Licence to Kill? Investigating the Moral Licensing Effect of Meat Reducing Petitions on Personal Meat Avoidance Pledges

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Abstract

This paper investigated the possibility of moral licensing in the context of meat reduction. Specifically, we investigated the impact of petition-signing on personal commitment to meat reduction. In two studies, participants were assigned to a treatment condition, in which they had the opportunity to sign a petition to restrict meat in public sector catering, or a control condition, where they did not see the petition. All participants then indicated whether they would personally pledge a meat-free week. We compared personal pledge rates between petition-signers, non-signers, and the control group. In Study 1 (n = 166) we found that petition-signers were significantly more likely than the non-signers to pledge a meat-free week but were not significantly different from the control group. The non-signers, however, were significantly less likely to pledge a meat-free week than the control group. In Study 2 (n = 435) we added measures of meat attachment and environmental attitudes as covariates. We found that, in a model without covariates petition non-signing significantly predicted non-pledging. In a model with covariates, meat attachment significantly predicted pledging likelihood, but petition non-signing remained a significant predictor of pledging. These results show no moral licensing effects. In fact, we observe consistency between petition-signing and pledge-taking, though this is likely attributable to stable underlying attitudes rather than a consistency effect per se. Animal advocates should target advocacy requests towards those who are most likely to have positive underlying attitudes and avoid those who are likely to refuse.

Keywords

moral licensing, moral consistency, meat reduction, animal advocacy, social psychology

Non-Technical Summary

Background

There are many efforts to pressure corporations or governments to improve animal welfare. Numerous individuals support such campaigns for example by signing petitions or by donations. Some animal advocates may worry that the existence of such avenues for "institutional advocacy" might reduce personal commitment to meat reduction due to "moral licensing". Moral licensing occurs when somebody engages in good behaviour, and later uses this as a licence to engage in some corresponding bad behaviour. Could it be, then, that supporting such campaigns actually increase individual meat consumption via moral licensing?

Why was this study done?

This study was done to investigate whether avenues for institutional advocacy in fact do reduce personal commitment to meat reduction.

What did the researchers do and find?

In two experiments, we investigated whether signing a meat reduction petition would reduce the rate of subsequently taking a meat-free pledge. We found no evidence of a moral licensing effect. There was some evidence of "moral consistency" – that is, people tended to be consistent with both decisions such that people were more inclined to take the meat-free pledge if they signed the petition, not less likely. However, this was likely driven by stable underlying attitudes – being less attached to meat predicted both petition-signing and pledge-taking.

What do these findings mean?

These findings mean that avenues for institutional advocacy do not reduce personal commitment to meat reduction. Furthermore, both requests should target groups who are most likely to share the underlying values, and avoid those who are not likely to share the values.

It is becoming increasingly important to reduce animal product consumption in the interests of the environment, public health and animal welfare. Whilst animal products contribute to about 57% of food emissions and use about 83% of global farmland, they only provide 37% of humanity's protein and 18% of calories (Poore & Nemecek, 2018). This makes animal products an inefficient food source and leads to meat-eaters generally having twice the dietary emissions of vegans (Scarborough et al., 2014).

Furthermore, animal agriculture is a threat to public health. In particular, unhygienic environments and bad animal handling have been identified as channels of cross-species

virus transmission and viral mutations (Aiyar & Pingali, 2020). Epidemic risks are also increased by meat production both directly (through increased contact with farmed and wild animals) and indirectly (such as through climate change and water and biodiversity loss) (Espinosa et al., 2020). Over twice as many medically important antibiotics are used for animals than humans in the USA (O'Neill, 2015), making animal products an important cause of antibiotic resistance. Animals in the food chain are therefore a grave risk to public health.

In terms of animal welfare, modern animal agriculture inflicts great harm. Animals are considered sentient as they have a central nervous system, feel pain and display pain and fear avoidance behaviours. Additionally, they have the capacity to learn skills and work towards desirable outcomes, as well as plan and autobiographically reflect in order to pursue long-term aims (Špinka, 2019). However, globally, over 90% of farmed animals are kept on factory farms (Anthis & Reese-Anthis, 2022) where they cannot conduct their natural behaviours, experience frequent pain and stress, and violent methods are often used to control them (D'Silva, 2006). Therefore, animal farming is responsible for widespread and extreme suffering.

Moral Licensing Effect

It is well-established that eating meat is a frequent cause of cognitive dissonance and can inspire an impressive degree of motivated reasoning (Rothgerber, 2020). People are motivated both to continue eating animals, and to maintain a positive self-image with respect to cruelty to animals (Loughnan & Davies, 2020). In service of this end, people are motivated to reach for credible justifications for meat consumption.

One such justification might be sought through moral licensing. Moral licensing occurs when somebody engages in good behaviour, and later uses this as a licence to engage in some corresponding bad behaviour. The effect has been observed experimentally in a wide range of situations: Khan and Dhar (2006) found that merely imagining helping a foreign student decreased the subsequent share of a $2 reward participants assigned to charity. Likewise, Susewind and Hoelzl (2014) observed that participants who brainstormed about an idea which would benefit others subsequently assigned themselves (rather than an anonymous partner) a greater share of a €6 reward, whilst Clot et al. (2014) found that imagining performing a good deed increased the chances that participants would cheat for a higher payoff. In the case of meat consumption, it may be the case that meat-eaters with dissonance might be less likely to alter their own meat consumption if they are offered some easier way of contributing towards a solution.

Indeed, this could be a concern for advocates of institutional change for animals. It is now broadly agreed in the effective animal advocacy community that focusing on institutional change is a more effective way of helping animals than focusing on individual change (Sentience Institute, 2022). Accordingly, there are many active efforts to pressure corporations to change their welfare policies and increase their plant-based

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offerings, and to petition governments to improve animal welfare laws. These campaigns have been estimated to be extremely cost-effective, with some estimates that a one-dollar donation to such efforts can spare up to 120 years of chicken suffering (Šimčikas, 2022). However, one might reasonably worry that the existence of these campaigns, which afford individuals a low-effort way of demonstrating their support for animal welfare, could actually increase meat consumption via moral licensing.

However, the moral licensing effect has proven difficult to replicate. For example, Urban et al. (2019) failed to replicate Mazar and Zhong's (2010) findings of increased dishonesty in participants who had engaged in pro-environmental behaviour (buying more 'green' products). Blanken et al. (2014) also failed to replicate findings of participants donating less and behaving less cooperatively in a hypothetical task after using positive trait words to write a story about themselves.

A 2015 meta-analysis of 91 studies and 7,397 participants estimated the moral licensing effect to have a small-to-medium Cohen's d of 0.31 (Blanken et al., 2015). That said, the authors also found that there was a considerable range of effect sizes found by different studies, many of which were from studies with small sample sizes, possibly resulting in their effect sizes to be overestimated. They also found a significant publication bias whereby smaller effects were more likely to remain in unpublished papers, suggesting that the effect may not be straightforward.

Moral Consistency (Spillover) Effect

Conversely, it has been argued that engaging in relatively low-effort good behaviours may actually lead to further higher-effort good behaviour via a moral consistency, or spillover, effect. In this case, engaging with relatively low-effort ways to indicate support for animal welfare may actually increase, rather than decrease, individuals' subsequent propensity to reduce their meat consumption. These opposite mechanisms have important implications for animal advocates in the context of promoting low-effort ways to support animals, e.g., petitions.

The impact of moral behaviour on subsequent behaviour may differ given different parameters. Bauer and Menrad (2020) observed that priming participants with an 'organic offer' influenced their subsequent likelihood of carbon offsetting, and that this influence was moderated by a number of factors. Where participants employed an outcome-based mindset, they were less likely to carbon offset following the organic offer (moral licensing), whereas those using a rule-based mindset were more likely to carbon offset following the organic offer (moral consistency) if they were also high in environmental values.

Consistent with this, Mullen and Monin (2016) reviewed studies on moral licensing versus moral consistency, and observed that individuals are more likely to exhibit moral consistency when they reflect on the abstract values underpinning each behaviour, whereas they are more likely to exhibit moral licensing when they reflect on the concrete

achievements of the first behaviour, as long as the second behaviour does not threaten an identity they value.

Further, Barak-Corren et al. (2018) found that people were more likely to make consistent judgments with respect to similar moral dilemmas when they were presented conjointly than when they were presented separately. When considering the dilemmas together, participants were more likely to be consistent with either a utilitarian or a deontological view, whereas they were more likely to be inconsistent when considering them apart.

In the context of meat reduction, somebody who indicates support for a meat-reduction petition could either (a) think that they have now done enough to contribute to meat reduction, and therefore don't need to reduce their own consumption (moral licensing), or (b) view themselves as being in support of meat reduction, and therefore ought to reduce their own consumption (moral consistency).

Carrico et al. (2018) found some evidence of moral consistency for those asked to reduce their meat consumption for environmental reasons. Compared to a control, this group experienced an increase in environmental concern, which was in turn linked to an increased likelihood of donating to a relevant charity. It is notable that, in this case, initial personal action increased subsequent support for institutional action; it is unclear whether initial support for institutional action would have the same impact on subsequent personal action. If this is the case for animal-related petitions and other lobbying efforts, then these relatively low-effort ways to indicate support for animals may have the added benefit of decreasing meat consumption via moral consistency or spillover effects.

Such decisions could also be consistent as a result of stable underlying values driving both. For example, in the context of meat reduction, support for institutional change and commitment to personal change might be consistent on the basis of an underlying attachment to eating meat, and/or concern for animal welfare or the environment. In particular, we might expect these outcomes to covary with meat attachment (Graça et al., 2015) and pro-environmental attitudes (Milfont & Duckitt, 2010).

Study 1

Method

In this study, we sought to investigate the impact of signing (or not signing) a petition to support a meat-free day in public institutions on subsequent rates of pledging a personal meat-free week. To this end, we compared both signers and non-signers of a petition to a control group who saw no petition in terms of their propensity to pledge a meat-free week. The study protocol (which was published via the Open Science Framework ahead

of data collection but not formally registered) as well as survey instruments, datasets, syntax for analysis, and other materials are available as Supplementary Materials.

Participants

Participants were recruited from Prolific and paid £0.50 for completing the survey online via Qualtrics. We aimed for a sample size which would comfortably meet Cohen's (1992) threshold of $N = 107$ for detecting a medium effect size ($w = 0.30$) at $p = .05$ given 2 degrees of freedom after removals.

We recruited a total of 205 participants from the UK. As per our study protocol, we removed participants who (a) were under the age of 18, (b) did not give their consent to take part, (c) failed to complete a CAPTCHA,[1] or (d) failed an attention check question. This resulted in 1 removal. In addition, we removed participants who (e) were already pescetarian, vegetarian, or vegan, which led to a further 31 removals, and (f) participants who did not complete the survey, which led to a further 5 removals. These exclusions were not in our study protocol, but we decided to add them to exclude incomplete responses, and because the outcome measure (pledging a meat-free week) is not applicable to people who already do not eat meat. The final sample consisted of 166 participants. Although the sample overall was not large, it comfortably met Cohen's (1992) criteria of $N = 107$ for 80% power to detect a medium effect size ($w = 0.30$) using a Chi-Square analysis with 2 degrees of freedom. Table 1 demonstrates that the sample achieved good representativeness in terms of age, gender, and other demographics.

Table 1

Study 1 Participant Demographics

Characteristic	%
Gender	
Male	54
Female	45
Other	1
Religion	
Christian	28
Muslim	2
Hindu	2
Buddhist	1
Jewish	1
Agnostic	20

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1) CAPTCHA is a computer system which distinguishes human from machine input, for example by identifying images or text.

Characteristic	%
Atheist	40
Sikh	1
Other	5
Income	
Less than £15,000	23
£15,000 - £19,999	9
£20,000 - £24,999	14
£25,000 - £29,999	11
£30,000 - £34,999	11
£35,000 - £39,999	4
£40,000 - £44,999	7
£45,000 - £49,999	6
£50,000 - £74,999	8
£75,000 - £99,999	1
£100,000+	1
Diet	
Omnivore	63
Reducetarian/Flexitarian	37
Pescetarian/Vegetarian/ Vegan	0
Political views	
Far left	2
Left	24
Centre-left	24
Centrist	18
Centre-right	8
Right	3
Far right	0
No political views	17
Prefer not to say	5
Urbanness	
Urban	37
Suburban	46
Rural	16
Education	
Some school	0
GCSEs/secondary school	11
A-Levels or equivalent	27
Undergraduate degree	43
Postgraduate degree	20

Note. Age of participants, M (SD) = 33.9 (10.8), *Range* = 18–75.

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Procedure

This study used a between-subjects design with the independent variable being exposure to the petition. Participants were either asked to sign a petition or not shown the petition; they could choose whether to sign it. The dependent variable was the meat-free week pledge where participants were asked if they would pledge to give up meat for a week some time within the next month.

Materials

Participants were shown a passage about the environmental impact of meat consumption (Figure 1A), and then randomly assigned to one of two groups. One group was asked if they would like to support a petition asking the UK government to implement one meat-free day per week in all public catering (Figure 1C). The others were directed straight to the meat-free pledge. All participants were asked if they would pledge to a meat-free week (Figure 1B). Finally, they completed a demographic survey and were debriefed.

Figure 1

Information, Pledge, and Petition Panels

Note. Panel A: Information on animal farming shown to all participants. Panel B: The meat-free pledge shown to all particiapants. Panel C: The petition question shown to participants in the treatment group.

Analysis

We propose four hypotheses to provide a framework to analyse our data:
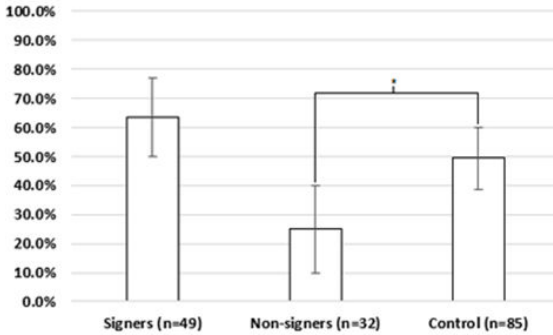
- *H1.* Participants who choose to support the petition will be more likely to pledge to give up meat for a week than those who choose not to support the petition. *(Moral consistency effect)*
- *H2a.* Participants who choose to support the petition will be more likely to pledge to give up meat for a week than those in the control group (who did not see the petition). *(Moral consistency effect)*
- *H2b.* Participants who choose to support the petition will be less likely to pledge to give up meat for a week than those in the control group (who did not see the petition). *(Moral licensing effect)*
- *H3.* Participants in the control group will be more likely to pledge to give up meat for a week than those who choose not to support the petition. *(Moral consistency effect)*

It is worth noting that our hypotheses make no predictions about the control group compared to the petition group overall. This is because we would only expect to see a moral licensing effect on the condition that an individual chooses to sign the petition. There is no reason to think that merely having the opportunity to sign the petition would lead to moral licensing if the opportunity is not taken. In the same way, we would not expect to see a moral licence to eat cake for somebody who walks past a gym, but does not go in. Therefore, the important comparisons here relate to petition signers and petition non-signers, not the petition opportunity group overall.

The data was analysed using chi-squared tests with the manipulated, categorical independent variable being the petition and the categorical dependent variable being the meat-free week pledge. This compared the likelihood of participants pledging a meat-free week based on if they had been shown the petition and if they chose to sign it. Assumptions for chi-square were met, since both variables were categorical, and observations were independent from each other.

Further analysis was conducted using a binomial logistic regression. In this analysis, meat-free pledging was the binary dependent variable, and other variables were entered as independent variables. Among the independent variables were two dummy variables representing (a) those who signed the petition, and (b) those who did not sign the petition, both of which are compared to the reference (control) group. Demographic variables were also entered as dependent variables in order to control for their effect on the outcome. The assumptions for binomial logistic regression were met, including a dichotomous dependent variable with mutually exclusive and collectively exhaustive values (pledging vs. not pledging a meat-free week), one or more independent variables, and independent observations.

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Figure 2

Meat-Free Pledges by Petition Outcome/Condition

*$p < .05$.

Results

Main Experimental Analyses

Participants were randomly allocated to either the petition condition (n = 81) or the control condition (n = 85). Rates of meat-free pledging were then compared between those who signed the petition, those who did not sign the petition, and the control group who did not see a petition (see Figure 2).

Our analyses indicated that those who signed the petition were significantly more likely to pledge a meat-free week than those who did not sign the petition, $\chi^2(1)$ = 10.09, p < .01, V = 0.34, w = 0.35, OR = 4.23, 95% CI [1.70, 10.51]. However, those who signed the petition did not differ significantly in their likelihood to pledge a meat-free week compared to the control group, $\chi^2(1)$ = 0.83, p = .36, V = 0.07, w = 0.08, OR = 1.38, 95% CI [0.69, 2.79]. However, those who did not sign the petition were significantly less likely to pledge a meat-free week than the control group, $\chi^2(1)$ = 9.02, p < .01, V = 0.26, w = 0.28, OR = 0.27, 95% CI [0.11, 0.65].

These results support some of our hypotheses. Hypothesis 1 was supported, since those who signed the petition were indeed more likely to pledge than those who did not. Likewise, Hypothesis 3 was supported, because those who chose not to sign the petition were less likely to pledge compared to the control group. However, Hypotheses 2a and 2b were not supported, as those who chose to sign the petition were no different in their likelihood to pledge a meat-free week than those in the control condition.

However, it is not straightforward to tell whether the apparent consistency between petition-signing and meat-free pledging was due to a moral consistency effect (i.e. participants were motivated to be consistent with their petition decision) or simply

Table 2

Binary Logistic Regression Predicting Whether Participants Take a Meat-Free Pledge

Variable	B	Exp(B)	SE	Wald	p
Age	0.01	1.01	0.02	0.20	.65
Female (dummy)	0.23	1.26	0.35	0.44	.51
Education	0.02	1.02	0.19	0.01	.93
Income	0.05	1.05	0.07	0.53	.47
Urbanness	-0.26	0.77	0.24	1.12	.29
Signed (dummy)	0.55	1.74	0.40	1.95	.16
Did not sign (dummy)[a]	-1.16	0.31	0.50	5.44	.02
Constant	0.45	1.56	1.17	0.15	.70

Note. Cox & Snell R^2 = .09, Nagelkerke R^2 = .12.

[a]Variable is a significant predictor of meat-free pledging.

due to stable underlying values (i.e. those who refuse to sign the petition are more 'pro-meat' and are therefore less likely to pledge a meat-free week). We interrogated these results further using the binary logistic regression method employed by Lee and Hsieh (2013). We included demographic factors which were available for more than 90% of participants, which meant that we did not include political views (more than 10% expressed no opinion). The results are displayed in Table 2.

Consistent with our first analyses, the binary logistic regression indicated that choosing not to sign the petition was a significant predictor of not pledging a meat-free week but choosing to sign the petition was not a significant predictor of pledging in either direction. This indicates that there may be some moral consistency effect in the negative direction, but not in the positive direction - i.e., those who refuse the petition become more likely to refuse the pledge, but those who sign the petition do not change. Certainly, there is no observable moral licensing effect.

Additional Exploratory Analyses

In addition to the main experimental analyses presented here, we also present some exploratory descriptive data of the outcome measures by demographic groups. We specified in the study protocol that we would report these outcomes by a range of demographics, but our reduced sample size meant that many groups were too small to bear meaningful comparisons (e.g., many religious groups or political views with only 1 adherent). However, we present the two main outcome measures overall, and by gender and age group in Bryant and Hancox (2022b).

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Study 2

Method

In Study 2, we built on our findings from Study 1 with an increased sample size, as well as the addition of potentially important covariates. The purpose here was to replicate the findings, and to investigate the extent to which any observable consistency between petition-signing and pledge-taking was attributable to underlying attitudes rather than a consistency effect per se. The study protocol, survey instruments, datasets, syntax for analysis, and other materials are available as Supplementary Materials section.

Participants

Participants were recruited from Prolific and paid £0.50 for completing the survey online via Qualtrics. We aimed for a sample size of 450, which would comfortably meet Freiman et al.'s (1978) estimates for regression analysis (4), which states that 343 is the sample size required to achieve 80% power given a small effect size.

Table 3

Study 2 Participant Demographics

Characteristic	%
Gender	
Male	48
Female	52
Other	0
Religion	
Christian	39
Muslim	4
Hindu	1
Buddhist	1
Jewish	0
Agnostic	15
Atheist	37
Sikh	0
Other	4
Income	
Less than £15,000	24
£15,000 - £19,999	13
£20,000 - £24,999	10
£25,000 - £29,999	14
£30,000 - £34,999	10
£35,000 - £39,999	8

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Characteristic	%
£40,000 - £44,999	4
£45,000 - £49,999	2
£50,000 - £74,999	6
£75,000 - £99,999	1
£100,000+	1
Diet	
Omnivore	67
Reducetarian/Flexitarian	33
Pescetarian/Vegetarian/ Vegan	0
Political views	
Far left	1
Left	20
Centre-left	18
Centrist	22
Centre-right	15
Right	6
Far right	1
No political views	15
Prefer not to say	4
Urbanness	
Urban	29
Suburban	48
Rural	23
Education	
Some school	1
GCSEs/secondary school	16
A-Levels or equivalent	31
Undergraduate degree	38
Postgraduate degree	14

Note. Age of participants, *M* (*SD*) = 56.07 (16.12), *Range* = 18–77.

We recruited a total of 507 participants from the UK. As per our study protocol, we removed participants who (a) were already pescetarian, vegetarian, or vegan, (b) failed to complete a CAPTCHA, or (c) failed an attention check question. We also removed those who (d) did not give their consent to take part, or (e) were under the age of 18, and (f) participants who did not complete the survey. In total, we removed 72 participants, giving a final sample size of 435.

Table 3 demonstrates that the sample achieved good representativeness in terms of age, gender, and other demographics.

Procedure

First, participants in the treatment group saw the petition ask, and then the pledge ask, while participants in the control group saw the pledge ask, *and then* the petition ask. This was a departure from Study 1, where the control group did not see the petition ask at all and was intended to give us additional insights about what this group would have said to the petition ask. This also enables the dataset to be used to analyse the order effects of different asks – for example, to investigate the possibility that an easier first ask increases acquiescence to a subsequent larger ask. Crucially, since the control saw the pledge ask first (and could not change their answers when they subsequently saw the petition ask) they can still be treated as a control when the pledge is taken as the dependent variable.

Second, we split the sample such that two thirds of participants would see the treatment arm, and one third would see the control arm. This was to account for the fact that those in the treatment arm were further split into petition-signers and petition non-signers for analysis, and thus this method would yield three approximately equal groups.

Third, we added two measures of potential covariates: meat attachment (Graça et al., 2015) and a selection of relevant items from the environmental attitudes inventory (Milfont & Duckitt, 2010). These are detailed in the following section.

Materials

The measures of meat attachment and environmental attitudes are detailed in Bryant and Hancox (2022a). The meat attachment measure was the mean of 16 items from Graça et al. (2015) and the environmental attitudes measure was the mean of 12 items selected from Milfont and Duckitt (2010).

Analysis

We propose two hypotheses to provide a framework to analyse our data.
There will be consistency between petition-signing and pledge-taking such that:

- *H1.* Petition-signing is associated with pledge-taking in a regression which does not account for meat attachment and environmental attitudes.
- *H2.* Petition-signing is *not* (or is significantly less) associated with pledge-taking in a regression which does account for meat attachment and environmental attitudes.

We ran two binary logistic regression models, one which accounted for the additional covariates, and one which did not. The dependent variable was the binary pledge-taking variable. The independent variables included (a) dummy variables comparing petition-signers and non-signers to the control group, (b) demographic factors including gender, age, income, level of education, urban density, and religiosity and (c) meat attachment and environmental attitudes covariates (Model 2 only). We included demographic factors

which were available for more than 90% of participants, which meant that we did not include political views (more than 10% expressed no opinion).

If the consistency between petition-signing and pledge-taking was attributable to these underlying attitudes, we would expect to see the association significantly reduced in Model 2, which accounts for covariates, compared to Model 1, which does not.
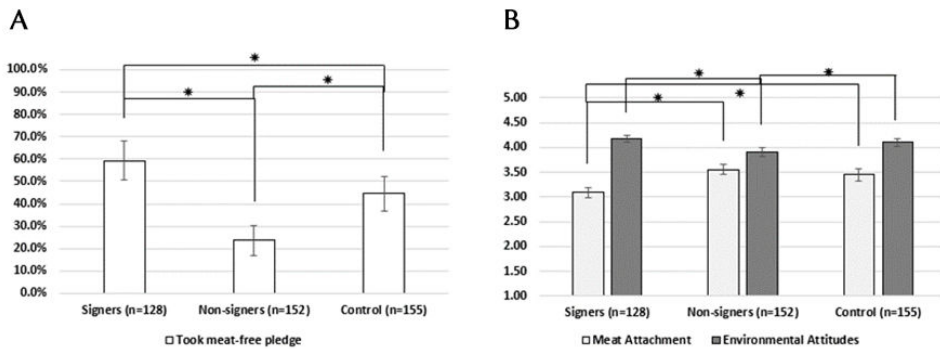
Results

Main Experimental Analysis

First, as in Study 1, we represent the main variables graphically (Figure 3).

Figure 3

Petition Outcomes and Covariate Means in Study 2

Note. Panel A: Meat-free pledges by petition outcome. Panel B: Meat attachment and environmental attitudes by petition outcome.
*$p < .05$.

As shown in Panel A, we observed that a significantly higher proportion of petition signers pledged compared to non-signers $\chi^2(1) = 36.88$, $p < .01$, V = 0.36, $w = 0.36$, $OR = 0.21$, 95% CI [0.13, 0.36], and compared to the control group $\chi^2(1) = 6.20$, $p = .01$, V = 0.15, $w = 0.15$, $OR = 0.55$, 95% CI [0.34, 0.88], while a significantly lower proportion of petition non-signers pledged compared to the control group $\chi^2(1) = 14.80$, $p < .01$, $w = 0.22$, $OR = 2.59$, 95% CI [1.58, 4.22].

As shown in Panel B, we also observe significant differences between groups in the covariates measured: petition-signers were significantly lower in meat attachment compared to petition non-signers and the control group, $F(2, 432) = 17.61$, $p < .01$. Similarly, petition non-signers were significantly lower than petition-signers and the control group in environmental attitudes, $F(2, 432) = 11.69$, $p < .01$. This is an indication that

these underlying attitudinal differences could be accounting for the differences between groups in pledge taking.

As per our study protocol, we used two regression models to examine the differences between groups when accounting or not accounting for these covariates. The results of both regressions[2] are shown side-by-side in Table 4.

Table 4

Outcomes of the Two Regression Models With and Without Covariates

Variable	Model 1 - No Covariates					Model 2 - With Covariates				
	B	Exp(B)	SE	Wald	p	B	Exp(B)	SE	Wald	p
Constant	0.72	2.05	0.64	1.26	.26	4.85	127.56	1.54	9.90	<.01
Petition signers (dummy)	0.48	1.61	0.26	3.35	.07	0.13	1.14	0.29	0.21	.65
Non-signers (dummy)	-1.00	0.37	0.27	13.99	< .01[a]	-0.88	0.41	0.31	8.27	< .01[a]
Meat attachment	-	-	-	-	-	-1.77	0.17	0.23	58.42	< .01[a]
Environmental attitudes	-	-	-	-	-	0.44	1.56	0.27	2.62	.11
Male (dummy)	-0.40	0.67	0.22	3.24	.07	-0.09	0.91	0.25	0.13	.72
Age	-0.01	0.99	0.01	3.80	.05	-0.02	0.98	0.01	5.09	.02[a]
Income	0.07	1.07	0.05	2.22	.14	0.12	1.12	0.05	5.09	.02[a]
More rural	-0.01	0.99	0.15	0.00	.96	-0.06	0.94	0.17	0.13	.72
Education	-0.10	0.90	0.12	0.79	.38	-0.13	0.88	0.13	1.02	.31
Religious (dummy)	0.19	1.21	0.22	0.74	.39	0.36	1.43	0.25	2.13	.14

Note. Model 1: Cox & Snell R^2 = .10, Nagelkerke R^2 = .13. Model 2: Cox & Snell R^2 = .28, Nagelkerke R^2 = .37.
[a]*p* value represent significant predictor within the model.

As shown, the results of the regression models partially support the hypotheses. Model 1, which did not include covariates, indicated that petition-signers were more likely to take the meat-free pledge compared to the control group, though this did not reach the threshold for significance (p = .07). The non-signers were significantly less likely to pledge compared to the control group. Model 2, which included covariates, found that meat attachment (but not environmental attitudes) significantly predicted meat-free pledging. While petition signing was not a significant predictor of pledge-taking in this model, petition non-signing remained a significant predictor. This finding suggests that refusing to sign a petition is associated with refusing to take a meat-free pledge, even when controlling for meat attachment and environmental attitudes.

Furthermore, several other demographic variables, which were close to significance in Model 1 crossed the threshold of significance in Model 2, including higher likeli-

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2) We also observed the same pattern of results when running each of the two models separately for two samples restricted to signers vs. control and non-signers vs. control.
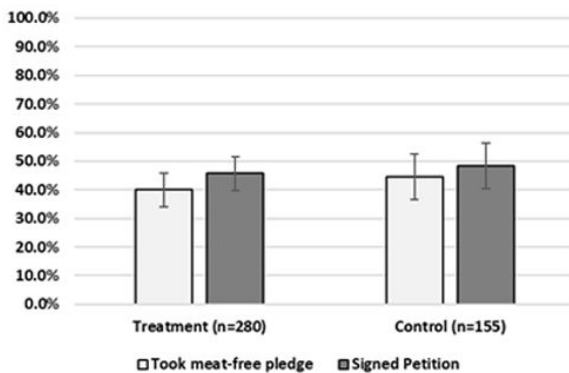
hood of meat-free pledging among younger people and religious people. It appears that accounting for differences in meat attachment and environmental attitudes further differentiated respondents such that other demographics more precisely predicted the outcome. Indeed, we observe a large change in Nagelkerke R^2 (0.13→0.37) indicating that accounting for the covariates made a substantial difference to the model's overall predictive ability.

Additional Exploratory Analyses

In Study 2, we also asked the control group to sign the petition after they had already been asked to take the pledge. This allowed us to observe the proportion of the control group who were willing to sign the petition without having this measure affect pledging. Effectively, this meant randomising the order of the petition and the pledge and can enable us to examine the order effects on outcomes (see Figure 4).

Figure 4

Order Effects on Outcomes of Petition vs. Pledge

As shown, very similar proportions of participants signed the petition and took the pledge in the control group compared to the treatment group. The control group had slightly higher rates of petition-signing, $\chi^2(1) = 0.29$, $p = .59$ and pledging, $\chi^2(1) = 0.84$, $p = .36$ compared to the treatment group, but these proportions were not significantly different. This verifies that the treatment and control groups were similar in their propensity to take the pledge and sign the petition, and moreover indicates that there are no significant order effects between asking about the petition first or the pledge first.

Discussion

Prioritising institutional reform over individual behaviour change is likely to be more effective in reducing overall meat consumption and improving animal welfare (Sentience Institute, 2022). However, some have expressed the concern that this focus may have the disadvantage of moving people away from implementing necessary behavioural changes on an individual level, which may be a concern for philosophies and movements like effective altruism (Sentience Institute, 2022). Therefore, this study investigated whether these concerns have basis, and if there would be an observable moral licensing effect within the context of meat reduction petitions and behaviour.

Our results showed no evidence of a moral licensing effect. In fact, the results tended to show consistency between the decision to sign a petition and the decision to take a personal pledge. That said, it is likely that this consistency is partly attributable to underlying values rather than a moral consistency effect per se.

This suggests that animal advocates should not be concerned that asking people to engage in low-effort behaviours aimed at institutional change will reduce their likelihood of individually reducing their animal consumption. On the contrary, people tend to behave consistently with respect to both requests, though it is not clear that the first decision actually affects the second decision.

When controlling for underlying values in Study 2, petition-signers were no more likely to pledge than the control group, but non-signers were significantly less likely to pledge. This mirrored the regression from Study 1 and could indicate a concerning asymmetrical moral consistency effect such that engaging positively with animal welfare asks does not increase one's odds of giving up meat but refusing to do so does decrease one's odds. This result suggests that agreeing to sign a petition has less impact on subsequent meat consumption than refusing to sign a petition and could suggest that animal advocates should target petition requests with care towards demographics who are least likely to refuse.

Encouragingly, rates of agreement with the petition and the pledge were high, with almost 50% agreeing to pledge a meat-free week, and over 50% signing the petition for the UK government to implement a meat-free day a week in public catering. This high rate of petition-signing suggests that this may be a feasible policy worth consideration. Restricting meat sales in public catering is one of a number of policy levers that policy makers can use to reduce meat consumption and has been explored in France and Denmark (Harvey, 2021; Levitt, 2020). Other options include adjusting related subsidies or taxes, or informational measures such as labelling requirements or national dietary guidelines (Hui, 2019).

Mullen and Monin (2016) found that reflecting on the values underlying the behaviours led to more moral consistency but thinking about the achievements of the behaviour led to more moral licensing. It is unclear in this study exactly what participants would have been reflecting on, but it may be more likely they were considering values

rather than the direct achievements of their petition signing or pledging as neither one would have directly resulted in achievements without further action. This explanation also accounts for the significant effect of underlying values in Study 2.

This study had several limitations. First, we did not consider the possible impact of some other covariates. While Study 2 did account for meat attachment and environmental attitudes, it is possible that other attitudes or values would explain more of the consistency effect if measured. Second, the pledge was a self-reported intended behaviour, and there was no suggestion that participants would have to follow through with their pledge. Therefore, we may have seen lower rates of moral licensing with this self-reported intention than if we had been able to observe actual behaviour. That said, Blanken et al. (2015) found that the moral licensing effect size was not moderated by whether the behaviour was actual or hypothetical. Third, this was a test which was narrow in scope, in that both asks related to the same domain (meat reduction). It is possible that a licensing effect would be more likely to be observed with asks in different domains – i.e., signing a petition about human rights subsequently impacts willingness to take a meat-free pledge. This configuration would reduce the issue of underlying attitudes driving both decisions.

Further research should develop the understanding of potential moral licensing or consistency effects in the context of reducing animal consumption. Future research could consider a time delay between the two behaviours or implementing methods to observe actual (rather than hypothetical) decisions. It would also be valuable to investigate which meat reduction policies would have the most public support, and would be most impactful on behaviour, particularly prioritising those policies already being discussed or implemented.

Conclusion

In conclusion, despite concerns about a moral licensing effect mitigating the benefits of encouraging people to support institutional change, we found no evidence of this. Conversely, there may be a moral consistency effect, which appears to asymmetrically impact petition-decliners more than petition-signers. It is likely, however that this is partly attributable to differences in underlying values rather than a consistency effect, per se. The finding suggests that such requests should be targeted towards groups who are most likely to share the underlying values and avoid those who are unlikely to share those values.

There were also high rates of agreement with our petition for public catering to have a meat-free day a week, suggesting it would be a feasible policy. We suggest that future research could clarify how to optimise these effects to reduce animal product consumption and which policies would be most useful to campaign for and implement.

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Ethics Statement: Both studies received ethical approval from the University of Bath's Psychology Research Ethics Committee (PREC 21-718; PREC 22-056).

Data Availability: Data are freely available, see Bryant and Hancox (2022a).

Supplementary Materials

The supplementary materials provided include study protocols, survey instruments, datasets, and syntax for analysis (Bryant & Hancox, 2022a), as well as additional analyses (Bryant & Hancox, 2022b).

Index of Supplementary Materials

Bryant, C., & Hancox, A. (2022a). *Supplementary materials to "Licence to kill? Investigating the moral licensing effect of meat reducing petitions on personal meat avoidance pledges"* [Study protocol, survey instuments, datasets, syntax]. OSF. https://osf.io/c75wh/

Bryant, C., & Hancox, A. (2022b). *Supplementary materials to "Licence to kill? Investigating the moral licensing effect of meat reducing petitions on personal meat avoidance pledges"* [Additional analyses]. PsychOpen GOLD. https://doi.org/10.23668/psycharchives.7768

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