shows very strong support for inclusion ( $BF_{Inc} > 100$ ). Male gender, right-wing political orientation, and moral foundation authority predicts a more negative attitude towards the homeless, while moral foundations care predicts more positive attitudes (Table 5).

**Table 4.** Model comparison of Bayesian regression for predicting attitudes towards homeless people

| Model                         | $P(M)$               | $P(M D)$             | $BF_M$               | $BF_{10}$         | $R^2$ |
|-------------------------------|----------------------|----------------------|----------------------|-------------------|-------|
| Null                          | $9.8 \times 10^{-4}$ | $1.9 \times 10^{-4}$ | $1.9 \times 10^{-4}$ | 1.0               | 0.00  |
| Gen + PolOr + C + A           | $9.8 \times 10^{-4}$ | $5.7 \times 10^{-2}$ | $6.2 \times 10^1$    | $3.0 \times 10^5$ | 0.23  |
| PolOr + Gen + C + A + L       | $9.8 \times 10^{-4}$ | $4.9 \times 10^{-2}$ | $5.2 \times 10^1$    | $2.6 \times 10^5$ | 0.25  |
| PolOr + Gen + S + C + A       | $9.8 \times 10^{-4}$ | $2.8 \times 10^{-2}$ | $3.0 \times 10^1$    | $1.5 \times 10^5$ | 0.24  |
| PolOr + Gen + C + F + A + L   | $9.8 \times 10^{-4}$ | $2.8 \times 10^{-2}$ | $2.9 \times 10^1$    | $1.5 \times 10^5$ | 0.25  |
| PolOr + Gen + C + F + A       | $9.8 \times 10^{-4}$ | $2.2 \times 10^{-2}$ | $2.3 \times 10^1$    | $1.2 \times 10^5$ | 0.24  |
| Gen + C + A                   | $9.8 \times 10^{-4}$ | $2.1 \times 10^{-2}$ | $2.2 \times 10^1$    | $1.1 \times 10^5$ | 0.21  |
| PolOr + Gen + S + C + A + L   | $9.8 \times 10^{-4}$ | $1.8 \times 10^{-2}$ | $1.9 \times 10^1$    | $9.7 \times 10^4$ | 0.25  |
| PolOr + Age + Gen + C + A     | $9.8 \times 10^{-4}$ | $1.6 \times 10^{-2}$ | $1.7 \times 10^1$    | $8.6 \times 10^4$ | 0.23  |
| PolOr + Edu + Gen + C + A + L | $9.8 \times 10^{-4}$ | $1.6 \times 10^{-2}$ | $1.7 \times 10^1$    | $8.6 \times 10^4$ | 0.25  |

*Legend:* A = Authority, C = Care, F = Fairness, L = Loyalty, S = Sanctity; Edu = Education Level, Gen = Gender, PolOr = Political Orientation, Rel = Religiosity.

*Notes:* Baseline levels for categorical variables in the regression models are *Female* (Gen), *More right-wing orientation* (PolOr), and *Not being religious* (Rel). Table displays only a subset of 10 best models. See text for further details.

**Table 5.** Posterior summaries of coefficients of Bayesian linear regression

| Coefficient | $P(Inc)$ | $P(Exc)$ | $P(Inc D)$ | $P(Exc D)$ | $BF_{Inc}$ | M (SD)       | 95 % CI        |
|-------------|----------|----------|------------|------------|------------|--------------|----------------|
| Intercept   | 1.000    | 0.000    | 1.000      | 0.000      | 1.00       | 2.55 (0.07)  | [ 2.42, 2.68]  |
| Gen         | 0.500    | 0.500    | 0.786      | 0.214      | 3.67       | 0.26 (0.19)  | [ 0.00, 0.58]  |
| Age         | 0.500    | 0.500    | 0.236      | 0.764      | 0.31       | -1.96 (0.00) | [-0.01, 0.01]  |
| Edu         | 0.500    | 0.500    | 0.254      | 0.746      | 0.34       | 0.01 (0.02)  | [-0.03, 0.07]  |
| Rel         | 0.500    | 0.500    | 0.245      | 0.755      | 0.33       | -0.01 (0.07) | [-0.24, 0.14]  |
| PolOr       | 0.500    | 0.500    | 0.786      | 0.214      | 3.67       | 0.06 (0.04)  | [ 0.00, 0.13]  |
| C           | 0.500    | 0.500    | 0.995      | 0.005      | 214.28     | -0.50 (0.14) | [-0.77, -0.21] |
| F           | 0.500    | 0.500    | 0.296      | 0.704      | 0.42       | -0.03 (0.08) | [-0.30, 0.04]  |
| A           | 0.500    | 0.500    | 0.860      | 0.140      | 6.13       | 0.23 (0.14)  | [ 0.00, 0.44]  |
| L           | 0.500    | 0.500    | 0.547      | 0.453      | 1.21       | 0.08 (0.10)  | [-0.01, 0.28]  |
| S           | 0.500    | 0.500    | 0.352      | 0.648      | 0.54       | 0.03 (0.07)  | [-0.04, 0.21]  |

*Legend:* A = Authority, C = Care, F = Fairness, L = Loyalty, S = Sanctity; Edu = Education Level, Gen = Gender, PolOr = Political Orientation, Rel = Religiosity.

*Notes:* Baseline categories for variables in the regression models are *female* (Gen), *more right-wing orientation* (PolOr), and *not being religious* (Rel). Table displays only a subset of 10 best models. See text for further details.

#### 4. Discussion

Our study aimed to offer insights into the assessment of moral foundations based on Moral foundation theory (Haidt & Joseph, 2004) in Slovenian sample. Additionally, we seek to illustrate the application of Bayesian statistical approach. Moral foundations theory emerged as a response to earlier theories within moral psychology that defined morality as either justice (Kohlberg, 1969) or care (Gilligan, 1977). Moral foundations theory expands our understanding to five foundations: care, justice, loyalty, authority and sanctity, with the last three representing group-oriented morality that tends to preserve society.

Participants in our study valued the foundations of care and fairness higher than the other three foundations. This is consistent with research showing that members of Western societies place greater importance on the foundations representing individual-oriented morality (e.g., Graham et al., 2011) due to a stronger orientation towards individualism compared to Eastern societies. We examine the role of sociodemographic variables in predicting the acceptance of a particular moral foundation. We found very strong support for the inclusion of gender as a predictor of the care foundation. Females value care foundation higher compared to men (Eisenberg et al., 1991; Graham et al., 2011; Güner, 2020). Gilligan (1977) was one of the first authors to argue that women rely more heavily on the idea of care when making moral judgements and decisions. Our results additionally show that female gender predicted higher endorsement of authority and loyalty. One reason for this could be that women overall have a higher moral response than men (Mainiero et al., 2008), so they perceive all behaviour as more immoral, resulting in higher endorsement of these foundations.

Bayesian analysis showed very strong evidence for the inclusion of age as a predictor of four foundations (except sanctity). This is consistent with several studies showing that older people have higher scores on all moral foundations (Friesen, 2019). The link between age and greater acceptance of moral foundations can be explained through developmental-psychological lens. Older people express more concern for others and place more value on adhering to social norms, respecting authority and upholding traditions than younger people (Robinson, 2013). Younger individuals, especially those in the transition to adulthood, are more prone to reflect and try out different options also regarding their identity formation (Arnett, 2004). This openness and indecisiveness may therefore also be reflected in their lower acceptance of moral foundations, namely their higher tendency to question act as immoral. Another potential factor could be attributed to societal changes, as studies have indicated that younger generations (those born after 1990) exhibit a greater tendency toward relativistic thinking (Stein & Dawson-Tunik, 2004). Consequently, they are less inclined to categorize behaviours as immoral, reflecting the influence of relativism, one of the important characteristic of contemporary postmodern society. We found evidence for the inclusion of education as negative predictor of sanctity, loyalty, fairness, and care. Which in contrary to some studies showing the opposite relationship. We turn again to the concept of relativism to explain this phenomenon. More educated individuals in our sample may rate actions as less immoral due to relativism. Higher levels of relativism are associated with higher levels of education (Perry, 1970), which may lead to higher levels of moral relativism. When people have higher levels of moral relativism, they increasingly believe that certain behaviours cannot be defined as immoral a priori, but instead situational factors are considered more when making judgements (Sulsky et al., 2015).

Moral foundation theory in the context of American society was dominantly used to explain the difference between liberals and conservatives. In the context of Slovenian sample, political orientation was not recognised as strong predictor of moral foundations.

The expression of a more right-wing political orientation in the Slovenian sample did not predict a greater appreciation of authority, loyalty, and sanctity, as expected, but it did predict care and fairness, although showing only a weak support. It has been argued that the theory of moral foundations focuses too much on the points of disagreement between liberals and conservatives in US (Frimer et al., 2013), which calls into question its generalisability of the theory across cultures. The left-right spectrum in Slovenia does not neatly align with the liberal-conservative dichotomy in American society. Consequently, the application of the moral foundations theory to explain differences in political orientation in the Slovenian context is not straightforward. Bayesian analysis showed evidence for the inclusion of being religious in the prediction of loyalty, authority, and sanctity foundation. All three foundations reflect group-oriented morality (Graham et al., 2011). Religious individuals typically affiliate with a specific religious community, which can influence their perception of certain actions, especially regarding betrayal of the group, as more morally reprehensible compared to non-religious individuals. Religion, as Durkheim argued, is a social phenomenon rooted in the collective actions and beliefs of a community. Religions are based on collective beliefs and rituals that unite the group. These collective aspects of religion not only shape the definition of morality but also help explain the internalisation of moral norms (Bader & Finke, 2010).

Bayesian analysis showed that the best model ( $BF_{10} > 100$ ) for predicting attitudes towards homeless people was the model with the predictors gender, political orientation and moral foundation of care and authority. Both moral foundations show very strong evidence for inclusion in the model, higher than gender and political orientation. The care foundation reflects our compassion and empathy towards victims and activates a helping state in us (e.g., Haidt et al., 2009), which can influence our perception of homeless people who need help and care due to their situation and consequently lead to less negative attitudes. The higher we rate the authority foundation, the more negative our attitudes towards homeless people are. One explanation for this could be that homeless people are perceived as a group that violates public and/or order, commits criminal acts and does not abide by the rules. Which are in fact, principles that constitute the moral foundation of authority (Haidt et al., 2009). Our results show that at least two moral foundations are important predictors of people's attitudes. Since moral foundations are more fundamental than specific attitudes, they should be explored when studying the acceptance of various attitudes toward different social groups.

The study has a primary limitation due to the use of convenience sampling method, which means our sample lacks representativeness, hindering generalisability. A further limitation refers to the use of Moral Foundation Vignettes, namely our study shows support for the five-factor structure, as the foundation of Liberty was not included as it showed low reliability coefficient. We did not test other aspects of validity, such as convergent, discriminant validity of the questionnaire, which is a limitation worth pointing out. Also, metric invariance of the questionnaire should also be examined in the future in at least regarding gender and age groups. Our results should be interpreted with this in mind. Regarding future research direction, beside examining the validity of the questionnaire more precisely, we believe that it would be interesting to explore the possible role of moral relativism (Sulsky et al., 2015) in the relationship between moral foundations and education, as our results showed a negative relationship between four foundation and education, indicating that participants with higher education, endorse those four foundations to a lesser extent, which is contrary to some previous studies (e.g., Efferson et al., 2017). It would also be interesting to examine the relationship between moral foundations and attitudes

towards different attitude objects (e.g., homosexuals, drug addicts, immigrants, etc.) as different objects can trigger different foundations (e.g., Koleva et al., 2012).

Finally, one of the main aims of this study was also to apply Bayesian approach, which is a different, more intuitive approach to hypothesis testing and allows different conclusions to be drawn. Despite its many advantages over the frequentist approach and the growing advocacy for its utilization, the Bayesian approach remains relatively underutilized in the social sciences (van de Schoot et al., 2017). One potential explanation for this limited adoption could be that Bayesian statistics is rarely taught in applied statistics courses. Consequently, many researchers may lack knowledge and confidence in their ability to apply these methods to their research inquiries (Faulkenberry et al., 2020). The authors hope that in the future, social scientists will embrace the Bayesian approach, thereby enriching the array of methods employed in social science.

Overall, our results showed that sociodemographic variables predicted a quarter of the variance in the four foundations (except sanctity), demonstrating that they are an important factor in understanding and explaining the endorsement of our foundational beliefs about right and wrong. Furthermore, our study sheds light on the fact that the acceptance of certain moral foundations also influences attitudes. Our study shows that the theory of moral foundations is applicable to the Slovenian context and represents an interesting area of research.

### Funding

This work was supported by the Slovenian Research and Innovation Agency under the Young Researchers Program (Grant No. P5-0168).

### References

- Atari, M., Haidt, J., Graham, J., Koleva, S., Stevens, S. T., & Deghani, M. (2023). Morality beyond the WEIRD: How the nomological network of morality varies across cultures. *Journal of Personality and Social Psychology*, 125(5), 1157–1188. <https://doi.org/10.1037/pspp0000470>
- Bader, C. D., & Finke, R. (2010). What does god require? Understanding religious context and morality. In S. Hitlin & S. Vaisey (Eds.), *Handbooks of sociology and social research* (pp. 241–254). Springer. [https://doi.org/10.1007/978-1-4419-6896-8\\_13](https://doi.org/10.1007/978-1-4419-6896-8_13)
- Baldwin, S. A., & Larson, M. J. (2017). An introduction to using Bayesian linear regression with clinical data. *Behaviour Research and Therapy*, 98, 58–75. <https://doi.org/10.1016/j.brat.2016.12.016>
- Centre for Social Informatics. (2023). *1KA* (Version 23.06.20) [Computer software]. University of Ljubljana, Faculty of Social Sciences. <https://www.1ka.si/>
- Clifford, S., Iyengar, V., Cabeza, R., & Sinnott-Armstrong, W. (2015). Moral foundations vignettes: A standardized stimulus database of scenarios based on moral foundations theory. *Behavior Research Methods*, 47(4), 1178–1198. <https://doi.org/10.3758/s13428-014-0551-2>
- Dawson, K. J., Han, H., & Choi, Y. R. (2021). How are moral foundations associated with empathic traits and moral identity? *Current Psychology*, 42(13), 10836–10848. <https://doi.org/10.1007/s12144-021-02372-5>
- Dodd, M. D., Balzer, A., Jacobs, C. M., Gruszczynski, M. W., Smith, K. B., & Hibbing, J. R. (2012). The political left rolls with the good and the political right confronts the bad: Connecting physiology and cognition to preferences. *Philosophical Transactions of*

- the Royal Society B: Biological Sciences*, 367(1589), 640–649. <https://doi.org/10.1098/rs.tb.2011.0268>
- Efferson, L., Glenn, A., Rempel, R., & Iyer, R. (2017). The influence of gender on the relationship between psychopathy and five moral foundations: Influence of gender on psychopathy-moral foundations relationship. *Personality and Mental Health*, 11(4), 335–343. <https://doi.org/10.1002/pmh.1395>
- Eisenberg, N., Miller, P. A., Shell, R., McNalley, S., & Shea, C. (1991). Prosocial development in adolescence: A longitudinal study. *Developmental Psychology*, 27(5), 849–857. <https://doi.org/10.1037/0012-1649.27.5.849>
- Erceg, N., Galić, Z., & Bubić, A. (2018). The psychology of economic attitudes: Moral foundations predict economic attitudes beyond socio-demographic variables. *Croatian Economic Survey*, 20(1), 37–70. <https://doi.org/10.15179/ces.20.1.2>
- Faulkenberry, T. J., Ly, A., & Wagenmakers, E.-J. (2020). Bayesian inference in numerical cognition: A tutorial using JASP. *Journal of Numerical Cognition*, 6(2), 231–259. <https://doi.org/10.5964/jnc.v6i2.288>
- Friesen, A. (2019). Generational change? The effects of family, age, and time on moral foundations. *The Forum*, 17(1), 121–140. <https://doi.org/10.1515/for-2019-0005>
- Frimer, J. A., Biesanz, J. C., Walker, L. J., & MacKinlay, C. W. (2013). Liberals and conservatives rely on common moral foundations when making moral judgments about influential people. *Journal of Personality and Social Psychology*, 104(6), 1040–1059. <https://doi.org/10.1037/a0032277>
- Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge University Press.
- Gilligan, C. (1977). In a different voice: Women's conceptions of self and of morality. *Harvard Educational Review*, 47(4), 481–517. <https://doi.org/10.17763/haer.47.4.g6167429416hg510>
- Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H. (2013). Moral foundations theory: The pragmatic validity of moral pluralism. In P. Devine & A. Plant (Eds.), *Advances in experimental social psychology* (pp. 55–130, Vol. 47). Academic Press. <https://doi.org/10.1016/b978-0-12-407236-7.00002-4>
- Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, 101(2), 366–385. <https://doi.org/10.1037/a0021847>
- Güner, H. (2020). Examining the moral foundations of high school students. *World Journal of Education*, 10(6), 1–13. <https://doi.org/10.5430/wje.v10n6p1>
- Haidt, J. (2008). Morality. *Perspectives on Psychological Science*, 3(1), 65–72. <https://doi.org/10.1111/j.1745-6916.2008.00063.x>
- Haidt, J., Graham, J., & Joseph, C. (2009). Above and below left–right: Ideological narratives and moral foundations. *Psychological Inquiry*, 20(2–3), 110–119. <https://doi.org/10.1080/10478400903028573>
- Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Daedalus*, 133(4), 55–66. <http://www.jstor.org/stable/20027945>
- Hatemi, P. K., Crabtree, C., & Smith, K. B. (2019). Ideology justifies morality: Political beliefs predict moral foundations. *American Journal of Political Science*, 63(4), 788–806. <https://doi.org/10.1111/ajps.12448>

- Horberg, E. J., Oveis, C., Keltner, D., & Cohen, A. B. (2009). Disgust and the moralization of purity. *Journal of Personality and Social Psychology*, 97(6), 963–976. <https://doi.org/10.1037/a0017423>
- IBM Corporation. (2020). *IBM SPSS Statistics for Windows* (Version 27.0) [Computer software]. <https://www.ibm.com/spss>
- Iyer, R., Koleva, S., Graham, J., Ditto, P., & Haidt, J. (2012). Understanding libertarian morality: The psychological dispositions of self-identified libertarians. *PLOS ONE*, 7(8), e42366. <https://doi.org/10.1371/journal.pone.0042366>
- Jaffee, S., & Hyde, J. S. (2000). Gender differences in moral orientation: A meta-analysis. *Psychological Bulletin*, 126(5), 703–726. <https://doi.org/10.1037/0033-2909.126.5.703>
- JASP Team. (2023). *JASP* (Version 0.17.2) [Computer software]. <https://jasp-stats.org/>
- Jeffreys, H. J. (1939). *Theory of probability* (1st ed.). Oxford University Press.
- Jeffreys, H. J. (1961). *Theory of probability* (3rd ed.). Oxford University Press.
- Kass, R. E., & Raftery, A. E. (1995). Bayes factors. *Journal of the American Statistical Association*, 90(430), 773–795. <https://doi.org/10.1080/01621459.1995.10476572>
- Kohlberg, L. (1969). Stage and sequence: The cognitive-developmental approach to socialization. In D. A. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 347–480). Rand McNally.
- Koleva, S. P., Graham, J., Iyer, R., Ditto, P. H., & Haidt, J. (2012). Tracing the threads: How five moral concerns (especially Purity) help explain culture war attitudes. *Journal of Research in Personality*, 46(2), 184–194. <https://doi.org/10.1016/j.jrp.2012.01.006>
- Kugler, M., Jost, J. T., & Noorbaloochi, S. (2014). Another look at moral foundations theory: Do authoritarianism and social dominance orientation explain liberal-conservative differences in "moral" intuitions? *Social Justice Research*, 27(4), 413–431. <https://doi.org/10.1007/s11211-014-0223-5>
- Kurzban, R., Dukes, A., & Weeden, J. (2010). Sex, drugs and moral goals: Reproductive strategies and views about recreational drugs. *Proceedings of the Royal Society B: Biological Sciences*, 277(1699), 3501–3508. <https://doi.org/10.1098/rspb.2010.0608>
- Liang, F., Paulo, R., Molina, G., Clyde, M. A., & Berger, J. O. (2008). Mixtures of g priors for Bayesian variable selection. *Journal of the American Statistical Association*, 103(481), 410–423. <https://doi.org/10.1198/016214507000001337>
- Low, M., & Wui, M. G. L. (2015). Moral foundations and attitudes towards the poor. *Current Psychology*, 35(4), 650–656. <https://doi.org/10.1007/s12144-015-9333-y>
- Mainiero, L. A., Gibson, D. E., & Sullivan, S. E. (2008). Retrospective analysis of gender differences in reaction to media coverage of crisis events: New insights on the justice and care orientations. *Sex Roles*, 58, 556–566. <https://doi.org/10.1007/s11199-007-9365-3>
- McAdams, D. P., Albaugh, M., Farber, E., Daniels, J., Logan, R. L., & Olson, B. (2008). Family metaphors and moral intuitions: How conservatives and liberals narrate their lives. *Journal of Personality and Social Psychology*, 95(4), 978–990. <https://doi.org/10.1037/a0012650>
- Miles, A. (2014). Demographic correlates of moral differences in the contemporary United States. *Poetics*, 46, 75–88. <https://doi.org/10.1016/j.poetic.2014.09.004>
- Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years*. Holt, Rinehart & Winston.
- R Core Team. (2022). *R: A language and environment for statistical computing* (Version 4.2.1) [Computer software]. R Foundation for Statistical Computing. <https://www.r-project.org/>



- Robinson, O. C. (2013). Values and adult age: Findings from two cohorts of the European Social Survey. *European Journal of Ageing*, 10(1), 11–23. <https://doi.org/10.1007/s10433-012-0247-3>
- Rosik, C. H., Dinges, L. J., & Saavedra, N. (2013). Moral intuitions and attitudes toward gay men: Can moral psychology add to our understanding of homonegativity? *Journal of Psychology and Theology*, 41(4), 315–326. <https://doi.org/10.1177/009164711304100404>
- Rouder, J. N. (2014). Optional stopping: No problem for Bayesians. *Psychonomic Bulletin & Review*, 21(2), 301–308. <https://doi.org/10.3758/s13423-014-0595-4>
- Sağel, E. (2015). *Age differences in moral foundations across adolescence and adulthood* [Unpublished master thesis]. Middle East Technical University.
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*, 22(11), 1359–1366. <https://doi.org/10.1177/0956797611417632>
- Snow-Hill, N. L. (2019). *The survey of attitudes toward homeless people: The validation of a new instrument assessing negative attitudes toward homeless people* [Unpublished doctoral dissertation]. University of South Carolina.
- Stein, Z., & Dawson-Tunik, T. L. (2004). *"It's all good": Moral relativism and the millennial mind*. Developmental Testing Service.
- Sulsky, L. M., Marcus, J., & MacDonald, H. A. (2015). Examining ethicality judgements of theft behavior: The role of moral relativism. *Journal of Business and Psychology*, 31(3), 383–398. <https://doi.org/10.1007/s10869-015-9418-5>
- Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality*, 69(6), 907–924. <https://doi.org/10.1111/1467-6494.696169>
- van de Schoot, R., Winter, S. D., Ryan, O., Zondervan-Zwijnenburg, M., & Depaoli, S. (2017). A systematic review of Bayesian articles in psychology: The last 25 years. *Psychological Methods*, 22(2), 217–239. <https://doi.org/10.1037/met0000100>
- van Doorn, J., van den Bergh, D., Böhm, U., Dablander, F., Derks, K., Draws, T., Etz, A., Evans, N. J., Gronau, Q. F., Haaf, J. M., Hinne, M., Kucharský, Š., Ly, A., Marsman, M., Matzke, D., Gupta, A. R. K. N., Sarafoglou, A., Stefan, A., Voelkel, J. G., & Wagenmakers, E.-J. (2021). The JASP guidelines for conducting and reporting a Bayesian analysis. *Psychonomic Bulletin & Review*, 28(3), 813–826. <https://doi.org/10.3758/s13423-020-01798-5>
- van Leeuwen, F., Koenig, B. L., Graham, J., & Park, J. H. (2014). Moral concerns across the United States: Associations with life-history variables, pathogen prevalence, urbanization, cognitive ability, and social class. *Evolution and Human Behavior*, 35(6), 464–471. <https://doi.org/10.1016/j.evolhumbehav.2014.06.005>
- Wagenmakers, E.-J. (2007). A practical solution to the pervasive problems of *p* values. *Psychonomic Bulletin & Review*, 14(5), 779–804. <https://doi.org/10.3758/bf03194105>
- Zellner, A., & Siow, A. (1980). Posterior odds ratios for selected regression hypotheses. *Trabajos de Estadística Y de Investigación Operativa*, 31(1), 585–603. <https://doi.org/10.1007/bf02888369>