



Individual differences in moral choices: Insights from two ipsative methods

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ABSTRACT

Most research on individual differences in moral values or foundations relies on normative assessments (e.g., Likert) which may have some limitations. To complement these methods, we present two studies on moral choices relying on forced-choice (Study 1) and budget allocation (Study 2) questionnaires (i.e., two ipsative methods) to understand individual differences in the moral foundations of avoiding harm, maximizing fairness, loyalty to one's ingroup, respect for authority, and purity. Furthermore, to understand individual differences in moral choices, we examined sex differences and the role of the Dark Triad traits (i.e., narcissism, psychopathy, and Machiavellianism). Maximizing fairness was chosen the most whereas in respect for authority and purity were chosen the least regardless of specific ipsative method. In addition, those who chose authority over care and fairness scored higher on all the Dark Triad traits (Study 1), men who were more narcissistic and psychopathic allocated a larger portion of their budgets to authority and purity and less to fairness and loyalty (Study 2), and women who were more Machiavellian invested more in purity. We emphasize the utility of ipsative measurement techniques to complement normative ones when trying to understand moral choices and more.

A primary aim of psychologists who study morality is to understand individual differences in moral decision-making (Ellemers et al., 2019). However, such research is characterized by several features that may limit our view of moral decision-making. For example, the reliance on moral dilemmas (e.g., trolley dilemma) limits insights to a rather narrow moral decision (Foot, 1967; Thomson, 1976) that may not reflect a real life well (Bauman et al., 2014; Bostyn et al., 2018; Kahane, 2015; Schein, 2020). Alternatively, researchers trying to capture a range of moral values or choices suffer from problems related to self-reports like social desirability and normative assessments (Batson et al., 1999; Graham et al., 2015; Valdesolo & DeSteno, 2007). Therefore, there is a need to adopt different methods to better understand individual differences in people's moral decisions and choices.

Our goal was to revisit the existing knowledge about moral values in the context of individual differences in sex and dark personality with ipsative methods. Exploring morality issues using new measurement methods may offer a new way to understand the dispositional factors underlying moral decisions. Moreover, such an approach may help to detect patterns in what people prioritize in their and others' moral lives that are difficult to detect using standard Likert scale approaches. We present two studies relying on ipsative methods where in Study 1

participants were presented with pairs of moral foundations and asked to pick which was more important to them and in Study 2 we gave participants various budgets to spend on different moral foundations. We focused on moral foundations (i.e., **avoiding harm, maximizing fairness, loyalty to one's ingroup, respect for authority, and purity**) theory (Graham et al., 2018; Haidt, 2001), given its cross-cultural validity (Atari et al., 2020) and its closeness to people's everyday moral intuitions (Haidt, 2001, 2013), but augment these studies that rely on normative scaling methods. We expect men and women will differ in their moral choices like they do in their moral declarations (Atari et al., 2020) and that individual differences in the Dark Triad traits (i.e., narcissism, psychopathy, and Machiavellianism; Jonason et al., 2015) will be related to the moral values revealed with ipsative methods.

1. Why ipsative methods? A case for alternative measurement

Unlike normative methods like Likert scales, ipsative methods require people to make choices between one or more alternatives. While potentially artificial, by forcing people to make choices they would not normally face, we can (1) understand moral decisions not just moral preferences/values, (2) minimize various response biases like

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acquiescence, extreme responding, socially desirability, and midpoint response styles (Berkshire, 1958; Paulhus, 2002; Wetzel & Frick, 2020), and be more efficient (e.g., fewer items required) in administration and scoring (Auerbach, 1971; Highland & Berkshire, 1951; Lishner et al., 2008; Osburn et al., 1954). The method reflects the situation of making a choice in everyday life, because even if people prefer some options over others (e.g., vanilla ice cream and strawberry ice cream over chocolate ice cream), sometimes they have to choose between two options that they value similarly (i.e., vanilla ice cream or strawberry ice cream). Similarly, people may prefer some moral foundations over others, but there are times when one must choose between moral foundations that they value similarly. Moreover, the forced-choice response format helps to overcome such response biases as the common tendency of raters to be overly generous in their ratings, along with acquiescent, extreme, socially desirable, and midpoint response styles (Berkshire, 1958; Paulhus, 2002; Wetzel & Frick, 2020).

We reason that people not only have different moral values but their values are often in conflict with one another. If we create such decision-making conflicts in measurement, we can better understand individual differences in how people resolve those conflicts. Moreover, we capture ratio data on the “tradeoffs” people make in their moral decisions. By framing moral choices as tradeoffs between different moral foundations, we can potentially learn what are people's primary and secondary moral values. We contend that people would all like to be maximally moral, but sometimes people must choose between moral values. Teasing out these choices will provide new insights into moral psychology.

The forced-choice method is well-established in psychological studies (Auerbach, 1971; Highland & Berkshire, 1951; Lishner et al., 2008; Osburn et al., 1954), and it involves presenting sets of two or more statements and requiring the subject to select one of them. The forced-choice method assumes 1-to-1 decisions, but these may be especially artificial because, at any one time, several moral values may be at odds. Therefore, we also think it might be useful to adopt the budget allocation method which is well-established in psychology (Baker et al., 1976; Milner, 1986) and widely used in social science research (Li et al., 2002; Thomas et al., 2020; Wee et al., 2014). The budget allocation method refers to a research design or measurement strategy where participants are given a fixed budget (e.g., points or money) and asked to allocate it across different options or categories. The allocations made by participants serve as indicators of their priorities regarding the presented options or categories. In morality research, the advantage of this method over the typical opinion surveys is that participants decide on budget proportions in parallel with other decisions (i.e. the more they give to one option, the less they can give to the remaining options); in contrast, survey respondents provide answers about individual moral issues serially and each answer is independent of the others. Moreover, giving participants budgets of different sizes provides information about the importance of particular options (e.g., necessities and luxuries; Li et al., 2002).

2. Moral foundations theory: A framework for mapping moral trade-offs

A theoretical framework that captures the essential structure of moral intuitions and allows unraveling the comparative advantages of the ipsative methodology for moral psychology is moral foundations theory which enumerates five (Graham et al., 2011, 2018; Haidt, 2001), cross-nationally present (Atari et al., 2020) individual differences in moral psychology of *care* (i.e., empathy towards and avoiding harming others), *fairness* (i.e., sensitivity to matters of justice, rights, and equality), *loyalty* (i.e., the tendency to form coalitions and feel proud of being a group member), *authority* (i.e., a preference for hierarchical social interactions and respect for, or fear of, people in a higher social position) and *purity* (i.e., a propensity to exhibit disgust in response to incorrect behavior and reflects individual differences in concerns for the sacredness of values). These moral foundations reflect moral values and,

like other value systems, differ from person to person. For instance, women care more about care, fairness, and purity than men (Atari et al., 2020; Efferson et al., 2017) which may reflect their desires to present themselves in prosocial ways to build long-term alliances (Benenson, 2013) and to mitigate infection risks and increase success in intrasexual competition (Davis et al., 2019; Olatunji et al., 2012). Given asymmetrical costs of infection over evolutionary time, women may have developed greater pathogen-avoidance tendencies. Moreover, women who derogate their competitors in mating systems may fixate on moral values that capture important mating characteristics like interpersonal warmth and sexual purity.

3. Sex and personality differences in moral foundations

People's moral system are likely instrumental adaptations for helping people navigate long-term, large-scale social relationships and interactions. However, people can also gain personal benefits by violating moral norms designed to serve the group at the expense of other people. In terms of stable individual differences or personality, self-promotion-oriented behavior that overlooks the needs, emotions, and well-being of others is associated with a high level of Dark Triad traits (Paulhus & Williams, 2002): Machiavellianism (i.e., manipulateness and pragmatism), narcissism (i.e., grandiosity, entitlement, dominance, and superiority), and psychopathy (i.e., callousness, impulsivity, and low empathy). Given the selfish and even violent nature of the Dark Triad traits, it is unsurprising that those characterized by these traits care little for care and fairness (Djeriouat & Trémolière, 2014; Efferson et al., 2017; Jonason et al., 2015; Karandikar et al., 2019) because people with developed Dark Triad traits prefer social rules that fit well with their personality (Spurk & Hirschi, 2018), they may make moral decisions that promote their social position to a greater extent (e.g., related to authority) and focus less on the needs of other people (e.g., related to care and fairness). On the other hand, sex-related factors may also play a role here, because, generally speaking, men score higher on the Dark Triad traits than women; however, such discrepancies are more pronounced in Western than non-Western countries (Aluja et al., 2022) and differences between men and women in correlations of psychopathy and harm and fairness are small (Efferson et al., 2017).

However, the traits' associations with individual differences in loyalty, authority, and purity are equivocal (Jach et al., 2023; Jonason et al., 2015; Karandikar et al., 2019). People well-characterized by the Dark Triad traits may prefer care and fairness less because these moral foundations involve going beyond one's own needs towards the needs of other individuals while people scoring higher on the Dark Triad traits are more motivated by the social values of hedonism and promotion than promoting or helping others (Jonason et al., 2018). On the other hand, the preferences of people with elevated Dark Triad traits related to loyalty, authority, and purity may depend on how convincing these moral foundations can be to justify their Machiavellian, narcissistic, and psychopathic actions. For example, people scoring higher on the Dark Triad traits express more homonegative and transnegative attitudes; however in case of Machiavellianism and psychopathy such attitudes are mediated by lower endorsement to care and fairness and in case of narcissism such attitudes are mediated by higher endorsement to loyalty, authority, and purity (Kay & Dimakis, 2022).

While we know much about sex differences in moral values and the role of the Dark Triad traits therein, these effects could be measurement artifacts and thus the importance of adopting alternative measurement systems. In particular, given the “naughty” nature of the Dark Triad traits and the likely self-presentation biases that may be present in morality research, we think it important to revisit these matters with ipsative scaling methods. This would capture not what people want to present themselves as but, instead, how they perform on or what they choose in tasks other than questionnaires. For example, people scoring higher on the Dark Triad traits try to present themselves as more sincere in their questionnaire responses (Galán et al., 2024). On the other hand,

people scoring higher on the Dark Triad traits have a stronger tendency to cheat in tasks with monetary temptation (Dickinson, 2023). Moreover, more Machiavellian men and women are more prone to committing plagiarism, cheating on exams, and falsifying documents in the academic field (Lingán-Huamán et al., 2024). Indeed, we offer this study in just this spirit. The adoption of alternative measurement techniques is quite useful in fleshing out the “truth” in various fields of research. Moreover, ipsative methods may give people with less person-oriented moral perspectives the opportunity to express their moral attitudes in a socially acceptable way (e.g., by giving more importance to other values).

4. The current research

We aimed to study how people choose between moral foundations if they consider them alongside others. In the current two studies, we tried to determine (1) what are people's moral priorities, (2) the sex differences therein, (3) the associations between the Dark Triad traits and moral decisions, and (4) the relationships between moral decisions and traditional assessments of those same moral foundations. Concerning these goals, we hypothesized that (H1) care and fairness will be the most valued (e.g., most often chosen in forced choices and most invested in budget allocations) moral foundations (Dahl, 2023); however it is unclear which one is stronger (Graham et al., 2011; Paruzel-Czachura et al., 2023). In addition, we hypothesized that (H2) women will prefer care, fairness, and purity more than men will (Atari et al., 2020). Furthermore, understanding how moral decisions, rather than moral values, relate to the Dark Triad traits provides a rare behavioral index that characterizes those with these traits and may reveal that those who are characterized by these traits are not inherently evil, but instead make different moral decisions. People scoring higher on the Dark Triad traits prioritize their own goals over the goals of others (Jonason et al., 2018; Karandikar et al., 2019); therefore, we hypothesized that (H3) they would prioritize less person-oriented moral values (e.g., loyalty, authority, and purity) over more person-oriented values (e.g., care and fairness). And last, if our ipsative methods are reasonable (i.e., valid), we hypothesized that (H4) those who choose a particular value more should also score higher on that same value when assessed with a quasi-continuous measure.

5. Method

Data are available in the OSF ZENODO database: [link hidden for peer review; however, link was included in the title page file]. The study was approved by the Ethics Committee of the University [hidden for peer review]. These studies were not preregistered.

5.1. Participants & procedure

We collected two samples of Polish participants who consented to participate in an anonymous, online study via the Polish survey platform “Ariadna”. For their participation, they received points that could be exchanged for prizes. The only exclusion criterion used for our studies was being over 18 years of age. The sample sizes were determined following the criteria of average effect size in social and personality psychology (Richard et al., 2003) and reduction of estimation error in personality psychology (Schönbrodt & Perugini, 2013). In Study 1, there were 268 participants (134 men; 134 women) aged 18 to 70 ($M = 45.23$, $SD = 15.59$). In Study 2, there were 266 participants (133 men; 133 women) aged 18 to 70 ($M = 45.17$, $SD = 15.91$). These sample sizes were adequate to detect small mixed model ANOVA effects ($f \geq 0.13$) and correlations ($|r| \geq 0.12$) when α is 0.05 and $1-\beta$ is 0.80 (Faul et al., 2007).

The participants were informed of the nature of the study. If they consented via a tick-box, they provided information about their demographic characteristics. Then, they made forced moral choices (Study 1) or performed a task of allocating points to moral foundations

depending on how relevant they were to them (Study 2). Next, they provided survey information about their Dark Triad characteristics and moral foundations. Upon completion of the survey, participants were thanked and had an opportunity to contact the first author via e-mail in case of questions or concerns.

5.2. Measures

To measure moral choices in both studies, we provided participants with brief descriptions of the five moral foundations (see Appendix A). Then, in Study 1, we showed them ten pairs of moral foundations and asked them to indicate which ones were more important to them. We randomized the order in which the participants were presented with individual pairs of moral values. Moreover, each value was presented in the study twice as the first of the pair (e.g., care or ...) and twice as the second of the pair (e.g., ... or care). We then summed the times each was chosen to reveal people's moral priorities.

In Study 2, we used a budget allocation task in two stages. Initially, we gave participants 20 points and asked them to describe their moral beliefs by assigning the appropriate number of points to each moral value (i.e., low budget task). Then, we gave participants 60 points and asked them to describe their moral beliefs again (i.e., high budget task). We have included the full instructions of low budget task and high budget task in Appendix B. To make the results from both tasks comparable, we translated the raw scores into proportional scores by dividing the scores from the low budget task by 20 and dividing the scores from the high budget task by 60.

In both studies, we measured the Dark Triad traits with the Polish translation (Rogoza & Cieciuch, 2019) of the Short Dark Triad questionnaire (Jones & Paulhus, 2014), containing scales (9 items each) for Machiavellianism (e.g., “I like to use clever manipulation to get my way.”; Cronbach's α = 0.76 [Study 1] and 0.77 [Study 2]), narcissism (e.g., “People see me as a natural leader.”; α = 0.68 [Study 1] and 0.67 [Study 2]), and psychopathy (e.g., “People who mess with me always regret it.”; α = 0.80 [Study 1] and 0.79 [Study 2]). Respondents indicated their agreement (1 = *disagree strongly*; 5 = *strongly agree*) and we averaged scores for the corresponding items to create indexes of the traits.

In both studies, we used the Polish translation (Jarmakowski-Kostrzanowski & Jarmakowska Kostrzanowska, 2016) of the Moral Foundations Questionnaire (Graham et al., 2011) to measure declared importance of five moral foundations. Participants were asked how relevant (1 = *not at all relevant*; 6 = *extremely relevant*) or how much they agreed (1 = *strongly disagree*; 6 = *strongly agree*) with 30 items corresponding to five moral foundations of care (e.g., “Whether or not someone suffered emotionally.”; α = 0.80 [Study 1] and 0.78 [Study 2]), fairness (e.g., “Whether or not some people were treated differently than others.”; α = 0.73 [Study 1] and 0.77 [Study 2]), loyalty (e.g., “Whether or not someone's action showed love for his or her country.”; α = 0.74 [Study 1] and 0.72 [Study 2]), authority (e.g., “Whether or not someone showed a lack of respect for authority.”; α = 0.77 [Study 1] and 0.76 [Study 2]), and purity (e.g., “Whether or not someone violated standards of purity and decency.”; α = 0.75 [Study 1] and 0.74 [Study 2]). The higher the score on each scale, the more important a given foundation was to participants (i.e., expressed preferences). We averaged scores for the corresponding items to create indexes of the traits.

6. Results

Which moral foundation will you choose? Table 1 contains descriptive statistics for the number of times each moral foundation was chosen, the Dark Triad traits, and responses about moral foundations in Study 1. We started with a 2 (sex) $\times$ 5 (number of times each moral foundation was chosen) mixed model ANOVA. We found a main effect of moral foundation [$F(4, 1064) = 180.55$, $p < .01$, $\eta_p^2 = 0.40$]. Participants chose fairness more often than any other moral foundation [$|ts(266)| \geq 5.32$, $ps < 0.01$, |Cohen's d s| ≥ 0.52]. Care and loyalty were chosen more

Table 1

Descriptive statistics of the number of times each moral foundation was chosen over others, the Dark Triad traits, and responses about moral foundations in Study 1 ($N = 268$).

	Overall		Men		Women		<i>t</i> /Fisher's <i>z</i>	Cohen's <i>d</i>
	<i>M</i> (<i>SD</i>)		<i>M</i> (<i>SD</i>)		<i>M</i> (<i>SD</i>)			
Care	2.47 (1.07)		2.33 (1.01)		2.62 (1.07)		2.29*	0.28
Fairness	3.03 (1.01)		3.10 (0.98)		2.97 (1.03)		−1.03	−0.13
Loyalty	2.50 (1.09)		2.46 (1.18)		2.53 (0.99)		0.51	0.06
Authority	0.75 (1.00)		0.78 (1.11)		0.71 (0.89)		−0.61	−0.07
Purity	1.25 (1.08)		1.33 (1.11)		1.17 (1.04)		−1.19	−0.15
Machiavellianism	3.02 (0.57)		3.09 (0.54)		2.95 (0.60)		−1.98*	−0.24
Narcissism	2.68 (0.49)		2.69 (0.50)		2.68 (0.48)		−0.24	−0.03
Psychopathy	2.25 (0.62)		2.41 (0.57)		2.09 (0.64)		−4.29**	−0.52
Responses about moral foundation		Correlation with the number of choices		Correlation with the number of choices		Correlation with the number of choices		
Care	4.73 (0.68)	0.21**	4.59 (0.70)	0.23**	4.88 (0.65)	0.15	3.43**/0.67	0.42
Fairness	4.61 (0.67)	<0.01	4.51 (0.70)	−0.03	4.73 (0.63)	0.05	2.64**/−0.65	0.32
Loyalty	4.00 (0.74)	0.12	4.07 (0.72)	0.22*	3.93 (0.75)	0.01	−1.50/1.73	−0.18
Authority	3.73 (0.82)	0.06	3.82 (0.77)	<0.01	3.65 (0.87)	0.13	−1.63/−1.06	−0.20
Purity	4.07 (0.83)	0.30**	4.08 (0.82)	0.34**	4.07 (0.83)	0.25**	−0.15/0.80	−0.02

* $p < .05$.

** $p < .01$.

often than authority [$ts(266) \geq 17.28$, $ps < 0.01$, $ds \geq 1.65$] and purity [$ts(266) \geq 11.34$, $ps < 0.01$, $ds \geq 1.17$] and purity was chosen more often than authority [$t(266) = -4.74$, $p < .01$, $d = -0.48$]. However, there was no interaction of sex and the number of choices of each moral foundation [$F(4, 1064) = 1.66$, $p = .16$, $\eta_p^2 < 0.01$].

Subsequently, we compared the frequencies of choosing each moral foundation in each pair (Table 2). Participants equally chose care and loyalty, and women equally often chose care and fairness and care and loyalty. However, participants chose care more often than authority and purity and fairness more often than loyalty, authority, and purity. Loyalty was chosen more often than authority and loyalty and purity were chosen more often than authority. Moreover, men chose fairness more often than care.

Next, we ran ten 2 (sex) $\times$ 2 (chosen moral foundation) MANOVAs for the Dark Triad traits. We did not detect multivariate interactions [$F(3, 266) \leq 1.71$, $ps \geq 0.17$, Wilk's $\lambda_s \geq 0.99$]; however, the multivariate effects of sex were significant [$F(3, 266) \geq 7.21$, $ps < 0.01$, $\lambda_s = 0.92$]. Univariate analyses showed that men scored higher on Machiavellianism [$F(1, 264) \geq 3.91$, $ps \leq 0.05$, $\eta_p^2s = 0.02$] and psychopathy [$F(1, 264) \geq 18.30$, $ps < 0.01$, $\eta_p^2s = 0.07$]. Moreover, we detected the multivariate effects of moral choice in each pair that contained authority [$F(3, 266) \geq 3.66$, $ps \leq 0.02$, $\lambda_s \leq 0.96$]. In univariate analyses, participants who chose authority over care and fairness scored higher on Machiavellianism [$F(1, 264) \geq 4.14$, $ps < 0.05$, $\eta_p^2s = 0.02$], narcissism [$F(1, 264) \geq 6.70$, $ps \leq 0.01$, $\eta_p^2s = 0.03$], and psychopathy [$F(1, 264) \geq 9.71$, $ps < 0.01$, $\eta_p^2s = 0.03$]. Moreover, participants who chose

authority over loyalty scored higher on narcissism [$F(1, 264) = 4.31$, $p = .04$, $\eta_p^2 = 0.02$] and psychopathy [$F(1, 264) = 15.09$, $p < .01$, $\eta_p^2 = 0.05$], and those who chose authority over purity scored higher on psychopathy [$F(1, 264) = 9.49$, $p < .01$, $\eta_p^2 = 0.04$]. For descriptive statistics of the Dark Triad traits among those who chose different moral foundations, see Table 3.

Lastly, we correlated the number of times each moral foundation was chosen in forced-choices with responses about moral foundations (see Table 1). In the overall sample, the number of choices correlated with responses about care and purity. Among men, the number of choices correlated with responses about care, loyalty, and purity and among women the number of choices correlated with responses about purity. However, we did not detect other correlations.

How much will you pay for moral foundations? Table 4 contains descriptive statistics of the proportions of budgets allocated to each moral foundation and the Dark Triad traits in Study 2. We conducted a 2 (budget type) $\times$ 2 (sex) $\times$ 5 (moral foundation) mixed-model ANOVA. We found a main effect of moral foundation [$F(4, 1056) = 69.63$, $p < .01$, $\eta_p^2 = 0.21$]. Participants allocated more points to fairness than any other moral foundation [$|ts(264)| \geq 2.04$, $ps \leq 0.04$, $|ds| > 0.22$]. Loyalty was valued more than care, authority, and purity [$|ts(264)| \geq 3.27$, $ps < 0.01$, $|ds| > 0.29$], care was valued more than authority and purity [$ts(264) \geq 6.48$, $ps \leq 0.01$, $ds > 0.48$], and purity was valued more than authority [$t(264) = -3.71$, $p < .01$, $d = -0.22$]. We did not detect both other main effects and interactions. Subsequently, we tested sex differences for the Dark Triad traits. Men scored higher on

Table 2

Number of times each moral foundation was chosen in each forced-choice in Study 1 ($N = 268$).

Pair of moral foundations	Overall			Men			Women		
	(A)	(B)	χ^2	(A)	(B)	χ^2	(A)	(B)	χ^2
Care (A) vs. Fairness (B)	100 (37.31 %)	168 (62.69 %)	17.25*	44 (32.84 %)	90 (67.16 %)	15.79*	56 (41.79 %)	78 (58.21 %)	3.61
Care (A) vs. Loyalty (B)	129 (48.13 %)	139 (51.87 %)	0.37	59 (44.03 %)	75 (55.97 %)	1.91	70 (52.24 %)	64 (47.76 %)	0.27
Care (A) vs. Authority (B)	225 (84.96 %)	43 (16.04 %)	123.60*	107 (79.86 %)	27 (20.14 %)	47.76*	118 (88.06 %)	16 (12.40 %)	77.64*
Care (A) vs. Purity (B)	209 (77.99 %)	59 (22.01 %)	83.96*	102 (76.12 %)	32 (23.88 %)	36.57*	107 (79.85 %)	27 (20.15 %)	47.76*
Fairness (A) vs. Loyalty (B)	178 (66.41 %)	90 (33.58 %)	28.90*	93 (69.40 %)	41 (30.60 %)	20.20*	85 (63.43 %)	49 (26.57 %)	9.67*
Fairness (A) vs. Authority (B)	241 (89.93 %)	27 (10.07 %)	170.88*	117 (87.31 %)	17 (12.69 %)	74.63*	124 (92.54 %)	10 (7.46 %)	96.99*
Fairness (A) vs. Purity (B)	226 (84.33 %)	42 (15.67 %)	126.33*	115 (85.82 %)	19 (14.18 %)	68.78*	111 (82.84 %)	23 (17.16 %)	57.79*
Loyalty (A) vs. Authority (B)	232 (86.57 %)	36 (13.43 %)	143.34*	115 (85.82 %)	19 (14.18 %)	68.78*	117 (87.31 %)	17 (12.69 %)	74.63*
Loyalty (A) vs. Purity (B)	208 (77.61 %)	60 (22.39 %)	81.73*	99 (73.88 %)	35 (26.11 %)	30.57*	109 (81.34 %)	25 (18.66 %)	52.66*
Authority (A) vs. Purity (B)	94 (35.07 %)	174 (64.93 %)	23.88*	42 (31.34 %)	92 (68.66 %)	18.66*	52 (38.81 %)	82 (61.19 %)	6.72*

* $p < .01$.

Table 3

Means (SDs) of the Dark Triad traits among people who chose different moral foundations in forced choices in Study 1.

	Machiavellianism		Narcissism		Psychopathy	
	(A)	(B)	(A)	(B)	(A)	(B)
Care (A) vs. Fairness (B)	3.07 (0.54)	2.99 (0.59)	2.70 (0.51)	2.67 (0.48)	2.34 (0.63)	2.25 (0.63)
Care (A) vs. Loyalty (B)	2.97 (0.63)	3.06 (0.52)	2.64 (0.51)	2.72 (0.47)	2.16 (0.61)	2.33 (0.63)
Care (A) vs. Authority (B)	2.98 (0.58)	3.20 (0.52)	2.65 (0.50)	2.86 (0.42)	2.19 (0.61)	2.53 (0.63)
Care (A) vs. Purity (B)	3.01 (0.58)	3.05 (0.56)	2.67 (0.49)	2.74 (0.49)	2.23 (0.61)	2.30 (0.68)
Fairness (A) vs. Loyalty (B)	3.00 (0.61)	3.06 (0.49)	2.68 (0.51)	2.69 (0.45)	2.20 (0.61)	2.27 (0.63)
Fairness (A) vs. Authority (B)	2.99 (0.57)	3.28 (0.57)	2.65 (0.49)	2.94 (0.38)	2.20 (0.59)	2.69 (0.74)
Fairness (A) vs. Purity (B)	3.03 (0.58)	2.97 (0.57)	2.68 (0.50)	2.67 (0.41)	2.27 (0.64)	2.15 (0.56)
Loyalty (A) vs. Authority (B)	3.00 (0.56)	3.12 (0.65)	2.66 (0.50)	2.84 (0.42)	2.19 (0.60)	2.61 (0.65)
Loyalty (A) vs. Purity (B)	3.04 (0.55)	2.95 (0.64)	2.68 (0.50)	2.69 (0.45)	2.24 (0.60)	2.26 (0.70)
Authority (A) vs. Purity (B)	3.03 (0.65)	3.01 (0.53)	2.74 (0.45)	2.65 (0.51)	2.38 (0.61)	2.17 (0.62)

Table 4Means (SDs) of proportions of budgets allocated to each moral foundation, the Dark Triad traits, and responses about moral foundations in Study 2 ($N = 266$).

	Overall	Men	Women	<i>t</i>	<i>Cohen's d</i>
Care – modest budget	0.21 (0.10)	0.20 (0.11)	0.21 (0.08)	0.35	0.04
Care – luxury budget	0.21 (0.09)	0.20 (0.10)	0.22 (0.10)	1.36	0.17
Fairness – modest budget	0.25 (0.12)	0.26 (0.12)	0.25 (0.12)	−0.41	−0.11
Fairness – luxury budget	0.26 (0.13)	0.27 (0.13)	0.26 (0.13)	−0.74	−0.09
Loyalty – modest budget	0.24 (0.10)	0.24 (0.10)	0.23 (0.10)	−0.86	−0.11
Loyalty – luxury budget	0.24 (0.12)	0.24 (0.11)	0.24 (0.12)	0.18	0.02
Authority – modest budget	0.14 (0.09)	0.14 (0.09)	0.14 (0.08)	0.72	0.09
Authority – luxury budget	0.13 (0.07)	0.13 (0.08)	0.14 (0.07)	0.41	0.05
Purity – modest budget	0.17 (0.09)	0.16 (0.09)	0.17 (0.09)	0.47	0.06
Purity – luxury budget	0.15 (0.08)	0.16 (0.10)	0.15 (0.07)	−1.06	−0.13
The Dark Triad traits					
Machiavellianism	3.10 (0.57)	3.16 (0.53)	3.05 (0.61)	−1.65	−0.20
Narcissism	2.77 (0.49)	2.81 (0.46)	2.73 (0.51)	−1.25	−0.15
Psychopathy	2.38 (0.64)	2.55 (0.60)	2.21 (0.64)	−4.51*	−0.55
Expressed moral values					
Care	4.67 (0.71)	4.51 (0.76)	4.82 (0.63)	3.60*	0.44
Fairness	4.60 (0.71)	4.46 (0.75)	4.73 (0.63)	3.09*	0.38
Loyalty	4.04 (0.72)	4.01 (0.74)	4.07 (0.70)	0.69	0.09
Authority	3.78 (0.81)	3.69 (0.85)	4.86 (0.75)	1.71	0.21
Purity	4.10 (0.78)	3.98 (0.81)	4.23 (0.73)	2.68*	0.33

* $p < .01$.

psychopathy than women [$t(264) = -4.51, p < .001, d = -0.55$]. However, men and women did not differ in Machiavellianism [$t(264) = -1.65, p = .10, d = -0.20$] and narcissism [$t(264) = -1.25, p = .21, d = -0.15$].

In the next step, we correlated the proportions of budgets allocated to each moral foundation with the Dark Triad traits overall and in men and women. In the case of a low budget, Machiavellianism correlated with purity overall ($r = 0.14, p = .02$) and among women ($r = 0.17, p = .048$). Then, in the full sample of participants and among men, narcissism correlated with authority (respectively: $r = 0.20, p < .01$ and $r = 0.29, p$

$< .01$) and with fairness (respectively: $r = -0.15, p = .01$ and $r = -0.24, p < .01$). Moreover, among men, psychopathy correlated with authority ($r = 0.19, p = .03$). In the case of a high budget, we did not detect correlations between Machiavellianism and moral foundations. However, in the full sample of participants and among men, narcissism correlated with authority (respectively: $r = 0.14, p = .01$ and $r = 0.24, p = .01$) and purity (respectively: $r = 0.17, p = .01$ and $r = 0.25, p < .01$); moreover, among men, narcissism correlated with fairness ($r = -0.20, p = .022$) and with loyalty ($r = -0.20, p = .02$). Furthermore, among men, psychopathy correlated positively with purity ($r = 0.19, p = .03$).

Comparing correlation coefficients, we observed that, among men, narcissism correlated with loyalty and purity more in the case of the high budget than in the case of the low budget (respectively: Steiger's z s = 2.09 and -2.57 , $ps = 0.04$ and 0.01); however, budget size did not moderate any other correlation. We also did not detect any differences in correlations among men and women (Fisher's $|z| \leq 1.88$, $ps \leq 0.06$) although these might be underpowered given that our sample size estimates were not based on moderated correlations.

Lastly, we correlated proportions of budgets allocated to each moral foundation with responses about moral foundations (see Table 5). At both budgets, in the overall sample and among men and women, proportions allocated in authority correlated with responses about this moral foundation. Moreover, at low budget, in overall sample, proportions allocated in fairness correlated with responses about this moral foundation. However, we did not detect other correlations.

7. Discussion

Life is full of dilemmas, including moral ones. However, research on morality tends to inquire about the degree to which people value particular moral ideas or to make decisions on simplistic, narrow scenarios that as especially artificial. Moreover, everyday moral decision-making is more about resolving conflicts between different moral intuitions than about choosing between moral and immoral options (Haidt & Bjorklund, 2008) and the importance of particular moral foundations may change with age (Castilla-Estévez & Blázquez-Rincón, 2021; Gouwy et al., 2025), which may influence the ultimate outcomes of these decisions. We aimed to study how people choose between moral foundations if they consider them alongside others. In line with hypothesis 1, in both studies, we found that participants chose fairness more often than other moral foundations. Fairness helps maintain cooperation and harmonize relationships both among humans (Brosnan & de Waal, 2012) and non-human primates (Brosnan, 2013). Therefore, participants may choose fairness often because it is the basis of social life, without which other moral choices could not actually occur; moreover, in social life, people may value fairness more than another individualizing foundation—care—because fairness regulates how and when behaviors that are inconsistent with care (e.g., punishment and use of violence) are justified. However, contrary to hypothesis 1 and previous reports (e.g., Atari et al., 2020; Dahl, 2023), participants chose loyalty either as often as care (Study 1) or more often than care (Study 2). The importance of care and fairness may differ depending on whether people analyze them in the context of self-concepts (i.e., data collected via questionnaire) or specific trade-offs (i.e., forced-choice and budget allocation data). People may exaggerate how important it is for them to take care of others to enhance how others view them (Cox et al., 2018); however, in the long run, people may value loyalty because they want to know whether they can rely on others and at the collective level loyalty is necessary to achieve important collective goals (Berry et al., 2021). On the other hand, in both our studies, authority and purity were chosen the least frequently. People (e.g., people with strongly conservative worldviews in Graham et al., 2009) may report similar importance to many

moral foundations; however, our results show that when people are faced with moral dilemmas, some moral foundations are clearly more important than others.

Research shows that women value care, fairness, and purity more than men (Atari et al., 2020), also adolescents differ in moral foundations, but the differences depend on age (Gouwy et al., 2025). However, contrary to these previous studies and hypothesis 2, in both of our studies, we observed no sex differences. This suggests that sex differences in moral declarations may be overemphasized compared to decisions when making moral trade-offs. On the other hand, men and women differ in their moral judgments in gender-egalitarian societies compared with less egalitarian ones (Atari et al., 2020), and women are more likely to compete in more gender-egalitarian societies (Hauge et al., 2023). Sex differences in declarations and their absence in choices regarding moral foundations suggest that, regardless of their real behaviors, women may want to present themselves as more caring and fair to increase their chances of forming coalitions with unrelated individuals (Stockley & Campbell, 2013) and as more focused on purity to lower the reputation of others, for example, by spreading gossip about their sexual activity (Wyckoff et al., 2019). This result is also consistent with studies on empathy, showing that sex differences are pronounced in self-report surveys (Baez et al., 2017). Because our results showed that men and women are similar rather than different when making moral trade-offs are inconsistent with previous results based on the Moral Foundations Questionnaire, it is worth considering further research on moral decisions, for example, observing moral decisions in immersive environments (e.g., role-playing games), simply replicating our results here in other and larger samples, and experimentally manipulating conditions that might affect such differences.

In line with hypothesis 3, in Study 1, participants who chose authority over care and fairness were more Machiavellian, narcissistic, and psychopathic, those who chose authority over loyalty were more narcissistic and psychopathic, and those who chose authority over purity were more psychopathic. People scoring higher on the Dark Triad traits might choose authority over other moral foundations because it gives them an effective context to justify their actions from a position of power, regardless of its origins in clever manipulation (e.g., Machiavellianism), social admiration (e.g., narcissism), or physical force (e.g., psychopathy). Moreover, people high on the Dark Triad traits prefer promotional values (e.g., power, prestige, and success; Jonason et al., 2018); therefore, they may prefer social values such as authority, which legitimize respect for those who have achieved high social status that they seek to attain.

In Study 2, we observed few associations between the Dark Triad traits and participants' decisions in budget allocations related to moral foundations; moreover, budget size moderated few associations between the Dark Triad traits and moral foundations. On the other hand, consistent with hypothesis 3 and the results of Study 1, men higher in narcissism and psychopathy chose to allocate a larger portion of their budgets to authority. Moreover, they invested more in purity and less in fairness and loyalty. The correlations between narcissism and psychopathy and purity may come from the fact that purity is not only

Table 5
Correlations of responses about moral choices and budget allocations in Study 2 ($N = 266$).

	Overall			Men			Women			Fishers z	
	Low	High	z	Low	High	z	Low	High	z	Low	High
Care	0.07	0.01	0.92	0.05	0.01	0.46	0.10	-0.02	1.17	-0.41	0.24
Fairness	0.13*	0.09	0.66	0.16	0.15	0.12	0.11	0.03	0.87	0.41	1.06
Loyalty	-0.03	0.03	-0.87	0.07	0.14	-0.69	-0.15	-0.09	-0.68	1.78	1.86
Authority	0.23**	0.21**	0.32	0.26**	0.23**	0.35	0.19*	0.19*	0.00	0.60	0.34
Purity	0.13*	0.11	0.34	0.17	0.17	0.00	0.09	0.06	0.39	0.66	0.90

Note. z is Steiger's z to compare dependent correlations;

* $p < .05$.

** $p < .01$.

associated with admiring perfection and unsullied sacredness but also allows for social influence by labeling people as inferior and unworthy, which is opposed to the narcissistic meaning of prestige; and justifies the callous and brutal treatment of others, which is associated with psychopathy (Semenyina & Honey, 2015). On the other hand, more Machiavellian women invested more in purity. This suggests that such women may be more willing to influence the social reputation of others by focusing on aspects related to breaking or maintaining chastity rules, for example, through gossip (Davis et al., 2019).

In both studies, choices and allocations were weakly correlated with questionnaire measures of moral foundations. These results only partially support hypothesis 4 and this may be for several reasons. First, responses about moral foundations are independent of each other and forced-choices and budget allocations are interrelated measures (i.e., some decisions limit the scope of other decisions). It is possible that when responding to surveys, respondents are more likely to give higher ratings to issues related to all moral foundations; however, in everyday life, relative decisions may abound. Second, moral decisions made in the choice and allocation procedures may have been more abstract than the problems described in the survey items and people may process moral issues differently, depending on their level of concreteness versus abstractness.

Our studies also provided interesting results from a methodological point of view. First, the observed effects were more pronounced using the forced-choice method than the budget allocation method. This suggests that the forced-choice method may motivate respondents to make more definite decisions than the budget allocation method, where respondents may try to make decisions that do not give any clear priority to any moral foundations. Second, in Study 2, participants made similar decisions regardless of whether they were on a low or high budget. This result is consistent with a substantial body of research on the stability of moral judgments (Knobe, 2021). This also suggests that high budgets should be used in future research on moral decisions: they give identical results to low budgets at the intra-individual level, but they may give more detailed results at the inter-individual level because of more variability/power. On the other hand, this could be because participants performed the budget tasks serially, which may cause a carryover effect; thus, similar results may result from the need for participants' desire to be consistent in their responses. Separating both stages of budget allocation decisions in future procedures is recommended, but we do not think this constitutes a fatal flaw presently.

7.1. Limitations and Conclusions

While our sample sizes were sufficiently powered, especially for our within-subjects tests, our moral measures were heterogeneous and based on decisions rather than self-described characteristics, and our Dark Triad measure is considered the gold standard among short-form measures, our studies have limitations. First, by relying on cross-sectional methods, we treated moral decisions static in time; however, we suspect that moral decisions may be subject to cultural, ecological, economic, and political shifts and may even be subject to simple cognitive effects (e.g., priming, glucose shortages, anger inductions, and time pressure) as well. As such, we encourage more detailed cross-national and experimental research on how people make moral decisions. Second, we focused only on three “dark” traits, excluding sadism (Mededović & Petrović, 2015; Paulhus et al., 2021), and, as measured, may not be sufficiently nuanced to get at lower-order features. Both may be useful to increase the breadth and depth of what is provided here. Third, we examined five moral foundations: care, fairness, loyalty, authority, and purity; however, some classifications also indicate liberty as the sixth foundation (Haidt, 2013) and distinguish three forms of harm: emotional harm to a human, physical harm to a human, and physical harm to a non-human animal (Clifford et al., 2015). Moreover, in recent research, fairness has been replaced by two more specific foundations: equality and proportionality (Atari et al., 2023). Therefore, future

research should include a broader scope of moral foundations. Fourth, modern Poles are W.E.I.R.D. (i.e., Western, Educated, Industrialized, and Rich; Henrich et al., 2010), so our reliance on two samples of relatively youthful Poles limits the generalizability of our conclusions to other cultures, especially of the non-W.E.I.R.D. variety. Subsequently, we collected information about participants' sex and age; however, we did not include other demographic or ideological characteristics. Including the mentioned aspects could have identified more nuanced relationships between the variables included in our two studies. Fifth, moral decisions have consequences—or at least they should—but we have not measured any of them here, something future research might consider. Sixth, we tested only two methods of measuring the importance of moral foundations. We recommend developing new methods beyond self-report surveys, and some inspiration could be the sacredness scale of moral foundations (Graham & Haidt, 2012) or calculating relative scores for moral foundations (Jach et al., 2023). In particular, correlating forced-choice and budget allocation methods with measures of the relative importance of moral foundations will be useful for establishing the validity of these methods. On the other hand, other ipsative methods of measuring moral foundations can also be developed (e.g., allocating fixed, differentiated packages of budgets to each of the values). Seventh, in our study, we made numerous multiple comparisons (e.g., in MANOVA analyses); however, we did not apply adjustments to reduce the risk of Type I error. We wanted to broadly test new methods for studying moral decisions; therefore, we decided to take a more liberal approach to analyzing the results. Moreover, our research focused on a new measurement method for variables whose relationships were identified in previous studies. On the other hand, we provided statistics (e.g. *F*s, *t*s, and *z*s) allowing for point-wise calculation of the highest *p*-values, which allows for the identification among them of values more or less inclined to reject the null hypotheses. Lastly, our ipsative methods address but do not eliminate such self-report method problems as social desirability and normative assessments. For example, if participants choose between two conflicting moral foundations, they may still identify and favor the response deemed more socially acceptable or desired in a given context. On the other hand, giving a low score in the questionnaire item simply means a low valuation of the described moral value, while a low score in ipsative methods implies a preference for other values that are generally highly valued globally (Atari et al., 2020). Therefore, ipsative methods, by providing a socially acceptable context for *any* answers, may create conditions that reduce self-presentational motivations of respondents. However, future research is needed to determine the intensity of this postulated effect.

Advancing methods in moral psychology can deepen our understanding of how people navigate real-life moral decisions. Rather than asking whether individuals are moral or not, we focused on identifying which moral foundations shape their decision-making when confronted with moral dilemmas. In our two studies, we tested the utility of two ipsative methods (i.e., forced-choice and budget allocation methods) for assessing moral foundations. We found that these methods, especially forced-choice, provide new information about the importance of the five moral foundations. Because morality in everyday situations manifests itself more in decisions than preferences, we believe that forced-choice and budget-allocation methods may simulate reality better than assessing the importance of each moral value independently of the others. Therefore, in research on moral decisions, we propose to use ipsative methods as a complement to methods based on moral dilemmas and questionnaires.

CRedit authorship contribution statement

Lukasz Jach: Writing – review & editing, Writing – original draft, Software, Project administration, Methodology, Investigation, Data curation, Conceptualization. **Mariola Paruzel-Czachura:** Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Peter K. Jonason:** Writing – review & editing, Methodology,

Conceptualization.

Author contributions

Łukasz Jach, Mariola Paruzel-Czachura, and Peter K. Jonason developed the idea for the current analysis. Łukasz Jach led data preparation and analysis. Łukasz Jach, Mariola Paruzel-Czachura, and Peter K. Jonason contributed to analyses and interpretation of results and wrote the manuscript. Peter K. Jonason provided editorial support.

Ethics statement

Studies presented in the manuscript were approved by the University of Silesia Institutional Review Board (decision number: KEUS 238/04.2022).

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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The current study was not preregistered.

Appendix A

Descriptions of moral foundations used in Study 1 and Study 2

People can care less or more about many values like fairness or loyalty. For instance, for some people, everyone must be treated fairly; for others, not. There are no right or wrong answers about our values because it is our own opinion.

In this study, we want to understand which values, so-called moral foundations, you care about the most. Below you will see a set of questions, and we ask you to decide which foundation is more relevant for you (on the left or the right).

We will ask you how important the following five moral foundations are for you:

1. Care (it is the opposite of Harm), for example, whether or not someone suffered.
2. Fairness (as the opposite of Cheating), for example, whether or not some people were treated differently from others.
3. Loyalty (as the opposite of Betrayal), for example, whether or not someone showed a lack of loyalty.
4. Authority (as the opposite of Subversion), for example, whether or not someone showed a lack of respect for authority.
5. Purity (as the opposite of Degradation), for example, whether or not someone violated standards of purity and decency.

Appendix B

Full instruction presented to Study 2 participants in budget allocation task

Part 1 (low budget task)

Describe your moral beliefs using points assigned to each moral value. You have a total of 20 points to distribute. The more points you assign to a particular value, the more important it is to you in your daily life. You can assign any number of points between 0 and 20 to each value, but the total number of points you assign must be exactly 20.

Part 2 (high budget task)

Now we ask you to describe your moral beliefs again using points. This time, you have a total of 60 points to distribute. The more points you assign to a particular value, the more important it is to you in your daily life. You can assign any number of points between 0 and 60 to each value, but the total number of points you assign must be exactly 60 points.

Data availability

Data are available in the OSF ZENODO database: doi:<https://doi.org/10.5281/zenodo.10983775>.

References

- Aluja, A., García, L. F., Rossier, J., Ostendorf, F., Glicksohn, J., Oumar, B., ... Hansenne, M. (2022). Dark triad traits, social position, and personality: A cross-cultural study. *Journal of Cross-Cultural Psychology*, 53, 380–402.
- Atari, M., Lai, M. H. C., & Dehghani, M. (2020). Sex differences in moral judgements across 67 countries. *Proceedings of the Royal Society B: Biological Sciences*, 287, Article 20201201.
- Atari, M., Haidt, J., Graham, J., Koleva, S., Stevens, S. T., & Dehghani, M. (2023). Morality beyond the WEIRD: How the nomological network of morality varies across cultures. *Journal of Personality and Social Psychology*, 125, 1157–1188.
- Auerbach, C. (1971). Correcting two-alternative forced-choice data for response bias. *Perceptual and Motor Skills*, 32, 533–534.
- Baez, S., Flichtentrei, D., Prats, M., Mastandueno, R., García, A. M., Cetkovich, M., & Ibáñez, A. (2017). Men, women, . . . who cares? A population-based study on sex differences and gender roles in empathy and moral cognition. *PLoS One*, 12, Article e0179336.
- Baker, N. R., Souder, W. E., Shumway, C. R., Maher, P. M., & Rubenstein, A. H. (1976). A budget allocation model for large hierarchical R&D organizations. *Management Science*, 23, 59–70.
- Batson, C. D., Thompson, E. R., Seufferling, G., Whitney, H., & Strongman, J. A. (1999). Moral hypocrisy: Appearing moral to oneself without being so. *Journal of Personality and Social Psychology*, 77, 525–537.
- Bauman, C. W., McGraw, A. P., Bartels, D. M., & Warren, C. (2014). Revisiting external validity: Concerns about trolley problems and other sacrificial dilemmas in moral psychology. *Social and Personality Psychology Compass*, 8, 536–554.
- Benenson, J. F. (2013). The development of human female competition: Allies and adversaries. *Philosophical Transactions of the Royal Society B*, 368, Article 20130079.
- Berkshire, J. R. (1958). Comparisons of five forced-choice indices. *Educational and Psychological Measurement*, 18, 553–561.
- Berry, Z., Lewis, N. A., Jr., & Sowden, W. J. (2021). The double-edged sword of loyalty. *Current Directions in Psychological Science*, 30, 321–326.
- Bostyn, D. H., Sevenhant, S., & Roets, A. (2018). Of mice, men, and trolleys: Hypothetical judgment versus real-life behavior in trolley-style moral dilemmas. *Psychological Science*, 29, 1084–1093.
- Brosnan, S. F. (2013). Justice- and fairness-related behaviors in nonhuman primates. *Proceedings of the National Academy of Sciences*, 110, 10416–10423.
- Brosnan, S. F., & de Waal, F. B. M. (2012). Fairness in animals: Where to from here? *Social Justice Research*, 25, 336–351.
- Castilla-Estévez, D., & Blázquez-Rincón, D. (2021). Age and moral foundations: A meta-analytic approach. *The Spanish Journal of Psychology*, 24, Article e41.
- Clifford, S., Iyengar, V., Cabeza, R., & Sinot-Armstrong, W. (2015). Moral foundations vignettes: A standardized stimulus database of scenarios based on moral foundations theory. *Behavior Research Methods*, 47, 1178–1198.
- Cox, J., Nguyen, T., Thorpe, A., Ishizaka, A., Chakhar, S., & Meech, L. (2018). Being seen to care: The relationship between self-presentation and contributions to online pro-social crowdfunding campaigns. *Computers in Human Behavior*, 83, 45–55.
- Dahl, A. (2023). What we do when we define morality (and why we need to do it). *Psychological Inquiry*, 34, 53–79.
- Davis, A. C., Vaillancourt, T., Arnocky, S., & Doyel, R. L. (2019). Women's gossip as an intrasexual competition strategy. In F. Giardini, & R. Wittek (Eds.), *The Oxford handbook of gossip and reputation* (pp. 303–321). Oxford University Press.

- Dickinson, D. L. (2023). Dark versus light personality types and moral choice. *IZA Discussion Paper, No. 16338*. Available at SSRN: <https://ssrn.com/abstract=4526263>.
- Djeriouat, H., & Trémoilère, B. (2014). The dark triad of personality and utilitarian moral judgment: The mediating role of honesty/humility and harm/care. *Personality and Individual Differences*, 67, 11–16.
- Efferson, L., Glenn, A., Rummel, R., & Iyer, R. (2017). The influence of gender on the relationship between psychopathy and five moral foundations. *Personality and Mental Health*, 11, 335–343.
- Ellemers, N., van der Toorn, J., Paunov, Y., & van Leeuwen, T. (2019). The psychology of morality: A review and analysis of empirical studies published from 1940 through 2017. *Personality and Social Psychology Review*, 23, 332–366.
- Faul, F., Erdfelder, E., Lang, A., & Buchner, A. (2007). G*power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175–191.
- Foot, P. (1967). The problem of abortion and the doctrine of the double effect. *Oxford Review*, 5, 5–15.
- Galán, M., Pineda, D., Rico-Bordera, P., Piqueras, J. A., & Martínez-Martínez, A. (2024). Are the dark personalities sincere?: Connections between the dark triad and the big three. *Current Issues in Personality Psychology*, 12, 178–184.
- Gouwy, M. C., Bostyn, D. H., De Clercq, B., & Roets, A. (2025). The development of a moral compass: Exploring age and gender differences in moral foundations in early and mid-adolescence. *Journal of Adolescence*, 97, 1333–1343.
- Graham, J., & Haidt, J. (2012). Sacred values and evil adversaries: A moral foundations approach. In M. Mikulincer, & P. R. Shaver (Eds.), *The social psychology of morality: Exploring the causes of good and evil* (pp. 11–31). American Psychological Association.
- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, 96, 1029–1046.
- Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, 101, 366–385.
- Graham, J., Meindl, P., Koleva, S., Iyer, R., & Johnson, K. M. (2015). When values and behavior conflict: Moral pluralism and intrapersonal moral hypocrisy. *Social and Personality Psychology Compass*, 9, 158–170.
- Graham, J., Haidt, J., Motyl, M., Meindl, P., Iskiwitsch, C., & Mooijman, M. (2018). Moral foundations theory: On the advantages of moral pluralism over moral monism. In *Atlas of moral psychology* (pp. 211–222). The Guilford Press.
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108, 814–834.
- Haidt, J. (2013). *The righteous mind: Why good people are divided by politics and religion*. Vintage.
- Haidt, J., & Bjorklund, F. (2008). Social intuitionists answer six questions about moral psychology. In W. Sinnott-Armstrong (Ed.), *Moral psychology, Vol. 2. The cognitive science of morality: Intuition and diversity* (pp. 181–217). Boston Review.
- Hauge, K. E., Kotsadam, A., & Riege, A. (2023). Culture and gender differences in willingness to compete. *The Economic Journal*, 133, 2403–2426.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, 466, Article 7302.
- Highland, R. W., & Berkshire, J. R. (1951). *A methodological study of forced-choice performance rating [dataset]*.
- Jach, L., Paruzel-Czachura, M., Aiken, L., & Jonason, P. K. (2023). How do the moral foundations attract the needle of a moral compass?: Relative scores as a supplementary method of measuring moral foundations. *Personality and Individual Differences*, 205, Article 112106.
- Jarmakowski-Kostrzanowski, T., & Jarmakowska Kostrzanowska, L. (2016). Polska adaptacja kwestionariusza kod'ow moralnych (MFQ-PL) [Polish adaptation of the moral foundation questionnaire (MFQ-PL)]. *Psychologia Społeczna*, 11, 489–508.
- Jonason, P. K., Strosser, G. L., Kroll, C. H., Duineveld, J. J., & Baruffi, S. A. (2015). Valuing myself over others: The dark triad traits and moral and social values. *Personality and Individual Differences*, 81, 102–106.
- Jonason, P. K., Foster, J. D., Kavanagh, P. S., Gouveia, V. V., & Birkás, B. (2018). Basic values and the dark triad traits. *Journal of Individual Differences*, 39, 220–228.
- Jones, D. N., & Paulhus, D. L. (2014). Introducing the short dark triad (SD3): A brief measure of dark personality traits. *Assessment*, 21, 28–41.
- Kahane, G. (2015). Sidetracked by trolleys: Why sacrificial moral dilemmas tell us little (or nothing) about utilitarian judgment. *Social Neuroscience*, 10, 551–560.
- Karandikar, S., Kapoor, H., Fernandes, S., & Jonason, P. K. (2019). Predicting moral decision-making with dark personalities and moral values. *Personality and Individual Differences*, 140, 70–75.
- Kay, C. S., & Dimakis, S. (2022). Moral foundations partially explain the associations of Machiavellianism, grandiose narcissism, and psychopathy with homonegativity and transnegativity. *Journal of Homosexuality*, 71, 775–802.
- Knobe, J. (2021). Philosophical intuitions are surprisingly stable across both demographic groups and situations. *Filozofia Nauki*, 29, 11–76.
- Li, N. P., Bailey, J. M., Kenrick, D. T., & Linsenmeier, J. A. W. (2002). The necessities and luxuries of mate preferences: Testing the trade-offs. *Journal of Personality and Social Psychology*, 82, 947–955.
- Lingán-Huamán, S. K., Domínguez-Lara, S., & Carranza Esteban, R. F. (2024). Gender-based differences in the impact of dark triad traits on academic dishonesty: The mediating role of moral disengagement in college students. *Heliyon*, 10, Article e23322.
- Lishner, D. A., Nguyen, S., Stocks, E. L., & Zillmer, E. J. (2008). Are sexual and emotional infidelity equally upsetting to men and women?: Making sense of forced-choice responses. *Evolutionary Psychology*, 6, Article 147470490800600412.
- Mededović, J., & Petrović, B. (2015). The dark tetrad: Structural properties and location in the personality space. *Journal of Individual Differences*, 36, 228–236.
- Milner, R. G. (1986). Resource allocation models and the budgeting process. *New Directions for Institutional Research*, 1986, 75–91.
- Olatunji, B. O., Adams, T., Ciesielski, B., David, B., Sarawgi, S., & Broman-Fulks, J. (2012). The three domains of disgust scale: Factor structure, psychometric properties, and conceptual limitations. *Assessment*, 19, 205–225.
- Osburn, H. G., Lubin, A., Loeffler, J. C., & Tye, V. M. (1954). The relative validity of forced choice and single stimulus self description items. *Educational and Psychological Measurement*, 14, 407–417.
- Paruzel-Czachura, M., Blukacz, M., Vecina, M. L., & Jonason, P. K. (2023). Moral foundations and criminality: Comparing community members to prisoners and violent/non-violent offenders. *Psychology, Crime & Law*, 31, 399–413.
- Paulhus, D. L. (2002). Socially desirable responding: The evolution of a construct. In *The role of constructs in psychological and educational measurement* (pp. 49–69). Lawrence Erlbaum Associates Publishers.
- Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism and psychopathy. *Journal of Research in Personality*, 36, 556–563.
- Paulhus, D. L., Buckels, E. E., Trapnell, P. D., & Jones, D. N. (2021). Screening for dark personalities: The short dark tetrad (SD4). *European Journal of Psychological Assessment*, 37, 208–222.
- Richard, F. D., Bond, C. F., Jr., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology quantitatively described. *Review of General Psychology*, 7, 331–363.
- Rogoza, R., & Cieciuch, J. (2019). Structural investigation of the short dark triad questionnaire in polish population. *Current Psychology*, 38, 756–763.
- Schein, C. (2020). The importance of context in moral judgments. *Perspectives on Psychological Science*, 15, 207–215.
- Schönbrodt, F. D., & Perugini, M. (2013). At what sample size do correlations stabilize? *Journal of Research in Personality*, 47, 609–612.
- Semenyina, S. W., & Honey, P. L. (2015). Dominance styles mediate sex differences in dark triad traits. *Personality and Individual Differences*, 83, 37–43.
- Spurk, D., & Hirschi, A. (2018). The dark triad and competitive psychological climate at work: A model of reciprocal relationships in dependence of age and organization change. *European Journal of Work and Organizational Psychology*, 27, 736–751.
- Stockley, P., & Campbell, A. (2013). Female competition and aggression: Interdisciplinary perspectives. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, 368, Article 20130073.
- Thomas, A. G., Jonason, P. K., Blackburn, J. D., Kennair, L. E. O., Lowe, R., Malouff, J., ... Li, N. P. (2020). Mate preference priorities in the east and west: A cross-cultural test of the mate preference priority model. *Journal of Personality*, 88, 606–620.
- Thomson, J. J. (1976). Killing, letting die, and the trolley problem. *The Monist*, 59, 204–217.
- Valdesolo, P., & DeSteno, D. (2007). Moral hypocrisy: Social groups and the flexibility of virtue. *Psychological Science*, 18, 689–690.
- Wee, S., Jonason, P. K., & Li, N. P. (2014). Cultural differences in prioritizing applicant attributes when assessing employment suitability. *European Journal of Work and Organizational Psychology*, 23, 946–956.
- Wetzel, E., & Frick, S. (2020). Comparing the validity of trait estimates from the multidimensional forced-choice format and the rating scale format. *Psychological Assessment*, 32, 239–253.
- Wyckoff, J. P., Asao, K., & Buss, D. M. (2019). Gossip as an intrasexual competition strategy: Predicting information sharing from potential mate versus competitor mating strategies. *Evolution and Human Behavior*, 40, 96–104.