Social Change Lab

Animal Rising's Grand National protest: Public opinion impacts and beyond

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Executive Summary

Animal Rising disrupted the 2023 Grand National, the biggest horse racing event in the UK, causing a delayed start to the race and kickstarting a national conversation about society's relationship with animals. The effect of such disruptive protest tactics on public opinion is currently not well understood. Social Change Lab assessed the impact of Animal Rising's Grand National protest on people's attitudes towards animals (e.g., how acceptable it is to use animals for entertainment/food), towards bans that protect animals (e.g., on factory farming), and towards veganism, by conducting a nationally representative poll before and after the protest. The key analyses related the extent to which people had heard about Animal Rising or the protest to changes (before vs. after the protest) in people's attitudes towards animals. Some of our key findings include:

- The protest sparked a national conversation about animal welfare and animal rights: the more that people reported having heard of Animal Rising and their protest, the more they reported thinking about animal welfare/rights issues.
- The protest seems to have sparked a sharp increase in sign-ups to take action with Animal Rising and in direct donations to Animal Rising, indicating some positive impacts on movement building and mobilisation for Animal Rising. Read more here.
- However, we observed negative attitudinal effects on several items (e.g. less agreement that society has a broken relationship with animals and needs to change how we treat them; higher agreement that it is acceptable to use animals for entertainment) and no statistically significant effects on others. Read more here.
- Exploratory analyses suggest a degree of polarisation; that is, people with relatively negative pre-existing views towards animals were affected particularly negatively by the protest, whereas people with relatively positive pre-existing views towards animals were affected positively. Read more here.

Additional follow-ups later this year will reveal to which extent these immediate negative effects persist or change over time as further protest campaigns unfold.

Introduction

Factory farming produces nearly all of the meat and other animal products that humans consume. An estimated 99% of animals whose meat is sold for food are from industrial farms. Activists have long criticised the practices typically used in factory farming for two main reasons: first, animal farming is one of the largest contributors to CO2 and methane emissions and therefore to climate change (Costa Jr et al., 2022; Reisinger et al., 2021; Scarborough et al., 2014); second, factory farming uses practices that most reasonable people would not consider humane. In addition, given decades of research documenting high levels of animal intelligence and sentience (Lifshin, 2022; Proctor, 2012), animal rights activists have also criticised the use of animals for entertainment.

To protest animal exploitation and spark a national debate on this issue, Animal Rising (AR) protested the Grand National horse race mid-April 2023 by going onto the course and causing a delay to the start of the race. The Grand National (GN) is the UK's most popular and prestigious horse race. Compared to other races, the GN is particularly dangerous. It is a very long steeplechase race and steeplechases in general cause an estimated 6 in 1000 horses to die; two horses died at this year's GN race. AR's goal is to make people question our relationship with animals, especially those we eat. AR is calling for a plant-based food system that would replace the fishing and farming industries which have come under fire due to animal cruelty and environmental considerations (Anomaly, 2015; Blattner, 2020; Reisinger et al., 2021).

The impact of such acts of civil disobedience on public opinion in the context of the animal advocacy movement is not well understood. Previous research on the Black Lives Matter (Caren et al., 2023; Dunivin et al., 2022; Harris, 2015) and the climate movement has revealed both positive and negative consequences of disruptive protest (Bugden, 2020; Feinberg et al., 2020; Orazani & Leidner, 2019; Shuman et al., 2021; Simpson et al., 2018). On the one hand, disruptive protest tactics receive substantially more media attention, making it much more likely that the issues raised will be discussed publicly. This increased salience often leads people to want to learn more about a subject. In turn, increased knowledge can lead to increased support for policies geared at addressing the issue (Milfont, 2012). Moreover, radical protest groups can benefit the broader movement they are a part of via the radical flank effect: recent experimental (Simpson et al., 2022) and observational evidence (Ostarek et al., submitted) point to a positive radical flank effect, whereby the presence and activities of a radical group improves people's attitudes towards a moderate group. On the other hand, disruptive tactics are unpopular and disruptive protest groups tend to have low levels of support (Feinberg et al., 2020; Simpson et al., 2018). In some cases, disruptive tactics can even have negative effects on the very issue protestors are fighting for. For

example, Feinberg et al. (2020) found that radical anti-Trump protests increased support for Trump. However, other studies have not observed such negative effects, leading Budgen (2020) to conclude that they occur only given specific conditions. It has been suggested that protests are particularly effective if they strike a balance between being disruptive and also constructive rather than destructive (Shuman et al., 2021).

When it comes to animal advocacy, there is very little data on disruptive protest. One study showed that a description of animal activists breaking into an animal testing facility and rescuing the animals illegally led to worsened attitudes towards the animal rights group compared to a peaceful protest in front of the building (Feinberg et al., 2020). Another recent study (Menzies et al., 2023) found that reading about both disruptive and non-disruptive pro-veganism protests led to more negative attitudes towards vegans compared to a fashion protest. By contrast, an experimental study by Simpson et al. (2022) tested the radical flank effect in the context of both the climate and the animal rights movements and saw a positive radical flank effect in both. The available evidence does not yet paint a very clear picture and the effects of disruptive animal rights protests remain largely unknown.

Here, we conducted a nationally representative poll just before the GN protest, and a second poll with the same respondents a few days after it, to assess how the protest might have impacted people's attitudes toward the issues AR is hoping to impact. These include the extent to which people think society has a broken relationship with animals, how morally acceptable people think our treatment of animals is, the extent to which they think that we need to change how we treat animals, and attitudes towards vegans. Most if not all major news outlets, including major newspapers, TV and radio news covered the protests, giving us relatively high statistical sensitivity to detect attitudinal changes. The massive media attention that the protest got also prompted us to explore whether the GN protest impacted mobilisation in the shape of people signing up to take action with AR and donating to AR.

Hypotheses

Our pre-registered hypotheses were chosen with the following considerations in mind: firstly, they concern aspects of people's attitudes towards animals that Animal Rising, and presumably other animal advocacy groups, want to change. Secondly, they target attitudes that were relatively likely to shift due to this specific protest campaign; it is more likely that a horse racing protest shifts public opinion on how we treat animals for entertainment than on how we treat them for food. The full list of survey questions can be found here. The hypotheses reflect the expectation that only those who heard about the protest and hence report higher awareness of AR at T2 are likely to have updated

their thoughts on animal welfare, animal rights, or veganism compared to T1, as a result of the protest. The reason we included the second set of hypotheses (the ones looking at awareness of the GN protest, not of AR) is to further increase our sensitivity to detect attitudinal changes due to the protests.

The following hypotheses were tested regarding effects of changes in awareness of AR on other variables of interest:

1. Increased awareness of AR is associated with increased thinking about animal welfare/rights (Q3)
2. Increased awareness of AR is associated with increased agreement with the statements in Q4 i and iii that society has a broken relationship with animals and that society needs to change the way we treat animals for entertainment. The average of the responses to Q4 i and iii will be the dependent variable.
3. Increased awareness of AR is associated with increased agreement that the use of animals for entertainment is morally unacceptable (Q6).

The hypotheses below (identical to those regarding awareness of AR) will be tested looking at the effects of awareness of the GN horse-racing protest. The rationale for this additional set of hypotheses is that people are more likely to remember that such protests took place than the specific name "Animal Rising". Due to this, analyses looking at awareness of the GN protest (rather than of AR) might be more sensitive.

1. Increased awareness is associated with increased thinking about animal welfare/rights (Q3)
2. Increased awareness is associated with increased agreement with the statements in Q4 i and iii that society has a broken relationship with animals and that society needs to change the way we treat animals for entertainment. The average of the responses to Q4 i and iii will be the dependent variable.
3. Increased awareness is associated with increased agreement that the use of animals for entertainment is morally unacceptable (Q6).

We also pre-registered that we would report simple before-to-after differences. Due to space limitations and doubts we have about the utility of such an analysis, these are reported in the Supplementary Materials.

Method

Participants

Wave 1 had a total of 1997 respondents. All respondents were invited to participate in the post-survey. Both surveys include a commitment check (Q1), as well as an attention check (Q8). Respondents were excluded if they failed an attention check or the commitment check. 1816 participants completed the survey after the GN protest (wave 2). Unfortunately, due to technical failure, data from 76 respondents could not be used. An additional 20 did not pass the attention (18) and/or commitment (2) checks. A total of 1720 participants could thus be used for analysis, corresponding to a retention rate of 86.1%. To test for possible biases due to differential attrition, we assessed whether those respondents that did not return for wave 2 differed from those who did on any of the main items of interest specified in the Hypothesis section. Regression analyses predicting responses to those items at wave 1 using retention (respondent later returned vs. did not return for wave 2) as the sole predictor variable suggested that the groups were highly similar (all t-values < 1, ps > 0.5) and thus that there were no issues with differential attrition.

Analysis

We used Bayesian regression analysis to test our hypotheses. This choice was not pre-registered since we only realised after the pre-registration that the package *brms* (Bürkner, 2017) provides an elegant implementation of ordinal regression that we consider the best analysis tool when simple Likert scale responses comprise the outcome variable. This method was used for the simple before vs. after differences, whereas linear Bayesian regressions were used for the difference score analyses described below. To make the results as nationally representative as possible regarding the demographic information collected (age, gender, ethnicity, region, political affiliation, social class, level of education), raking was used (Pasek & Pasek, 2018). This method gives a weight to each respondent that reflects how much their demographics deviate from the population average. These weights are then used in the statistical analyses and correct for biases due to over or undersampling on any of the demographics. The weighting algorithm considered all demographic factors to be adequately representative of the UK population except for social class (see the Supplementary Materials for details on the demographic questions). Thus, weights corrected for over and undersampled social class segments. For all regression models, the priors for the effect of changes in awareness of AR/ awareness of the GN protest on the variable of interest were a normal distribution with a mean of zero and a standard

deviation of 0.1. This reflects our expectation that the effects will be small and are very likely to be in a range between -0.2 and 0.2.

The models that tested hypotheses regarding the effects of AR awareness on the variables of interest used awareness of AR (Q11) as the sole (continuous) predictor variable. More precisely, the difference between each respondent's awareness of AR after vs. before the Grand National protest was used to predict after vs. before changes in each variable of interest. A complementary analysis tested the effect of awareness of the protests (rather than of AR itself) on the same variables. Awareness of the GN protest was based on wave 2 data only; this question was not asked at T1 since the protests had yet to take place). This second analysis is expected to be more sensitive because it is easier to forget the name of the protest group than to forget the protest itself. At the same time, the first analysis directly relates changes in awareness of AR to changes in the variables of interest and thus constitutes the most logical and direct test of whether the protest triggered attitudinal changes. Hence, these two analyses are complementary and should both be taken into account regarding conclusions about the effects of the protest.

For all analyses, we report estimates of the effect of the predictor variables alongside 95% Credible Intervals (CrI), the Bayesian equivalent of 95% Confidence Intervals (Gray et al., 2015). The 95% CrI is the range of values where the true population-level value is expected to fall with a probability of 95%. Generally speaking, effects are considered to be statistically robust if the 95% CrI does not include zero. We additionally report two Bayes Factors. 1) A one-sided directional Bayes Factor (BF_{dir}) that gives the evidence ratio for the (posterior) probability under a given hypothesis (e.g., that the effect of awareness of the GN protest on a variable of interest is positive) relative to the alternative (that the effect is negative). For example, A BF of 10 when testing the hypothesis that a certain effect is positive means that it is 10 times more likely for the effect to be positive rather than negative, having seen the data. A BF of 0.1 would mean the reverse, that the effect is 10 times more likely to be negative rather than positive. 2) A Bayes Factor reflecting the evidence for the null hypothesis that the effect of the predictor variable is zero (BF_{NULL}). For example, here a BF of 10 would mean that it is 10 times more likely that the effect is zero, rather than non-zero. The latter is strongly dependent on the priors, which here were only quite weakly informative, hence this BF will tend to be overly conservative.

Animal Rising Mobilisation data

We had access to Animal Rising's donation data from their crowdfunding page, which we used for our analysis on their donations. Additionally, we had access to sign-up forms from their Action Network, which they use to recruit potential volunteers to join their campaigners, to understand the impact of the GN protest on activist mobilisation.

Results

Main pre-registered analyses

The results supported our first hypothesis that increased awareness of AR after the GN protests would be associated with increased thoughts about animal welfare/rights issues (estimate=0.16, 95% CrI [0.11, 0.20], BF_{dir}=∞, BF_{NULL}=0). Similarly, higher awareness of the GN protest was associated with increased thoughts about animal welfare/rights issues (estimate=0.13, 95% CrI [0.09, 0.17], BF_{dir}=∞, BF_{NULL}=0). The magnitude of these effects can be seen in Figure 2A and 2D below. This suggests that the protest was very successful at bringing animal rights issues to the fore. The notion that the protest triggered large-scale attention is further supported by a simple media analysis looking at the frequency with which "Animal Rising" was mentioned in news articles (see Figure 1). Whereas the protest group had no (or very few) mentions before the protest, numbers spiked to hundreds per day when the protest occurred. Notably, AR spokespersons were invited to 61 TV interviews in April that were seen by millions of people, whereas in the first three months of the year AR only did a total of 9. Moreover, as described in the section "Effects of the GN protest on mobilisation" below, sign-ups to take action with AR and direct donations to AR increased sharply the days around the protest.

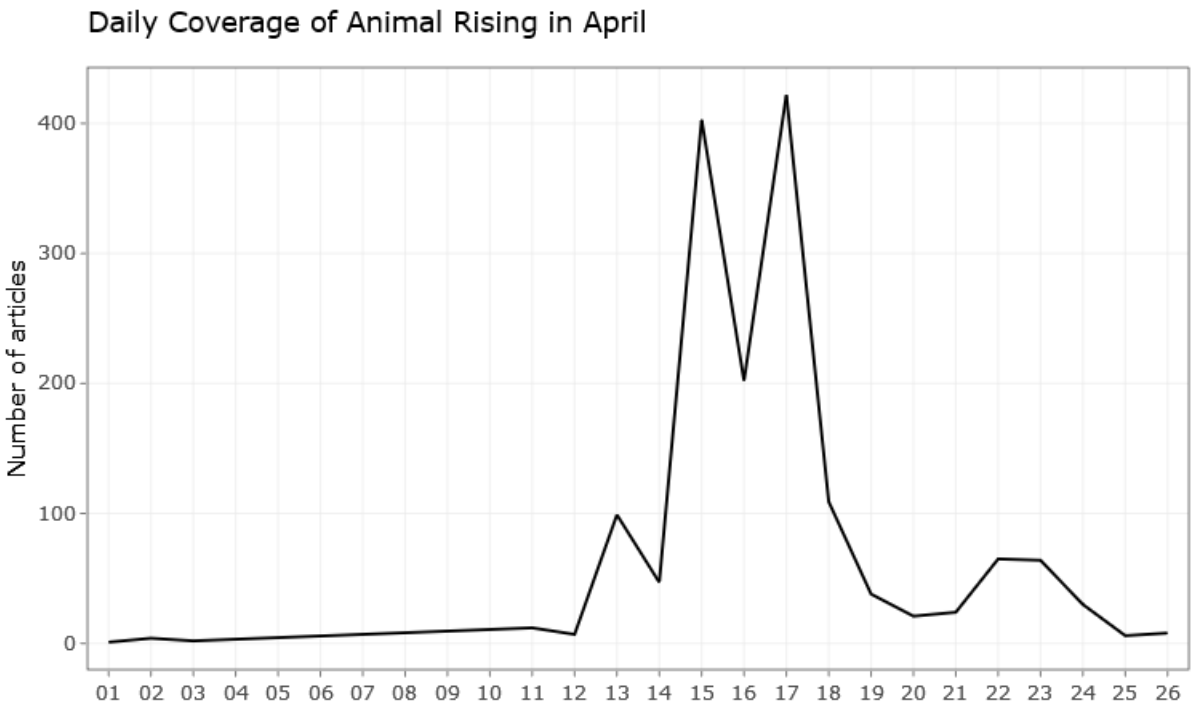

Figure 1. Daily mentions of "Animal Rising" in April. The Grand National protest occurred on April 15, 2023. A journalist had leaked their plans some days prior, hence the increase before the event. Numbers were calculated with LexisNexis. A majority of the mentions were from UK media.

The results did not confirm the other two pre-registered predictions (see Figure 2). Firstly, increases in awareness of AR were associated with lower values on the composite score measuring the extent to which people agreed that society has a broken relationship with animals and the extent to which society needs to change how we use animals for entertainment (estimate=-0.07, 95% CrI [-0.12, -0.03], BF_{dir}=1999, BF_{NULL}=0.01) – seen in Panel B of Figure 2 below. Similarly, higher awareness of the GN protest was associated with lower scores on this measure (estimate=-0.05, 95% CrI [-0.09, 0.00], BF_{dir}=38.22, BF_{NULL}=0.53). Secondly, regarding changes in how acceptable people found the use of animals for entertainment, results also pointed towards the opposite direction compared to our predictions, but were less clear-cut. There was no evidence of an association with increases in awareness of AR (estimate=0.02, 95% CrI [-0.05, 0.08], BF_{dir}=2.53, BF_{NULL}=2.73). Regarding the effect of awareness of the GN protest, the results point towards a small increase (estimate=0.07, 95% CrI [0.01, 0.13], BF_{dir}=67.97, BF_{NULL}=0.34).

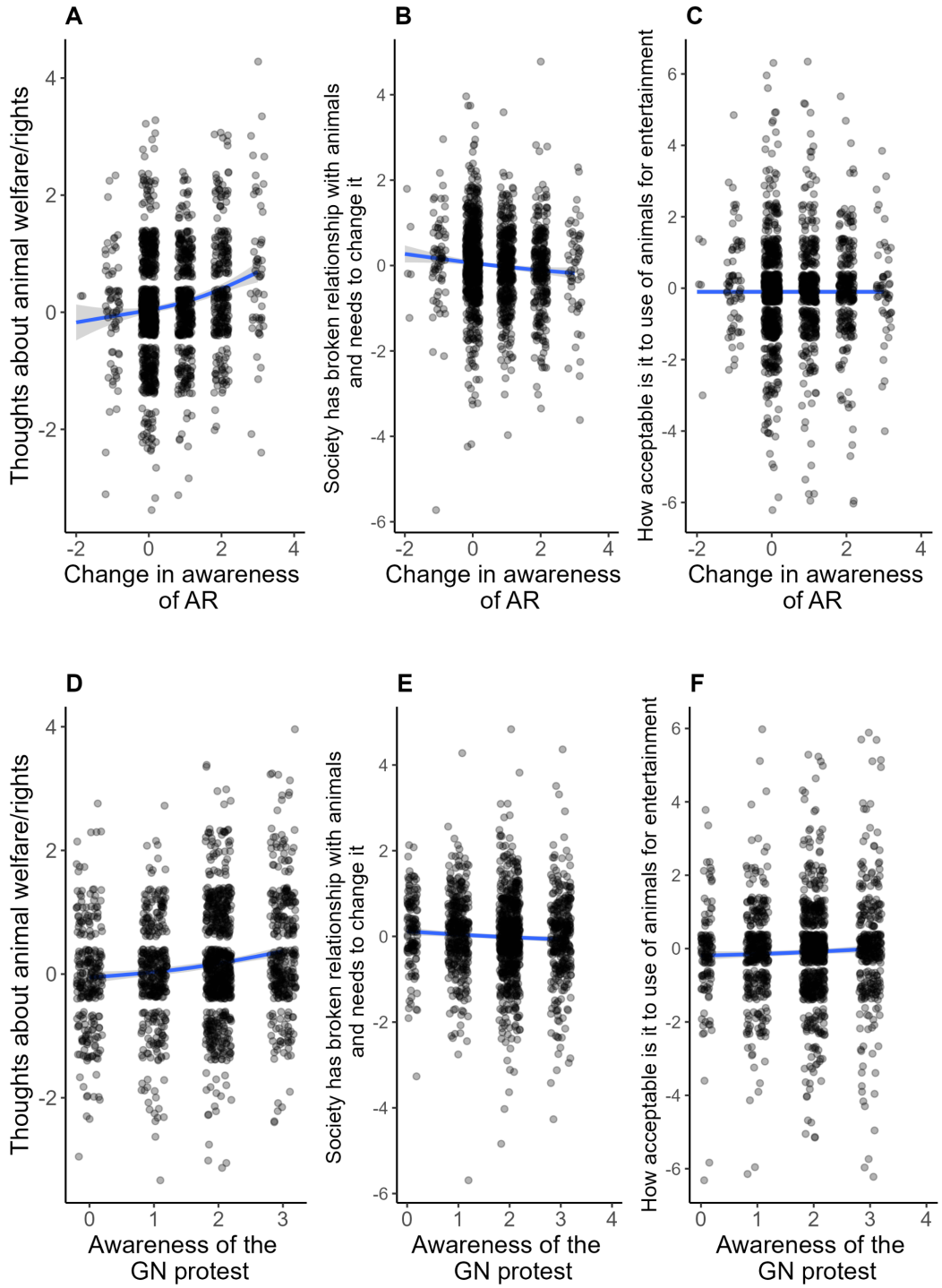

Figure 2. Results of the pre-registered analyses. Top panel: Increased awareness of AR after the GN protest is associated with increased thoughts about animal welfare/right issues (A), decreased agreement that society has a broken relationship with animals and needs to change how we treat animals used for entertainment (B); was not associated with how morally acceptable people considered using animals for entertainment (C). Bottom panel: Equivalent results for awareness of the GN protest with the exception that it was associated with increased agreement that it is acceptable to use animals for entertainment.

The fact that very similar results were obtained in the analyses looking at changes in awareness of AR and awareness of the GN protest at wave 2 increases our confidence in

the findings reported above, even though they mostly ran counter to our pre-registered hypotheses. Below, we report a set of additional analyses that were not pre-registered.

Additional exploratory analyses

We performed additional analyses on the individual scores that make up the composite score described above. The first one measured people's agreement with the statement that society has a broken relationship with animals. Increased awareness of AR (estimate=-0.07, 95% CrI [-0.13, -0.01], BF_{dir}=99, BF_{NULL}=0.27) and higher awareness of the GN protest (estimate=-0.06, 95% CrI [-0.12, -0.01], BF_{dir}=65.67, BFNULL=0.34) were associated with decreased agreement. The second one measured people's agreement with the statement that society needs to change how we use animals for entertainment. Here, increased awareness of AR was associated with decreased agreement (estimate=-0.07, 95% CrI [-0.13, -0.02], BF_{dir}=152.85, BF_{NULL}=0.17), but there was only a negligible trend for a similar effect for awareness of the GN protest (estimate=-0.03, 95% CrI [-0.08, 0.03], BF_{dir}=4.17, BF_{NULL}=2.17). Finally, we would like to report an additional noteworthy finding. Higher awareness of the GN protest was associated with lower agreement that society needs to change how we use animals for food (estimate=-0.06, 95% CrI [-0.11, -0.01], BF_{dir}=73.07, BF_{NULL}=0.45).

We also asked respondents to indicate how much they supported banning a) horse racing b) animal testing c) factory farming d) all farming. We did not pre-register these analyses since we thought that changes in these variables were less likely. Exploratory analyses indeed showed no robust association between changes in awareness of AR or awareness of the GN protest and changes in any of these variables (all 95% CrIs clearly crossed zero). Lastly, we also explored whether there were any effects on people's attitudes towards vegans/veganism, as measured with a composite score averaging people's answers to six questions (see list of questions in the appendix). There was some evidence that awareness of the GN protest (but not increases in awareness of AR) negatively affected attitudes towards vegans/veganism (estimate=-0.03, SE=0.02, 95%CrI [-0.06, -0.001], BF_{dir}=46.62, BF_{NULL}=0.9). However, this effect appears to be small as the 95% CrI nearly reaches zero.

Table 1 below gives a simple overview of all the variables of interest for which the regression analyses suggested a significant association with changes in awareness of AR or awareness of the GN protest, or both.

	Regression: effect of changes in awareness of AR	Regression: effect of awareness of the Grand National protest
"How often did you think about animal welfare...?"	More awareness -> more thoughts about animals	More awareness -> more thoughts about animals
"Society has a broken relationship with animals and needs to change how we treat animals used for entertainment" (composite)	More awareness -> agreed less	More awareness -> agreed less
"Society has a broken relationship with animals"	More awareness -> agreed less	More awareness -> agreed less
"Society needs to change how we treat animals used for entertainment"	More awareness -> agreed less	More awareness -> trend to agreeing less
"Society needs to change how we treat animals used for food"	No effect	More awareness -> agreed less
"How morally acceptable or unacceptable do you find the use of animals for entertainment?"	No effect	More awareness -> more acceptable
Attitudes towards vegans/veganism (composite)	No effect	More awareness -> more negative attitudes

Table 1. Overview of the observed associations between changes in the variables of interest from wave 1 to wave 2 and changes in awareness of AR (middle column) and awareness of the GN protest (right column).

Accounting for baseline differences

It is possible that people who are more interested in horse racing are more likely to have heard about the GN protest and have overall less concern for animal suffering/welfare. They might then in turn be affected more negatively by the protest. Indeed, a latent profile analysis presented below suggests that negative attitudinal impacts of the protest were specifically seen for people who had quite negative attitudes towards animals at wave 1. Thus, negative effects of the protest might be inflated in the present study. To assess this possibility statistically, we repeated the

main analyses but included participants' baseline responses for a given item (at wave 1) as a covariate. This ensures that variance is only attributed to changes in awareness of AR/ awareness of the GN protest if it is not already explained by baseline attitudes towards animals. Overall, we find that differences with the analyses above, which did not account for baseline differences, are small. The figures below show the probability densities for estimates when accounting vs. not accounting for baseline responses. As can be seen, they do not differ by much. In the analysis testing the effect of changes in awareness of AR on the composite of "Society has a broken relationship with animals" and "Society needs to change how we treat animals used for entertainment", virtually no difference is observed between the model that does vs. does not correct for baseline responses (Figure. 3, left panel in purple). Regarding the effect of awareness of the GN protest, some small differences were found: the 95% CrI crosses zero in the model with baseline correction (95% CrI [-0.07, 0.02]), when it does not in the model without baseline correction (Figure 3, right panel in blue). The same pattern (not shown) was observed for the analysis testing the effect of awareness of the GN protest on agreement that "Society needs to change how we treat animals used for food" (95% CrI [-0.10, 0.01]).

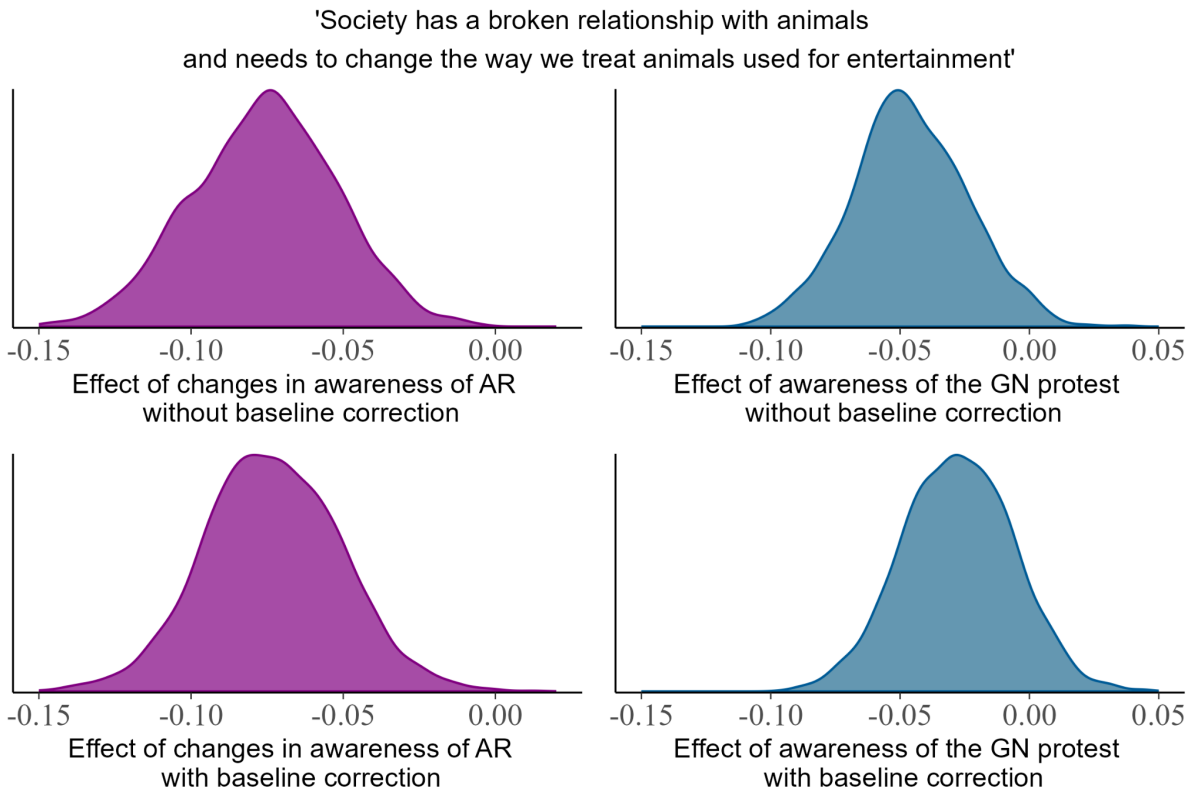

Figure 3. Assessing the influence of baseline responses regarding Hypothesis 2. Posterior probability densities for the estimated effects of changes in awareness of AR (left panel) and awareness of the GN protest (right panel) in models that do not (top) vs. do (bottom) include baseline responses.

By contrast, regarding "How morally unacceptable or acceptable do you find the use of animals for entertainment", the 95% CrI for the effect of changes in awareness of AR does not cross zero in the model with baseline correction (95% CrI = 0.01, 0.12), when it did in the model without correction.

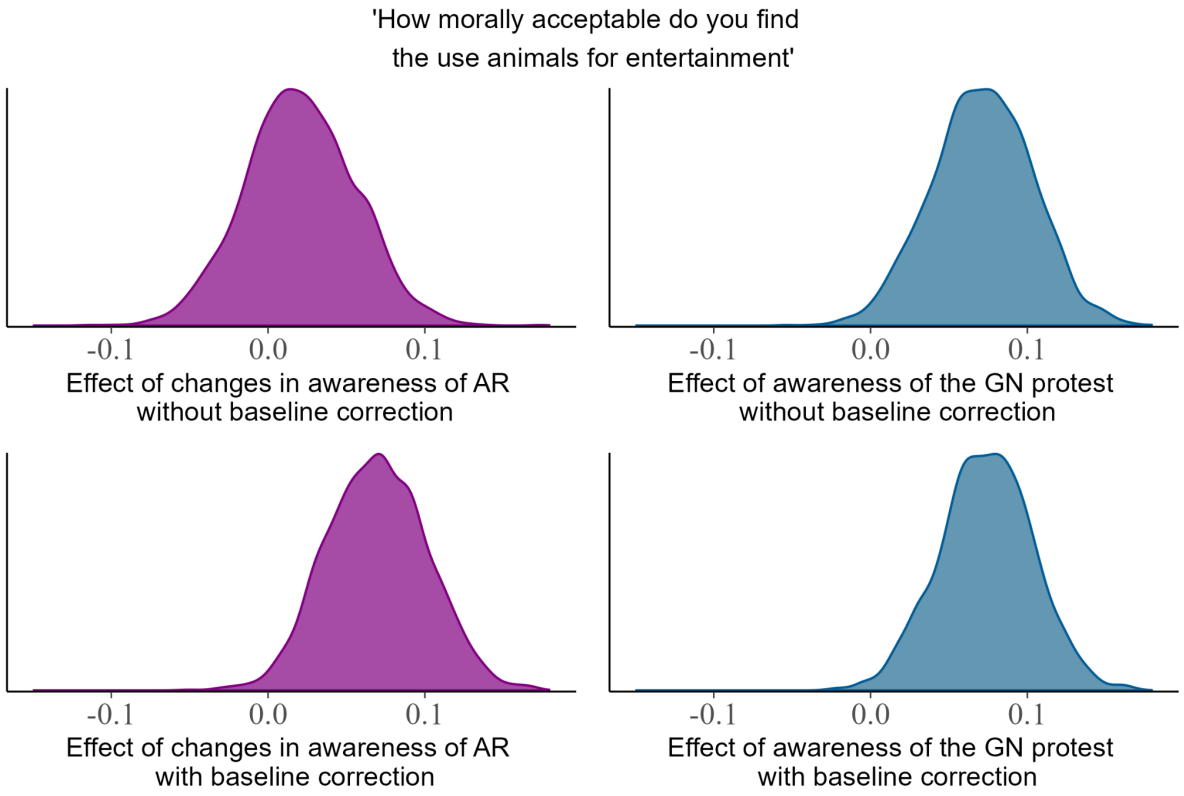

Figure 4. Assessing the influence of baseline responses regarding Hypothesis 3. Posterior probability densities for the estimated effects of changes in awareness of AR (left panel) and awareness of the GN protest (right panel) in models that do not (top) vs. do (bottom) include baseline responses.

Thus, we conclude that accounting for baseline responses can shift estimates somewhat, but these shifts are small and can go either way. This suggests that it is not the case that our method consistently and/or substantially overestimated negative impacts of the protest.

Latent Profile Analysis (examining the existence of polarisation)

Next, we investigated whether the GN protest might affect people differently depending on their prior attitudes towards animals. We used latent profile analysis (Fraley et al., 2012) to classify people into different groups of overall favorability towards animals, based on their responses to a number of questions at wave 1 (see Supplementary Materials for details). A three-profile solution provided good fit for the data and was readily interpretable: people in profile 1 were exceptionally favourable towards animals (N = 102; 5.9% of the total sample), people in profile 3 were unfavourable towards animals (N = 802; 46.6% of the total sample), and people in profile 2 were in the middle (N = 816; 47.4% of the total sample). We then ran the same models as above with the latent profiles (and their interaction with awareness of AR) as additional factors. The general pattern for most variables was an interaction effect such that people in profile 1 were positively affected by the protest, whereas people in profile 3 were negatively affected. Below, we visualise the differential effect that changes in awareness of AR had in the different latent profiles (Figure 5). We do so only for the composite scores of agreement that society has a broken relationship with animals and agreement that society has to change the way we treat animals used for entertainment, but most other variables looked very similar (see Supplemental Materials). Note that the negative effect for people in profile 3 is more robust than the positive effect for people in profile 1, in the sense that it is based on many more people (because more people were in profile 3). This suggests that if people's attitudes towards animals were already more positive, the protest would likely have had a more positive impact.

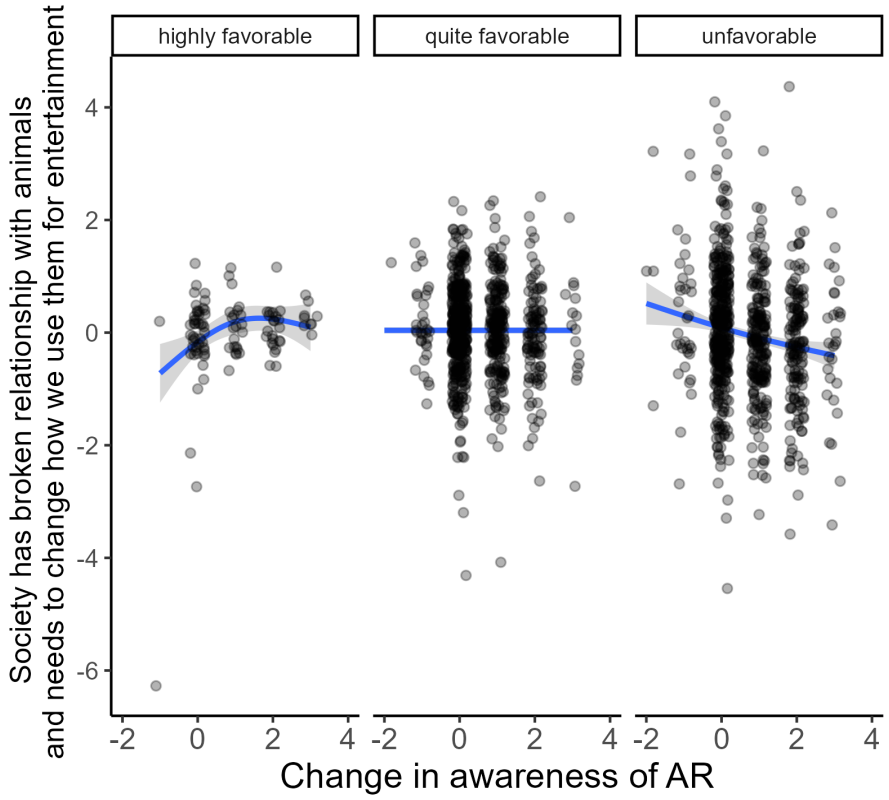

Figure 5. The effect of changes in awareness of AR on agreement that society has a broken relationship with animals and needs to change how we treat animals used for entertainment, for each of the three latent profiles. Left: people with highly favourable attitudes towards animals (N=102). Middle: People with overall quite favourable attitudes towards animals (N=816). Right: People with unfavourable attitudes towards animals (N=802).

Effects of media views on support for AR

Previous research has highlighted that media narratives can greatly influence public opinion (McLeod & Detenber, 1999; Shanahan et al., 2011). For instance, work on attitudinal responses to Civil Rights protests indicates that news articles with a legitimising debate framing lead to greater support for and identification with the protestors (Brown & Mourão, 2021). We tentatively evaluated whether there is a similar pattern in the present data. At wave 2, respondents were asked on which news media outlet they heard about the GN protest and how the news outlet they consumed viewed the protests (Likert scale 1-7 from "strongly condemned" to "strongly praised"). They were also asked the extent to which they support or oppose the protestors' actions (Likert scale 1-7 from "strongly oppose" to "strongly support").

First, we investigated whether different news outlets were associated with different levels of support for AR in a regression model with the BBC (generally considered quite neutral) as the reference level (see Figure 6). Relative to the BBC, hearing about the

protest on ITV was associated with lower levels of support (estimate = -0.43, 95% CrI [-0.69, -0.18]), whereas hearing about it via social media (estimate = 0.3, 95% CrI [0.02, 0.57]), The Guardian (estimate = 0.55, 95% CrI [0.16, 0.96]), and family or friends (estimate = 0.84, 95% CrI [0.37, 1.31]) was associated with higher levels of support. Thus, our data are compatible with the view that the framings and narratives used by different media outlets affect public opinion.

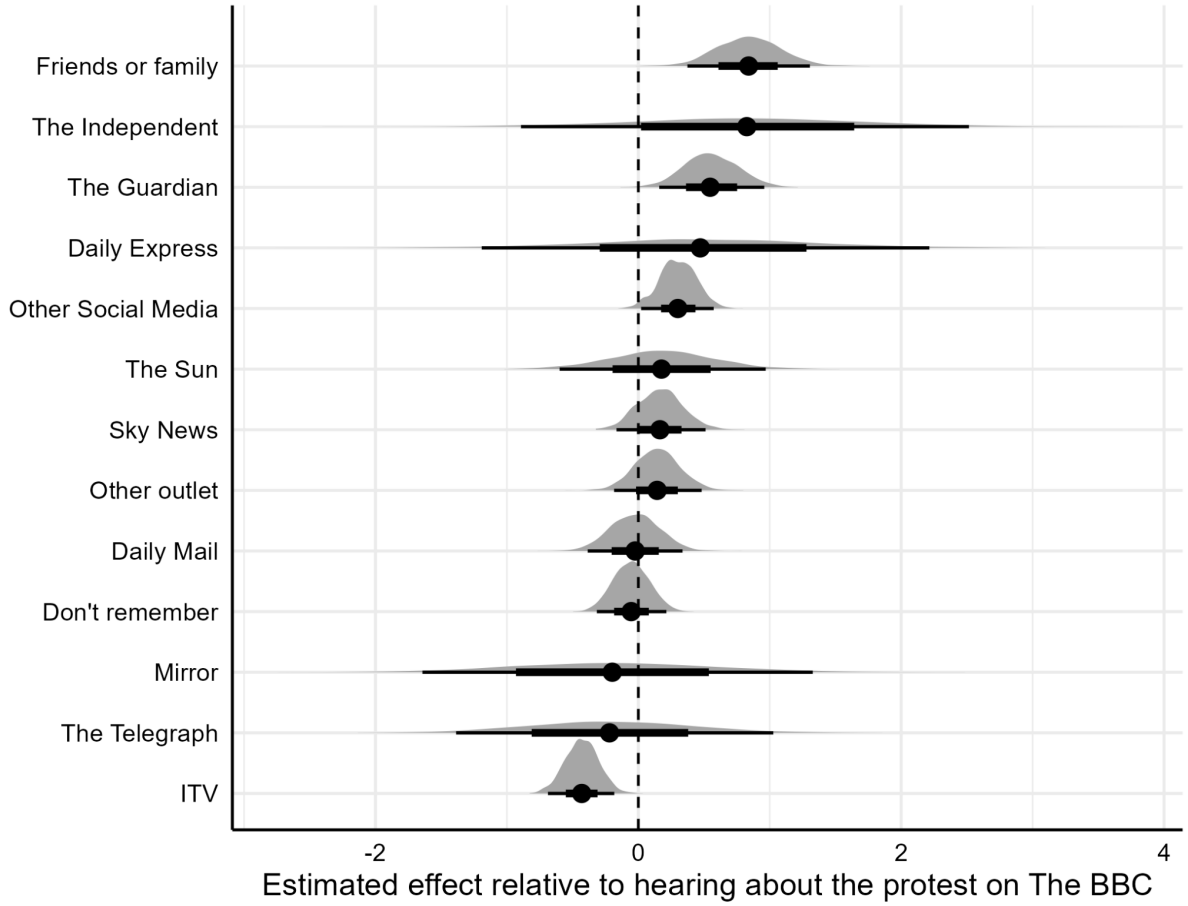

Figure 6. Forest plot showing the link between different news outlets and support for AR. Dots represent the model estimates for each contrast. The thin and thick lines show the 95% and 66% CrIs, respectively, overlaid with the posterior probability densities of the estimates, some of which are very wide due to small sample sizes for some outlets (see the embedded table). The BBC was used as the reference level for the news media outlets factor, i.e. the estimates for the remaining outlets show the differential effect on support for AR compared to hearing about the protest on the BBC. The underlying model controls for a number of control variables to de-confound the estimates for the news outlets factor.

To investigate this further, we ran a regression analysis linking how favourably respondents rated the news outlet's reporting of the protest to support for AR. It indicated that the more positive the outlet's view of the protest, the more supportive

respondents were of AR's actions (see Figure 7). We reasoned that people's media consumption is likely related to their political leanings and beliefs and therefore strongly confounded with their pre-existing attitudes towards animals; these in turn are expected to influence how favourably they feel about an animal rights group. That is why, in both of the regression analyses, we included a number of demographic variables (age, gender, education, voting intention), as well as people's responses to key questions at wave 1 that should capture pertinent pre-existing attitudes towards animals (society has a broken relationship with animals, society needs to change the way we treat animals used for entertainment/food, how morally acceptable it is to use animals for entertainment). Even though these additional factors explained quite a lot of variance (see the regression table in the Supplementary Materials), the relationship between media views and support for AR remained stable, pointing towards an independent effect of media portrayal. Note that these analyses are tentative, not least because respondents were always asked about their support for AR after answering the questions about news outlets and hence there could be an order bias. Future work dedicated to media effects should replicate and extend the analyses reported here to solidify the link between disruptive animal rights protest, media narratives, and support for the protestors.

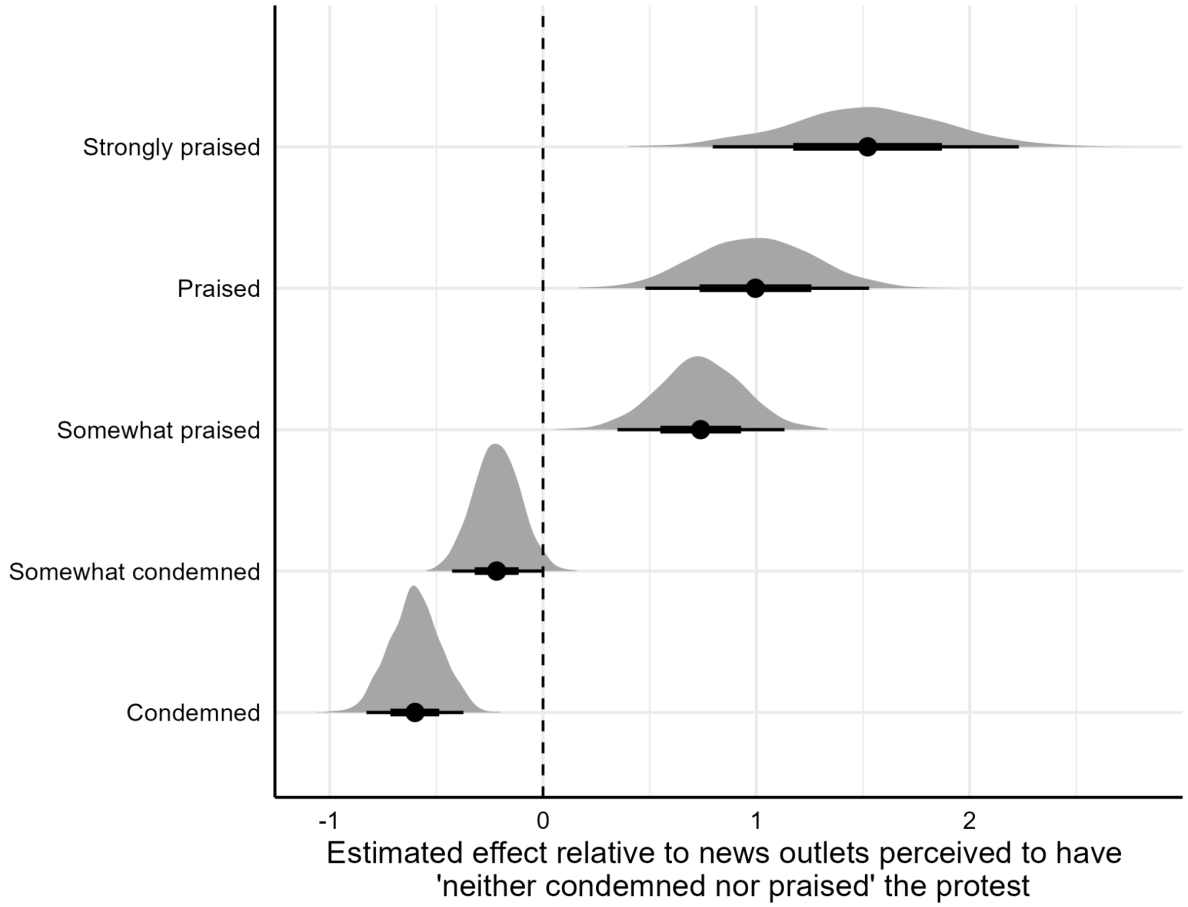

Figure 7. A forest plot of the regression estimates showing the relationship between media views and support for AR's actions. "Neither condemned nor praised" was used as the reference level for the media views factor, i.e. the estimates for the remaining factor levels show the differential effects on support for AR relative to that reference level. Note that no participant selected "Strongly condemned", hence this level does not appear in the plot. Dots represent the model estimates for each contrast. The thin and thick lines show the 95% and 66% CrIs, respectively, overlaid with the posterior probability densities of the estimates.

Effects of the GN protest on mobilisation

The main goal of this study was to determine the nationwide immediate effects of the GN protest on public opinion. While people's attitudes toward - and policies regarding - animal welfare/rights are what AR ultimately wants to influence, in the short term it is important for activist groups to build momentum and mobilise people to join their cause. This is why we wanted to assess whether the GN protest brought increases in sign-ups to take action with AR and in direct donations to AR. Figure 8 below shows sign-ups to take action with AR, participate in trainings etc., in April 2023. It shows a sharp peak in the days before the GN protest (15 April). Interestingly, there is an earlier

even larger peak just as AR's plans to disrupt the GN were leaked in a headline report by the Mail on Sunday. The leak presumably also explains why sign-ups peaked the days before the protest; it likely motivated many to try and participate in the GN protest.

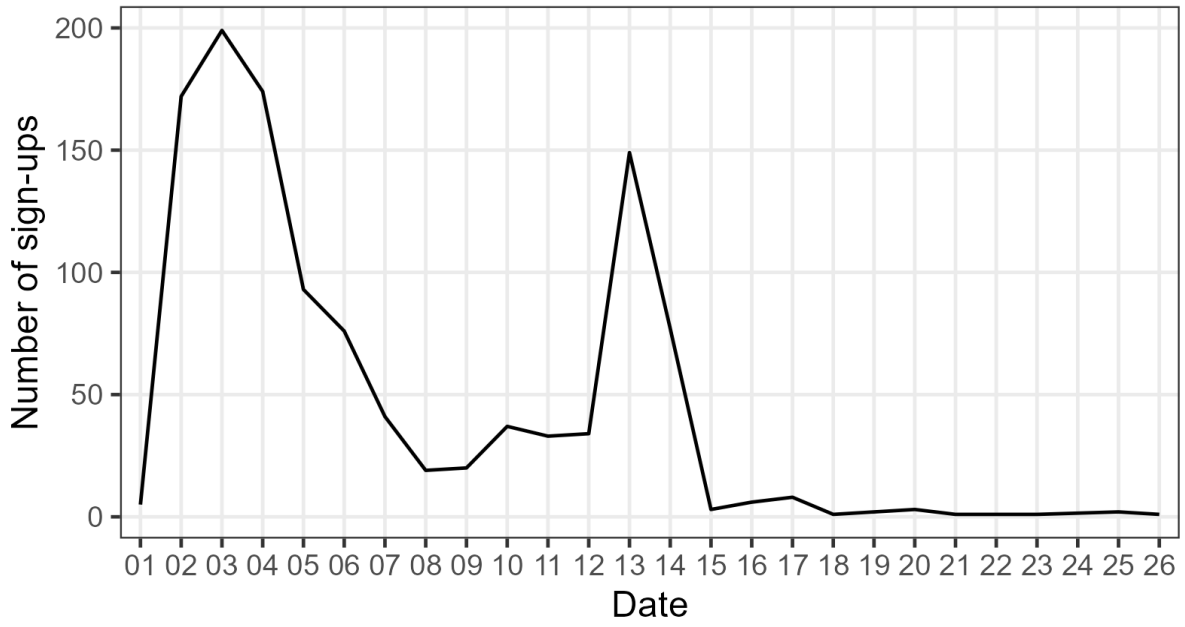

Figure 8. Daily sign-ups to take action with AR in April 2023, using their Action Network activist sign-up data. Sign-ups showed heightened sign-ups just before the GN protest and when the Daily Mail leaked AR's plans to disrupt the GN.

Going beyond sign-ups, which may or may not lead to direct participation, direct financial donations to AR indicate that someone is not only interested, but wants to support AR's endeavours. Looking at direct donations, we see a substantial peak right after the protest, after which daily donations slowly return to their usual levels (Figure 9, top panel). Zooming out to the whole year of 2023 so far, it is clear that these levels of daily donations are very rare, reinforcing the idea that they were sparked by the protest (see Figure 9, bottom panel).

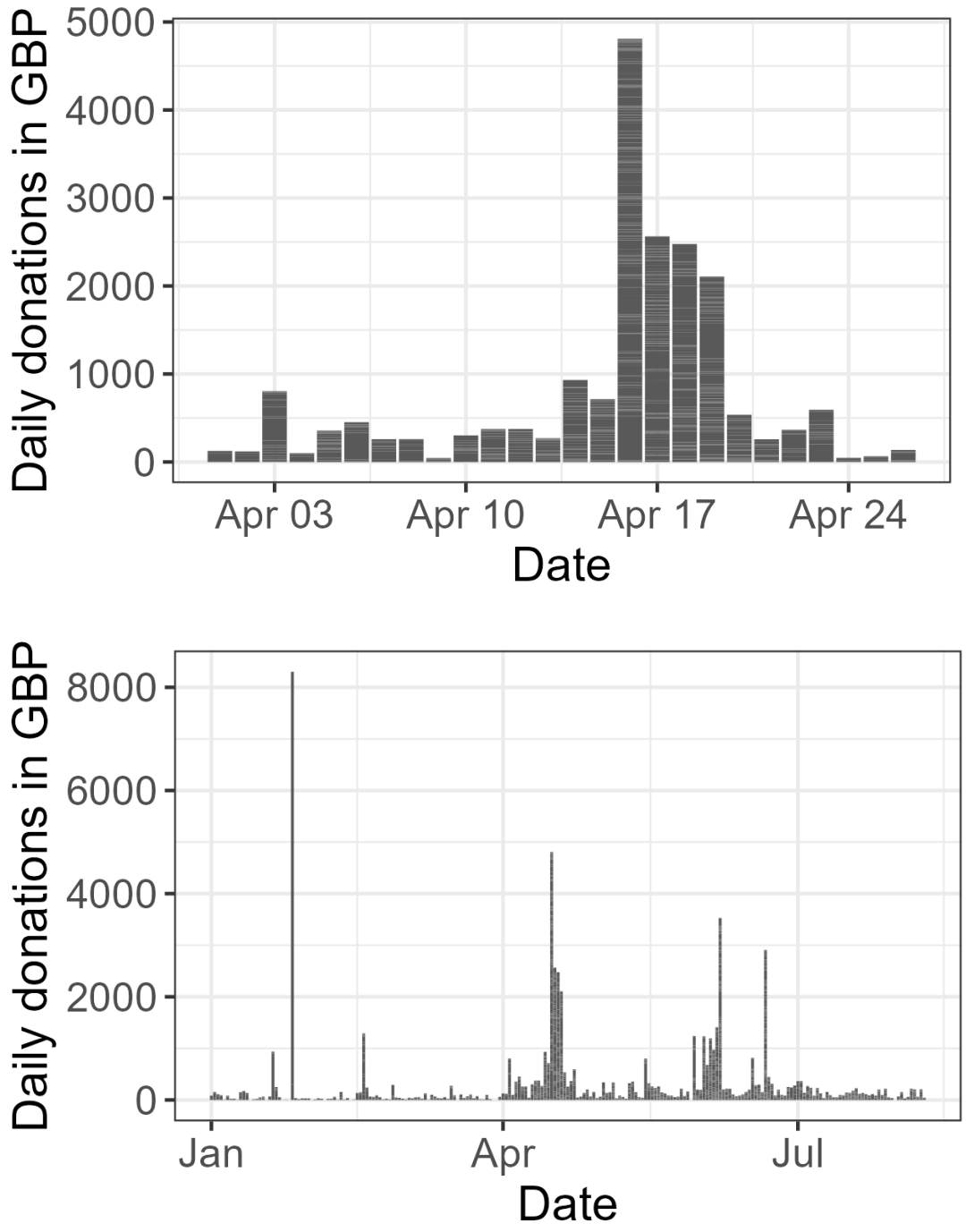

Figure 9. Daily direct donations to AR. Top panel: Donations in April 2023 show a strong peak right after the GN protest (15 April). Bottom panel: Donations in 2023 up until August 9, 2023. Calculated using data from AR's Chuffed crowdfunder.

Discussion

By its nature, disruptive protest is unpopular. When the US Civil Rights movement was active in the 1960s, approval ratings for Martin Luther King were extremely low. Despite this, civil disobedience has been a vital ingredient for social movements to draw attention to the issues they are fighting for (Sovacool & Dunlap, 2022; Wien & Elmelund-Præstekær, 2009). Studies on the climate movement and the Black Lives Matter movement indicate that disruption has a much higher chance of getting media attention (Chen et al., 2023; Dunivin et al., 2022). Heightened salience of an issue leads to more people thinking and learning about it. More information and knowledge, at least in the case of climate change, has been shown to lead to increased support for the cause (Milfont, 2012).

A debated question is the extent to which non-violent disruptive tactics have negative effects on public opinion, thereby undermining the goal of activists to bring more people on side (Feinberg et al., 2020). Here, we studied the public opinion impacts of disruptive tactics in the context of AR's protest of the GN horse race. The protest received considerable media coverage; it was discussed on all the major news outlets in the UK. While some news articles focused solely on the protest itself, many others touched on animal welfare issues, on whether traditions such as the GN are justifiable etc. AR spokespersons were invited to more than 60 interviews on national TV giving them a chance to communicate their perspective/message. Our results showed that the more people had heard about AR or the GN protest, the more they indicated having thought about animal welfare/rights issues. The protest thus successfully sparked a national conversation about animal welfare/rights issues. However, the results point to negative attitudinal effects on several key issues that animal rights activists are interested in. The evidence suggests that the GN protest led to people agreeing less that society has a broken relationship with animals, to people agreeing less that society needs to change how we treat animals used for entertainment and food, and to people deeming it more morally acceptable to use animals for entertainment.

These negative effects contrast with previous studies on disruptive climate protest finding no negative effects on people's attitudes towards climate change policies (Ostarek et al., submitted; Bugden, 2020). There are several possible reasons for this difference: 1) Animal welfare/rights enjoys much lower levels of support from the public than the climate crisis. This may be because these issues are not (yet) very salient; whereas climate change has been debated intensively for years, the same cannot be said for animal welfare/rights. As such, disruptive protests are more likely to lead to negative effects on public opinion, as recently predicted in an expert survey. 2) Differences in awareness/knowledge. The Sentience Institute (2017) reported that about

58% of people think that farm animals are treated humanely and 75% think the meat that they eat comes from humane manufacturers (CIWF report on factory farming). Thus, people often tend to think that animal welfare is not as bad as it is in reality - and therefore do not agree that animal welfare/rights protest is warranted. 3) Novelty: There simply has not been any high-profile disruptive direct action by animal rights activists in recent years. Therefore, negative effects might be exacerbated in this particular protest and might be different in future protests when people have digested the initial shock.

Related to the last point, the present study only measures the immediate effects of the protest on public opinion. Only further research can tell what the longer-term impacts are. One reasonable theory of change is that one first needs to get attention for an issue in order to get people thinking and talking about it; only after that, can one reasonably hope to win them over. As we have argued above, disruptive tactics are uniquely effective at garnering media attention and sparking a national debate. In this perspective, animal rights issues might follow a similar trajectory to climate issues, where public support grew progressively, putting increasing pressure on governments and corporations to take action. We will do further research this year to put this idea to the test. One facilitating factor is that people generally feel affection for animals and generally have the ability to feel compassion for them, at least for live animals they experience in real life. Previous evidence suggests that many Brits are also willing to pay more for higher welfare meat (Gorton et al., 2023).

A conceptual obstacle seems to be to connect the meat (or other animal product) on people's plates with the animal itself. Most people are against hurting animals but eat meat (which hurts animals), the meat paradox (Gradidge et al., 2021). The meat paradox is striking because it seems obvious that people know that the meat they eat comes from an animal that, if they saw it alive, they would not want to harm. Such discrepancies between people's beliefs and their behaviours are known to create a type of mental discomfort known as cognitive dissonance (Festinger, 1962). People have a strong tendency to avoid or resolve cognitive dissonance by aligning their beliefs and behaviours. This can be achieved by changing one's beliefs, changing one's behaviour, or by obscuring the contradiction between the two. It seems that in the case of the meat paradox, it is mostly the third strategy. Since people typically do not want to give up the belief that they love animals and don't want to hurt them, and they don't want to give up consuming animal products, it is the only way to decrease cognitive dissonance. Obscuring the contradiction can be done, for example, by conceptualising the animals people eat as food, not as living creatures, thereby suppressing one's moral concern for them (Loughnan et al., 2010). It seems quite likely that most people will remain reluctant to change their eating habits and that it will take a lot for them to substantially deviate from them. Whether and to which extent relentless disruptive protest can push a large

number of people towards easing their meat paradox related cognitive dissonance by giving up or reducing their consumption of animal products, remains to be seen.

In conclusion, the present study suggests that Animal Rising's protest at the 2023 Grand National horse race simultaneously had strong positive and negative effects. On the one hand, it made people think more about animal welfare/rights issues, made many people sign up to take action with Animal Rising, and generated extraordinary levels of personal donations to them. On the other hand, the protest had negative effects on several measures that reflect people's attitudes towards animals and the need to change how society treats animals. Thus, disruptive animal rights protests, at least in the short term, can lead to negative impacts on public opinion, but at the same time attract a great deal of attention, lead to an increased number of activists joining a movement and start a national conversation about a neglected issue. Future studies could usefully investigate whether in the longer-term, the positive effects can combine to eventually positively affect public opinion, enable behavioural change, and put pressure on policymakers.

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