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Personality Aspects and Attitudes About Animal Welfare Legislation

Maxim Trenkenschuh, Christopher J. Hopwood, and Courtney Dillard

Abstract

The US Supreme Court recently debated and upheld a significant piece of farmed animal welfare legislation, Proposition 12, which was broadly supported by Californian voters. The goal of this study was to determine how individual differences in personality are related to attitudes about this legislation. We examined how ten lower-order aspects of the Big Five personality traits were related to Proposition 12 in an American sample (n = 802). The Openness aspect of Openness to Experience, the Withdrawal aspect of Neuroticism, and trait domain Agreeableness were consistently related to support for Proposition 12. Effects were not moderated by political orientation, region, gender, or age. Our results show that personality traits are not only an important factor in general political attitudes about animal welfare, but that they can predict people’s attitudes about particular pieces of animal welfare legislation. Results also highlight the importance of considering lower-order aspects for predicting animal welfare attitudes.

Keywords
Animal welfare; aspects; human–animal interaction; law; personality; Proposition 12

Animal welfare policy advances in part as a response to changes in human attitudes. Personality traits are robust predictors of human attitudes and other important outcomes across a wide range of contexts (Anglim et al., 2020; Buecker et al., 2020; Mammadov, 2022; Roberts et al., 2007; Roberts & Bogg, 2004; Wagner et al., 2015). Personality is an established predictor of political variables including political information seeking (Zhao, 2023), political orientation (Gerber et al., 2011; Sibley et al., 2012), and voting choice (Vecchione et al., 2011), as well as attitudes about more specific social issues, like prejudice (Crawford & Brandt, 2019), social support (Swickert et al., 2010), environmental engagement (Milfont et al., 2012), and trust in COVID-19 policies (Rammstedt et al., 2022). Personality traits, and in particular high levels of Agreeableness and Openness to Experience, also predict positive general attitudes about animal welfare (Amiot & Bastian, 2017; Furnham et al., 2003; Pfeiler & Egloff, 2018).
suggesting that personality might be important for understanding specific attitudes about animal welfare policy (Alonso et al., 2020; Pejman et al., 2019).

In this study, we address two limitations in existing research on the role of personality traits in attitudes about animal welfare policy. First, most studies have sampled personality at the level of broad trait domains; thus, little is known about the particular features of personality that predict animal welfare views. Second, most studies have focused on associations between traits and very general attitudes. What is missing is a better understanding of how personality traits are related to specific policies in a historical and cultural context. Understanding this connection could inform how personality might influence behavior (e.g., voting or consumption). Thus, we examined associations between personality traits and aspects and attitudes about recently debated animal welfare legislation, Proposition 12, which is a California law concerned with the wellbeing of farmed animals whose legality was recently (but subsequent to this study) confirmed by the US Supreme Court. Our population of interest was the United States as a whole. Our sample was not representative, but matched to US census data for gender, age, ethnicity, and state of living and was collected by the data collection service CINT.

**Attitudes About Animal Welfare and Proposition 12**

While most Americans oppose the impact of factory farms on animal welfare (Alonso et al., 2020; Clark et al., 2016), most also still consume animal products produced in this manner (Bozzo et al., 2019; Pejman et al., 2019). To overcome this paradox, legislative regulation of animal welfare is pursued to require farmers to adhere to certain standards. Proposition 12, also known as the Farm Animal Confinement Initiative, was one such piece of legislation that passed in California in 2018 with the aim of improving the welfare of farmed animals. The law sets specific standards for the confinement of veal calves, breeding pigs, and egg-laying hens. It requires that these animals are provided enough space to move around freely, stretch their limbs, and turn around. In addition to setting standards for animal confinement, Proposition 12 also bans the sale of eggs and meat from animals that have been kept in a manner that does not meet these standards. This also means that eggs and meat from animals confined in conditions that do not adhere to the standards set by Proposition 12 cannot be sold in California, even if they are produced in other states. The law thus applies to both in-state and out-of-state producers, making it one of the strictest animal welfare laws in the world. Subsequent to its passage, this regulation was challenged in the US Supreme Court.

Ultimately, the US Supreme Court determined that this legislation is legal. The more important point for this study is that the original Proposition was voted upon by individual Californian voters, whose votes were likely influenced by a range of factors. Such influences might include general political reasons such as the effectiveness of the Proposition 12 campaign, as well as personal factors such as attitudes about animal welfare. Given established evidence that personality traits are related to general political attitudes and more specific attitudes about animal welfare cited above, it stands to reason that personality traits may have also influenced Californians who voted for or against Proposition 12, and that it may influence how the law and the subsequent decision to challenge the law in the Supreme Court is appraised. However, research in this domain rarely goes beyond
general and abstract political or animal welfare attitudes to examine how personality traits are related to the way people think about specific issues.

Thus, the goal of this study was to provide a fine-grained analysis of personality as a predictor of attitudes toward this specific regulation. We examined several specific attitudes about Proposition 12. Our main outcomes were how strongly people endorsed the animal welfare standards set by Proposition 12 and how strongly they endorsed maintaining the regulation. We further examined how persuasive they perceived specific arguments for or against the regulation. For instance, regarding arguments for keeping Proposition 12, we presented one statement relating to the passage of Proposition 12 being a democratic decision and it having a positive impact on animal welfare: “It was the will of the voters to pass Proposition 12 and that should not be overturned by the courts” and “Proposition 12 improves animal welfare.” The other two arguments in favor of Proposition 12 were more economic in nature: “Proposition 12 puts needed restrictions on corporate power” and “Proposition 12 helps small farmers who already give their animals more space.” We decided on these four pro-legislation arguments to capture a variety of views in favor of the regulation that go beyond its impact on animal welfare alone. Regarding the persuasiveness of arguments against Proposition 12, we examined statements that relate to potentially increasing prices and negative effects on consumers: “Overturning Proposition 12 prevents increases in the price of pork products” and “Overturning Proposition 12 provides equity to low income consumers.” To assess arguments beyond the consumer level, we presented two statements: “Overturning Proposition 12 prevents one state from telling others what to do” and “Proposition 12 hurts America’s farmers.” The item content was informed by the expertise of collaborators with a background in animal welfare advocacy.

**Personality Traits and Aspects**

The widely used Big Five model of personality traits is a hierarchical system with broad higher-order dimensions (Digman, 1997) that explain covariance among the five major trait domains (Neuroticism, Extraversion, Openness, Agreeableness, Conscientiousness), each of which can also be split into two aspects per domain (DeYoung et al., 2007), multiple narrower facets (McCrae & Costa, 1999; Schwaba et al., 2020), or even narrower nuances (Mõttus et al., 2017; Stewart et al., 2022). In this study, we focused on the domains and aspects, such that Neuroticism is divided into Withdrawal and Volatility, Agreeableness into Compassion and Politeness, Conscientiousness into Industriousness and Orderliness, Extraversion into Enthusiasm and Assertiveness, and Openness to Experience into Intellect and Openness.

Examining lower-order features of Big Five domains potentiates the discovery of specific patterns of association with attitudes about animal welfare legislation. For instance, it is possible that one aspect of a trait is driving the association with the outcome, while the other is not. In such cases, the domain-level association may be weak even if aspects of the trait carry important information about the outcome. Thus, a fine-grained analysis can lead to a more nuanced understanding of the association between personality structure and animal welfare legislation and allows a more
comprehensive understanding of the factors that influence pro-animal welfare legislation attitudes.

Previous studies have utilized the Big Five Aspect Scale (BFAS) to investigate prosocial behaviors (Ferguson et al., 2019; Fong et al., 2021; Hopwood et al., 2024, 2023; Stahlmann et al., 2023; Zhao et al., 2017a, 2017b) and provide a valuable point of comparison. Thus, examining the aspect level of Big Five traits also allows us to benchmark our findings against prior research and gain a deeper understanding of the relationships between personality and prosocial behaviors. This previous research generally suggests that Compassion drives prosocial behavior more than Politeness (Ferguson et al., 2019; Stahlmann et al., 2023), is a stronger correlate of plant-based diet (Tan et al., 2021), and is a stronger correlate of solidarity to animals (Hopwood et al., 2023). These studies also indicate that the Openness aspect of Openness to Experience is associated more strongly than Intellect with pro-animal (Hopwood et al., 2023) and pro-environmental (Hopwood et al., 2024) attitudes. Based on these findings, we expected the Openness aspect of Openness to Experience to be a stronger predictor than the Intellect aspect of support for Proposition 12 and the Compassion aspect of Agreeableness to be more strongly related to support for Proposition 12 than the Politeness aspect. We also explored how other Big Five traits and aspects are related to specific arguments for and against Proposition 12.

**Moderators**

We further explored whether trait–attitude relations were moderated by several variables with established associations with pro-animal attitudes, with the aim of gaining a better understanding of how individual differences and contextual factors may shape the relationship between personality traits and attitudes toward animals. Women and people living in more urban areas tend to eat less meat and show more pro-animal attitudes (Kalof et al., 1999; Pfeiler & Egloff, 2018). Women also more strongly endorse animal welfare (Randler et al., 2021). Additionally, meat eaters tend to be older and politically more conservative (Pfeiler & Egloff, 2018). Given these differences in pro-animal attitudes across demographic groups, we were interested in whether these factors may moderate the relationship between personality traits and pro-animal attitudes. One such example would be gender. As there is evidence that women score lower on speciesism (Graça et al., 2018), we treated this variable as a moderator because it is possible that variation in agreeableness extends to nonhuman animals. In this case the correlation between agreeableness and support for Proposition 12 could be expected to be higher. Political orientation and region could also act as personality–attitude moderators. For instance, for a political conservative or a person who lives in more rural areas, the object of agreeableness may be animal farmers who could be perceived as harmed by Proposition 12. On the other hand, for a person on the political left, or who lives in a more urban area, the object of agreeableness may be animals and farm workers who could be perceived as benefited by Proposition 12.

Before exploring moderation effects, we also examined whether these demographic variables acted as confounders. For this, we first examined whether there are instances in which these variables were associated with a Big Five trait or aspect, in cases in
which this trait or aspect is associated with one of the two support variables. We identified these cases (see online supplemental Table S1). Second, we calculated partial correlations to test whether the associations between traits and support variables remained significant after controlling for the respective confounder. Partial correlation results are reported in online supplemental Table S2. We did not find any confounding effects of these variables; therefore, we moved on to explore them as potential moderators. We did not preregister any hypotheses regarding these moderators and did not have expectations about how these factors might moderate associations.

Summary

The goal of our study was to examine associations between personality traits and aspects and attitudes about Proposition 12, the decision by the US Supreme Court to hear the case, and arguments for and against this legislation. We preregistered two hypotheses. We preregistered that Agreeableness and its Compassion aspect, as well as Openness to Experience and its Openness aspect, would show the strongest associations with support for animal welfare legislation. We explored associations with other traits and the moderation effects of gender, region, age, and political orientation on personality–attitude associations.

Methods

This research was determined exempt from review by the University of Zurich Ethics Committee in accordance with Swiss law. We initially recruited 1,307 participants via the survey platform CINT. We removed 285 participants who failed one of two attention checks, in line with our preregistration, which is available at https://osf.io/yhm4j/?view_only=c8f183ee19c14b609889414963b0d76a. Materials and data are available at https://osf.io/yg2wq/?view_only=25a4df843b9f4ca0855dab3783d60b61. While our preregistered goal was to conduct analyses on 1,000 participants, we deviated from this number due to data quality and plausibility concerns, reported via a preregistration deviation document: https://osf.io/r57sd?view_only=25a4df843b9f4ca0855dab3783d60b61. We noticed two patterns in our results that were consistent with careless responding and acquiescence: trait intercorrelations were higher than in the literature and traits predicted conceptually opposite attitudes in a similar direction. We therefore took further steps to clean the data. First, to ensure taking out participants with careless responding, we excluded 220 participants with individual response variabilities 1.5 times above or below the interquartile range (Dunn et al., 2018) or with relative speed index values above 2 (Leiner, 2019), resulting in a final sample size of 802. The initial sample was matched to US census data. After applying exclusion criteria, the sample was still matching the US population in regards to gender, ethnicity and state but was slightly older (online supplemental Table S3). In what follows, the demographic distributions are reported, with the US census data in parentheses if applicable. The final sample was composed of 50.9% women (US census: 50.5%), 48.2% men (49.5%), and 0.9% non-binary individuals. The average age was 52.9 (SD = 15.98); 3.6% stated their ethnicity as Asian/Asian-American (6.3%), 11.6% as Black/African-American (13.6%), 1.2% as Native American/First Nation (0.3%), 0.3% as Pacific Islander (0.3%), 79.8% as White/European-American (White alone: 75.5%), and 3.5% as Latino/a (4.1%). All participants indicated their state of residence, which were then aggregated...
into regions: 22.4% lived in a state in the Midwest (20.7%), 19.8% in the Northeast (17.2%), 34.6% in the South (38.4%), and 23.3% in the West (23.7%).

**Measures**

The Big Five Aspect Scale (BFAS; DeYoung et al., 2007) is a measure of personality traits. It consists of 100 items that are answered using a 5-point Likert scale. It measures two aspects of each of the Big Five domains of personality: Neuroticism (Volatility $\omega_t = 0.91$ and Withdrawal $\omega_t = 0.87$), Agreeableness (Compassion $\omega_t = 0.90$ and Politeness $\omega_t = 0.85$), Conscientiousness (Industriousness $\omega_t = 0.89$ and Orderliness $\omega_t = 0.79$), Extraversion (Enthusiasm $\omega_t = 0.87$ and Assertiveness $\omega_t = 0.87$), and Openness to Experience (Intellect $\omega_t = 0.88$ and Openness $\omega_t = 0.80$).

We captured the support for Proposition 12 via four items (e.g., “How supportive are you of providing minimum space requirements for veal calves”) using a 5-point Likert response scale, which ranged from “very unsupportive” to “very supportive” ($\omega_t = 0.95$). Four additional, inverted items were preregistered to be part of this composite measure. Parallel analysis and fit indices from one- and two-factor models of these eight items indicating that they should be aggregated to a different measure. Based on these results, we used the four inverted items to capture the support for keeping Proposition 12 (e.g., “How supportive would you be of the Supreme Court’s decision to overturn this case?”), which also used a 5-point Likert response scale, which ranged from “very unsupportive” to “very supportive” ($\omega_t = 0.79$).

We captured individual reasons for support and overturn of Proposition 12 with eight items (e.g., “It was the will of the voters to pass Proposition 12 and that should not be overturned by the courts” and “Overturning Proposition 12 provides equity to low income consumers”; see preregistration). Answers were provided on a 5-point Likert scale, which ranged from “very unpersuasive” to “very persuasive.” We examined each of these reasons separately.

**Analyses**

Analyses were conducted in R (R Core Team, 2021) using the lavaan package (Rosseel, 2012). We person-centered scores for all variables to correct for social desirability bias (Rammstedt et al., 2013; Soto & John, 2017). We fitted measurement models in which BFAS items loaded on separate aspects for each trait domain. We included a method factor with paths to all reverse-coded items in these models. We next included regression paths to each support variable in separate models (i.e., one model for each trait and both support variables, $5 \times 2 = 10$ total models). We compared the fit of models in which these two regression paths were either freed to vary or constrained to equality, using a chi-square test ($df = 1$). We interpreted the domain-level correlation for models in which the data fit better when the paths were constrained. We interpreted the aspect-level regression paths for models in which the data fitted better when the paths were freed to vary. We used a $p$-value of 0.05 for statistical tests of trait–attitude associations and focused interpretation on effect sizes.

We included gender (dichotomous male or female), region (dummy coded as urban, suburban, and rural), median-centered age, and political orientation centered at the
absolute midpoint of the raw scale (i.e., neither conservative nor liberal), as moderators of
trait–attitude associations. For categorical moderators, we fitted multigroup models and
interpreted moderation if constrained models fit the data better than unconstrained
models using the chi-square test ($df = 1, p < 0.05$). For continuous moderators, we
entered traits, moderators, and the moderator × trait interaction terms to predict attitudes
toward Proposition 12 one trait at a time. We interpreted significant moderation using a $p$-
value of 0.05 for the interaction term.

**Results**

Table 1 shows descriptive data for the outcome variables as well as differences across gender,
ethnicity, geography, and dietary groups. Bivariate correlations among the main study vari-
ables are presented in online supplemental Tables S4 and S5. We fitted measurement models
for each of the trait domains. The fits of these models were all acceptable, with RMSEA values
ranging from 0.052 to 0.062 and CFI values ranging from 0.890 to 0.939 (Table 2).

To examine whether attitudes about Proposition 12 were differentially related to
aspects of the same domain, we compared models in which the regression paths from
both support variables were constrained to be equal for both aspects of each trait to
models in which these paths were freed to vary across personality aspects. We fitted
these models one trait domain at a time. Results varied by trait domain (Table 2). Open-
ness was the only domain for which models suggested different patterns of association
across aspects for both of the main outcomes. Neuroticism showed a significant differ-
ence between aspects regarding Support for Keeping Proposition 12. There was no signifi-
cant difference between aspects in regard to our main outcomes for Agreeableness,
Conscientiousness, or Extraversion.

As predicted, the Openness aspect of Openness to Experience correlated both with
support for Proposition 12 and support for keeping it (Table 3). Also as predicted, there
was no association between these variables and the Intellect aspect. We did not find evi-
dence supporting our second preregistered hypothesis, that the Compassion aspect of
Agreeableness would predict both support variables. Instead, the Agreeableness
domain factor predicted support for Proposition 12 and support for keeping Proposition
12. The Withdrawal aspect of Neuroticism was also related to higher Support for Keeping
the legislation, which mirrors findings by Hopwood et al. (2023), in which Withdrawal was
related to more positive attitudes toward animals ($r = 0.169, p < 0.001$). Interestingly,
Extraversion, which was identified as a pro-animal welfare correlate in prior work
(Furnham et al., 2003), was associated with reduced Support for Keeping Proposition
12. These results show that personality traits are related to specific attitudes about
animal welfare legislation and that a fine-grained approach is able to uncover differential
associations on the aspect level that could get lost at the domain level.

**Personality Aspects and Specific Arguments for or Against Proposition 12**

We next focused on how personality is related to arguments for and against keeping
Proposition 12 (e.g., “It was the will of the voters to pass Proposition 12 and that
should not be overturned by the courts” and “Overturning Proposition 12 provides
Table 1. Means and standard deviations of outcomes split by demographics.

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<th>Demographic</th>
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<th>SD</th>
<th>Keep M</th>
<th>SD</th>
<th>Pro 1 M</th>
<th>SD</th>
<th>Pro 2 M</th>
<th>SD</th>
<th>Pro 3 M</th>
<th>SD</th>
<th>Pro 4 M</th>
<th>SD</th>
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<th>Contra 3 M</th>
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<td>3.06</td>
<td>0.98</td>
<td>3.72</td>
<td>1.10</td>
<td>3.94</td>
<td>1.05</td>
<td>3.64</td>
<td>1.11</td>
<td>3.80</td>
<td>1.06</td>
<td>3.03</td>
<td>1.14</td>
<td>3.06</td>
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<td>3.04</td>
<td>1.19</td>
<td>2.94</td>
<td>1.23</td>
</tr>
<tr>
<td>Suburban</td>
<td>48.1</td>
<td>3.89</td>
<td>1.07</td>
<td>3.17</td>
<td>0.95</td>
<td>3.71</td>
<td>1.13</td>
<td>3.95</td>
<td>1.01</td>
<td>3.58</td>
<td>1.13</td>
<td>3.85</td>
<td>1.02</td>
<td>2.96</td>
<td>1.13</td>
<td>2.87</td>
<td>1.09</td>
<td>2.97</td>
<td>1.13</td>
<td>2.96</td>
<td>1.20</td>
</tr>
<tr>
<td>Rural</td>
<td>25.8</td>
<td>3.73</td>
<td>1.12</td>
<td>3.05</td>
<td>1.00</td>
<td>3.56</td>
<td>1.16</td>
<td>3.79</td>
<td>1.14</td>
<td>3.41</td>
<td>1.19</td>
<td>3.66</td>
<td>1.08</td>
<td>3.02</td>
<td>1.18</td>
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<td>3.17</td>
<td>1.18</td>
<td>2.96</td>
<td>1.21</td>
</tr>
<tr>
<td>Dietary identity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veg*an/</td>
<td>22.7</td>
<td>3.81</td>
<td>1.10</td>
<td>3.18</td>
<td>1.01</td>
<td>3.77</td>
<td>1.08</td>
<td>3.92</td>
<td>0.97</td>
<td>3.62</td>
<td>1.09</td>
<td>3.85</td>
<td>0.94</td>
<td>2.88</td>
<td>1.10</td>
<td>2.88</td>
<td>1.07</td>
<td>2.90</td>
<td>1.12</td>
<td>2.74</td>
<td>1.23</td>
</tr>
<tr>
<td>Flexitarian</td>
<td>77.3</td>
<td>3.85</td>
<td>1.08</td>
<td>3.09</td>
<td>0.96</td>
<td>3.64</td>
<td>1.15</td>
<td>3.90</td>
<td>1.08</td>
<td>3.53</td>
<td>1.16</td>
<td>3.77</td>
<td>1.08</td>
<td>3.03</td>
<td>1.15</td>
<td>2.97</td>
<td>1.10</td>
<td>3.08</td>
<td>1.17</td>
<td>3.02</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Note: “Support” = Support for Proposition 12, “Keep” = Support for keeping Proposition 12. “Pro 1 to 4” capture arguments in favor of, “Contra 1 to 4” capture arguments against, Proposition 12.
## Table 2. Fit statistics for measurement and regression models.

<table>
<thead>
<tr>
<th>Measurement Model</th>
<th>Neuroticism</th>
<th>Agreeableness</th>
<th>Conscientiousness</th>
<th>Extraversion</th>
<th>Openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>df</td>
<td>161</td>
<td>158</td>
<td>159</td>
<td>160</td>
<td>161</td>
</tr>
<tr>
<td>χ²</td>
<td>552.849</td>
<td>505.725</td>
<td>653.945</td>
<td>636.401</td>
<td>550.058</td>
</tr>
<tr>
<td>RMSEA [90% CI]</td>
<td>0.055 [0.050, 0.060]</td>
<td>0.052 [0.047, 0.058]</td>
<td>0.062 [0.057, 0.067]</td>
<td>0.061 [0.056, 0.066]</td>
<td>0.055 [0.050, 0.060]</td>
</tr>
<tr>
<td>CFI</td>
<td>0.938</td>
<td>0.939</td>
<td>0.890</td>
<td>0.907</td>
<td>0.904</td>
</tr>
</tbody>
</table>

### Regression Models

<table>
<thead>
<tr>
<th>Δχ²</th>
<th>p</th>
<th>Δχ²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Outcomes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support for Proposition 12</td>
<td>0.025</td>
<td>&lt; 0.001</td>
<td>0.026</td>
</tr>
<tr>
<td>Arguments for keeping Proposition 12</td>
<td>0.141</td>
<td>0.974</td>
<td>0.026</td>
</tr>
<tr>
<td>Arguments against Proposition 12</td>
<td>0.214</td>
<td>0.113</td>
<td>0.214</td>
</tr>
</tbody>
</table>

Note: Estimates listed under Regression Models indicate the results of the chi-square tests between free and constrained models. Bolded values indicate p < 0.05.
Table 3. Associations between personality traits and attitudes about Proposition 12.

<table>
<thead>
<tr>
<th>Main Outcomes</th>
<th>Neuroticism</th>
<th>Agreeableness</th>
<th>Conscientiousness</th>
<th>Extraversion</th>
<th>Openness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Withdrawal</td>
<td>Volatility</td>
<td>Compassion</td>
<td>Politeness</td>
<td>Industriousness</td>
</tr>
<tr>
<td>99% CI</td>
<td>[-0.134, 0.035]</td>
<td>[0.105, 0.267]</td>
<td>[-0.137, 0.170]</td>
<td>[-0.163, 0.009]</td>
<td>[-0.124, 0.062]</td>
</tr>
<tr>
<td>p</td>
<td>0.251 &lt; 0.001</td>
<td>0.830</td>
<td>0.078</td>
<td>0.513 &lt; 0.001</td>
<td></td>
</tr>
<tr>
<td>Support for Proposition 12</td>
<td>0.240</td>
<td>-0.120</td>
<td>0.286</td>
<td>0.048</td>
<td>-0.120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arguments for Proposition 12</th>
<th>Will of the voters</th>
<th>Improvement of animal welfare</th>
<th>Restriction of corporate power</th>
<th>Helps small farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>99% CI</td>
<td>[0.082, 0.402]</td>
<td>[-0.275, 0.036]</td>
<td>[0.036, 0.132]</td>
<td>[-0.217, -0.023]</td>
</tr>
<tr>
<td>p</td>
<td>0.003 0.132</td>
<td>&lt; 0.001</td>
<td>0.262</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Arg. for Proposition 12 | Will of the voters | Improvement of animal welfare | Restriction of corporate power | Helps small farmers |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>99% CI</td>
<td>[0.052, 0.351]</td>
<td>[-0.332, -0.040]</td>
<td>[0.121, 0.278]</td>
<td>[-0.063, 0.115]</td>
</tr>
<tr>
<td>p</td>
<td>0.008 0.012</td>
<td>&lt; 0.001</td>
<td>0.564</td>
<td>0.038</td>
</tr>
</tbody>
</table>

Arg. for Proposition 12 | Will of the voters | Improvement of animal welfare | Restriction of corporate power | Helps small farmers |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>99% CI</td>
<td>[0.116, 0.414]</td>
<td>[-0.445, -0.155]</td>
<td>[0.169, 0.323]</td>
<td>[-0.035, 0.142]</td>
</tr>
<tr>
<td>p</td>
<td>&lt; 0.001</td>
<td>0.239</td>
<td>0.049</td>
<td>0.233</td>
</tr>
</tbody>
</table>

Arg. for Proposition 12 | Will of the voters | Improvement of animal welfare | Restriction of corporate power | Helps small farmers |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>99% CI</td>
<td>[0.069, 0.368]</td>
<td>[-0.392, -0.102]</td>
<td>[0.084, 0.243]</td>
<td>[-0.052, 0.101]</td>
</tr>
<tr>
<td>p</td>
<td>0.004 0.001</td>
<td>&lt; 0.001</td>
<td>0.533</td>
<td>0.006</td>
</tr>
</tbody>
</table>

Arg. for Proposition 12 | Will of the voters | Improvement of animal welfare | Restriction of corporate power | Helps small farmers |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>99% CI</td>
<td>[0.121, -0.198]</td>
<td>[0.0219]</td>
<td>0.015</td>
<td>0.180</td>
</tr>
<tr>
<td>p</td>
<td>0.112 0.008</td>
<td>&lt; 0.001</td>
<td>0.705</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>
Arguments against Proposition 12

<table>
<thead>
<tr>
<th></th>
<th>Estimate 1</th>
<th>Estimate 2</th>
<th>Estimate 3</th>
<th>Estimate 4</th>
<th>Estimate 5</th>
<th>Estimate 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing price</td>
<td>-0.115</td>
<td>-0.159</td>
<td>0.139</td>
<td>-0.137</td>
<td>-0.014</td>
<td>0.020</td>
</tr>
<tr>
<td>99% CI</td>
<td>[-0.191, -0.039]</td>
<td>[-0.239, -0.079]</td>
<td>[0.001, 0.278]</td>
<td>[-0.280, 0.007]</td>
<td>[-0.089, 0.060]</td>
<td>[-0.072, 0.112]</td>
</tr>
<tr>
<td>p</td>
<td>0.003</td>
<td>&lt; 0.001</td>
<td>0.050</td>
<td>0.062</td>
<td>0.708</td>
<td>0.675</td>
</tr>
<tr>
<td>Equity to low-income</td>
<td>-0.120</td>
<td>-0.115</td>
<td>0.004</td>
<td>0.078</td>
<td>-0.0146</td>
<td></td>
</tr>
<tr>
<td>consumers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99% CI</td>
<td>[-0.196, -0.045]</td>
<td>[-0.195, -0.034]</td>
<td>[-0.073, 0.081]</td>
<td>[-0.008, 0.163]</td>
<td>[-0.235, -0.056]</td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>0.002</td>
<td>0.005</td>
<td>0.925</td>
<td>0.077</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>One state forcing others</td>
<td>-0.179</td>
<td>-0.079</td>
<td>0.049</td>
<td>0.073</td>
<td>0.109</td>
<td>-0.222</td>
</tr>
<tr>
<td>99% CI</td>
<td>[-0.254, -0.105]</td>
<td>[-0.153, 0.010]</td>
<td>[-0.028, 0.126]</td>
<td>[-0.013, 0.158]</td>
<td>[0.017, 0.201]</td>
<td>[-0.317, -0.126]</td>
</tr>
<tr>
<td>p</td>
<td>&lt; 0.001</td>
<td>0.087</td>
<td>0.210</td>
<td>0.095</td>
<td>0.020</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>It hurts America’s farmers</td>
<td>-0.099</td>
<td>-0.178</td>
<td>0.110</td>
<td>0.001</td>
<td>0.109</td>
<td>-0.106</td>
</tr>
<tr>
<td>99% CI</td>
<td>[-0.175, -0.022]</td>
<td>[-0.300, -0.056]</td>
<td>[-0.018, 0.239]</td>
<td>[-0.076, 0.078]</td>
<td>[0.008, 0.209]</td>
<td>[-0.204, -0.008]</td>
</tr>
<tr>
<td>p</td>
<td>0.012</td>
<td>0.004</td>
<td>0.093</td>
<td>0.980</td>
<td>0.034</td>
<td>0.034</td>
</tr>
</tbody>
</table>

Note: Instances where the constrained model did not significantly differ from the free model are indicated by only one estimate across both aspects. Bolded values indicate \( p < 0.05 \). Estimates are standardized.
equity to low income consumers”). We used the same strategy as above: first using a model fitting approach to test whether the aspect level provided nuanced information and then computing associations, and then estimating effect sizes at the domain or aspect level depending on which model fitted best.

In general, we found a very similar pattern as with general support for Proposition 12. The most consistent results were again found for Openness to Experience (Figure 1). The aspects of the Openness to Experience domain had different associations for seven out of the eight arguments. Openness was the strongest predictor out of all domains and aspects, predicting all four arguments in favor of Proposition 12. It was also negatively associated with arguments against the legislation. In the case where the aspects did not significantly differ, domain Openness also predicted lower endorsement of an anti-legislation argument. Interestingly, in some cases Intellect was associated with anti-legislation views.

The Agreeableness domain was positively related to all four arguments in favor of, and two arguments against, Proposition 12, which mirrors the results regarding the main outcomes and underlines the role of Agreeableness in pro-animal legislation attitudes. The Compassion aspect, but not the Politeness aspect, was also negatively related to the argument that Proposition 12 could hurt America’s farmers.

There was a consistent differentiation between domain and aspect level effects for Neuroticism. While the Withdrawal aspect predicted perceived persuasiveness of pro-legislation arguments, the Volatility aspect predicted endorsement of anti-legislation arguments. In contrast, Neuroticism aspects did not significantly differ in regard to

![Figure 1. Associations between Openness aspects and attitudes toward Proposition 12.](image)

Note: “Pro 1 to 4” capture arguments in favor of, “Contra 1 to 4” capture arguments against, Proposition 12. Separate bars for the aspects are only depicted in instances where the constrained model did significantly differ from the free model (see Table 2). *p < 0.05, **p < 0.01, ***p < 0.001.
arguments against the legislation. For these arguments, the Neuroticism domain was a consistent negative predictor, suggestive of more pro-legislation views.

The Extraversion domain was negatively associated with the pro-Proposition 12 arguments that it was the will of the voters and that it could improve animal welfare. For the arguments that Proposition 12 could restrict corporate power and help small farmers, the Enthusiasm aspect was a positive correlate and the Assertiveness aspect was a negative correlate. Extraversion was unrelated to all but one of the arguments against Proposition 12: enthusiastic people were more likely to agree that it could hurt farmers whereas assertive people were more likely to disagree. With one minor exception, Conscientiousness was not related to arguments for or against Proposition 12. Extraversion had a complicated pattern of associations.

**Moderators of the Trait–Attitude Associations**

Next, we tested whether age, gender, region, or political orientation moderated the associations between personality traits and the main study outcomes, support for Proposition 12 and support for keeping Proposition 12. We treated gender and region as categorical variables and age and political orientation as continuous variables. We did not find consistent evidence that any of these variables moderated trait–attitude associations (see online supplemental Tables S6 and S7).

**Discussion**

Personality traits predict a wide variety of outcomes, including political attitudes and attitudes toward animal welfare. However, the knowledge about the relation between personality and animal welfare has been largely limited to associations between broader Big Five domains and general animal welfare attitudes. This study expands this line of research by using a more fine-grained approach. First, we focused on Big Five aspects to disentangle effects that would be hidden if only the aggregated domains are considered. Second, we focused on a specific piece of animal welfare legislation – Proposition 12 – instead of general attitudes, allowing to make predictions about an important and contemporary real-world outcome.

The most consistent effect was for the Openness aspect of Openness to Experience, which was robustly associated with pro-legislation attitudes, in line with our first hypothesis. Openness was not only associated with support for the legislation and its upholding but also consistently related to the endorsement of arguments in favor and rejection of arguments against it. Examining only the trait domain and attitude associations would have indicated that more open people are more likely to support animal welfare legislation. However, it would have weakened the association and masked the association driven by the Openness aspect and that in some cases the Intellect aspect actually shows the opposite pattern.

Regarding Agreeableness, we expected the Compassion aspect to drive associations with positive attitudes toward animal welfare legislation. While the Agreeableness domain was robustly associated with a pro-legislation outlook, its aspects only differed in regard to one argument against Proposition 12. Overall, results indicate that agreeable
people tend to be more supportive of animal welfare legislation and that this effect is not driven primarily by either motives to be compassionate or polite.

We observed a surprisingly robust association between domain Neuroticism, particularly the Withdrawal aspect, and pro-legislation attitudes. A positive association between Withdrawal and attitudes toward animals was also found by Hopwood et al. (2023). This finding may suggest that people who are prone to internalizing negative emotions (Lyon et al., 2021) may be particularly sympathetic to the plight of farmed animals, and this may explain support for legislation designed to protect them. Volatility on the other hand was associated with less sympathetic reasons to support Proposition 12, possibly because aggressive people are less sympathetic toward animals (Hopwood & Bleidorn, 2021).

**Personality, Prosocial and Moral Behavior, and Animal Welfare Legislation**

Variation in prosocial behavior is relatively stable across different situations and time (Engel, 2011; Peysakhovich et al., 2014); thus, personality traits provide a useful lens through which to understand the kinds of people who are likely to be prosocial and moral (Stahlmann et al., 2023; Sun & Goodwin, 2020; Thielmann et al., 2022). In general, the most consistent Big Five predictors of prosocial or moral behavior in previous research have been Agreeableness and Openness to Experience (Thielmann et al., 2020). This work has largely focused on indicators of highly general prosocial behaviors (Furr et al., 2022; Stahlmann et al., 2023) or measures of specific moral tendencies operationalized by economic games (Thielmann et al., 2020; Zhao et al., 2017a, 2017b). By focusing on attitudes about legislation that is highly contextualized in a specific time and place, this research is situated somewhat between these two approaches. The general consistency of findings across these kinds of studies adds confidence regarding the robust ability of traits like Openness and Agreeableness to predict moral attitudes and behaviors.

This research also adds specificity to previous research on associations between personality traits and positive attitudes toward animals. Studies focusing on specific patterns of behavior such as plant-based diet (Holler et al., 2021; Pfeifer & Egloff, 2018; Tan et al., 2021) and general attitudes (Amiot & Bastian, 2017; Hopwood et al., 2024) tend to point to Openness to Experience and Agreeableness as the most important trait predictors of pro-animal attitudes. Studies that have distinguished the aspects of trait domains have tended to find that the Openness aspect of Openness to Experience drives domain-level associations with pro-animal attitudes (Hopwood et al., 2024; Tan et al., 2021). Again, the consistency of findings points to the robust importance of these traits for understanding the kinds of people who are likely to be sympathetic to the plight of nonhuman animals.

It is intuitive that agreeable people and particularly those who are compassionate would support animals. Such people would tend to experience empathy for others and care about their wellbeing. Open people tend to be on the political left (Klein et al., 2019), and people on the political left tend to be more concerned with the welfare of others (Amiot & Bastian, 2015; Grünhage & Reuter, 2021). Within the Openness domain, the Openness facet has to do with trying new things and being open to new ideas, including being willing to challenge social norms. In contrast, the Intellect domain has to do with intellectual curiosity and general interest in abstract ideas. It follows that Openness
drives the association between the Openness domain and the tendency of the left to be more in favor of social change that benefits those with less power, as well as associations with pro-animal attitudes.

Previous research also often shows support for other traits in predicting certain prosocial outcomes, as we did for the Withdrawal aspect of Neuroticism and Extraversion here. This could be due to sampling error, or it may be that such traits have particular relevance for certain kinds of outcomes, as opposed to moral attitudes more generally. This is an important subject for future research.

This study not only informs prosociality research but may also be useful for informing animal advocacy or law. By understanding how personality traits are expressed in prosocial behavior in different contexts, we can develop more effective strategies for promoting cooperation and reducing exploitation (Thielmann et al., 2022). For instance, this kind of work could help animal rights organizations by providing hypotheses about how to target their efforts to maximize resources, for instance by tailoring messages based on the personality traits of their target audience.

Limitations and Future Directions

Because this study used a convenience sample, inferences cannot be made about rates of support for this legislation in the general American population based on the rates observed in this study. Moreover, associations between attitudes and personality may not generalize to the American population. Because the study focused on American adults with demographic features matched to the census, these results may also not generalize to specific segments of the American population or people from other nations and cultures. All data were self-reported and potentially subject to related biases, including monomethod inflation of effect sizes. As such, effects should be interpreted in terms of the range observed in similar previous research. Our outcome measures were created for this particular study and some were assessed using single items. While this was necessary given that we focused on a specific piece of legislation and no other measures were available, the reliability and validity of these measures are not established.

A large number of participants produced problematic data, and although this was dealt with via common procedures, it may call into question the data that were retained. We therefore emphasize the need for replication with a higher quality sample. However, the consistency of these results with predictions and previous research is reassuring.

Future research should explore whether even greater nuance can be obtained by examining lower-order facets and nuances or with different trait frameworks such as the HEXACO model (Columbus, 2021; Hilbig et al., 2014). Future studies would also benefit from a more ecologically valid way to capture political attitudes in real-life, such as actual votes. Longitudinal or experimental research could help determine the mechanisms that underlie personality associations with pro-animal attitudes. Related to this point, the recent increase in personality intervention studies raises the possibility that purposeful personality change could have an effect on attitudes about animals. Research of this kind could help establish the real world importance of personality traits for public policy (Bleidorn et al., 2019).
Conclusion

This study shows that personality traits are associated with people’s attitudes toward specific animal welfare legislation. In particular, people who are more open, more agreeable, and who experience more withdrawn negative emotions are more likely to support animal welfare policies and be more sympathetic to various arguments about such policies. Results suggest that these associations between personality and animal rights attitudes do not depend on factors like political orientation, region, gender, or age. These findings build on previous research regarding the relevance of personality traits for pro-social behavior and could help guide advocacy and policy efforts in the area of animal welfare.

Notes

1. While we preregistered the effect on only one aggregated outcome, we conducted an exploratory factor analysis and decided to split the measure into two. The R script and results of the method are provided in the online supplemental material. The main fit indices from the factor analysis are provided in the methods section.
2. Fit indices for the two models: 1-factor model: RSMR = 0.15, TLI = 0.627, RMSEA = 0.33, BIC = 1159.52. 2-factor model: RSMR = 0.03, TLI = 0.953, RMSEA = 0.12, BIC = 43.54.

Disclosure Statement

No potential conflict of interest was reported by the first two authors. The third author is employed by Mercy for Animals, a non-profit organization dedicated to ending factory farming.

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