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Providing Fairness and Effectiveness Reasoning for Obesity Policies Increases Policy Support

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Abstract: This study investigates how providing fairness and effectiveness reasoning for obesity prevention policies impacts support for these policies. We used an online experimental survey to measure support for 12 policies. 1,353 participants were randomly shown a control version (basic description), a version with an effectiveness reasoning, or a version with a fairness reasoning for each policy. Policy support was high. Effectiveness and fairness treatments modestly increased support. Among fairness treatments, those about autonomy (respecting freedom of choice) were most effective. Effects varied by policy and treatment and did not depend on individual-level factors (e.g., attitudes).

Keywords: Obesity; Overweight; Obesogenic; Policy; Perceptions; Fairness; Effectiveness; Environment

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1. Introduction

Overweight and obesity rates in Ireland have reached epidemic proportions, affecting over half of adults and about a third of children, with serious implications for health conditions such as disabilities and cardiovascular diseases as well as quality of life (World Health Organisation, 2022).

A major challenge when using policy to reduce obesity rates is that food choice is a personal, everyday decision. Therefore, any policies seeking to change how people eat will intrude to some level on people's personal lives. This level of intrusion might vary, as there are many ways in which policies can change how people eat. For example, some policies might alter prices, increase the prominence, size, or even availability of unhealthy foods, or change what people know about the foods on offer.

The public may find some approaches to changing their food choices more or less acceptable than others. They may also care about whether the policy is likely to meaningfully reduce obesity rates. In fact, perceptions about obesity policies' fairness and effectiveness are among the most important determinants of support for these policies (Espinosa & Nassar, 2021; Gunarathne et al., 2019; Robertson et al., 2023; n.d.; also broader policy acceptance studies, Grelle & Hofmann, 2024; Reynolds et al. 2020).

A further issue is that the public's perceptions of what policies are fair and effective often do not match those of public health experts: the public prefer less intrusive obesity policies (e.g., information and subsidies) and see them as fairer and more effective, while experts prefer more intrusive policies such as taxes and restrictions (Fatemi et al., 2021; Robertson et al., 2023; n.d.; Reynolds et al., 2019).[1]

Given this context, the challenge for government is to select a suite of policies and policy approaches that are both effective and acceptable, and to communicate a justification for this selection (e.g. based on fairness and effectiveness). In other words, finding what determines people's policy support matters, because knowing this is helpful to select and implement the right policy mix.

This study investigates how providing fairness and effectiveness reasoning for obesity prevention policies impacts the public's support for these policies, across a range of policies spanning intrusiveness levels, using a pre-registered online experimental survey. We also test the role of beliefs, attitudes, and perceptions that may influence how this reasoning is received.

1.1. Role of fairness and effectiveness

Previous studies on perceived *effectiveness* and policy support test the impact of stating and quantifying the effects of policies on obesity rates or unhealthy behaviours, with generally positive effects (Arad & Rubenstein, 2018; Mantzari et al., 2022; Reynolds et al., 2018; 2019). In this study, we vary whether or not effectiveness reasoning for each policy is provided. For example, when asking participants about their views on increasing the sugar tax, we vary whether or not to also inform them that there is research evidence showing that sugar taxes in Ireland led drinks manufacturers to reduce sugar content (see Houghton et al., 2023). The aim is to provide direct insights for policy by testing true statements based on known information about a range of potential policies.

[1] Throughout this paper, we use the concept of policy "intrusiveness" to discuss the extent to which different types of policies impede on individual freedom and responsibility. Our ranking of policy types as more or less instrusive is based on the Nuffield Council on Bioethics' (2007) Intervention Ladder (see Methods section for more details).

Previous studies on perceived *fairness* and policy support have identified policy features that may be relevant to fairness judgments, such as intrusiveness (Bos et al., 2013; Robertson et al., n.d.). To our knowledge, there is no evidence on whether providing fairness reasoning for policies can inform policy perceptions. To do this, we draw on public health ethics research (especially Abbasi et al., 2018; and Barnhill & King, 2013) and research on other policy areas (e.g., climate policy, Zimm et al., 2023) and we identify four fairness dimensions likely most relevant to perceptions of obesity policies:[2]

1. *Autonomy*: concerns about liberty, freedom of choice, understanding of available options, and psychological capacity to make choices and act on them; this is particularly relevant to policies that impact people's decision-making or (food) options (Barnhill & King, 2013; Bos et al., 2013).

2. *Distributive fairness*: concerns about equality, equity, targeting, and distributive effects on specific groups; regarding obesity policy, people especially care about children and those on low incomes (Bos et al., 2013; Barnhill & King, 2013; Espinosa & Nassar, 2021; Grelle & Hofmann, 2024).

3. *Procedural fairness*: concerns about the processes deciding rules or situations that impact people's lives, for example based on who enacts the process, public involvement and support (e.g., via a consultation about a policy), and transparency (Espinosa & Nassar, 2021; Grelle & Hofmann, 2024).

4. *Protection from harm*: concerns around ensuring that rules or situations do not harm people (especially vulnerable groups in society) or correcting wrongs that have been done, such as harmful business practices to sell unhealthy foods (Abbasi et al., 2018; Bos et al., 2013; Zimm et al., 2023).

We focus the fairness experimental conditions on providing reasoning for policies that is relevant to these four dimensions. The conditions are tailored to each policy: for example, distributive concerns may be relevant to taxing unhealthy foods, while autonomy concerns may be relevant to restricting food options in shops or cafeterias. Finally, obesity policies aim not only to influence individual behaviour, but also to reduce harms being caused by other actors (e.g. the food industry) in influencing this behaviour. Therefore, while some of the "autonomy" and "protection" conditions focus on how policies target individual behaviour, others focus on how policies aim to counteract harmful food industry practices.

1.2. Role of beliefs, attitudes, and perceptions

We test the moderating effects of three measures when providing fairness reasoning: empathy for people living with obesity, blame assigned to the food industry for the obesity epidemic, and concern for specific groups when designing obesity policies. Previous research shows that empathy is linked to fairness perceptions and predicts policy support (Robertson et al., n.d.); that fairness judgments are informed by concerns about food suppliers' behaviours but that the public is less likely than experts to blame the food industry for obesity (Bos et al., 2013; Robertson et al., 2023); and that concern for specific groups, such as children or those on low incomes, may influence support (Bos et al., 2013; Barnhill & King, 2013), thus it may moderate the effect of fairness reasoning focused on these groups.

Finally, we test whether effectiveness reasoning interacts with people's awareness of environmental causes of the obesity epidemic, such as the availability of cheap, unhealthy foods, in influencing policy support. This is because previous research found that people who are aware of the obesogenic

[2] We do not claim that this approach is a systematic or comprehensive classification of fairness concerns in obesity policy. Instead, our study aims to reflect common fairness principles identified in obesity research.

environment see policies as less effective (controlling for policy type), but when controlling for perceived effectiveness, awareness is linked with higher policy support (Robertson et al., n.d.). Hence providing effectiveness reasoning may counteract the negative effect of awareness. On the other hand, Reynolds et al.'s (2022) review found no evidence that information about environmental factors changes support, possibly because the interventions do not change the belief that environmental factors matter.

Overall, the study aims to better understand the role of effectiveness and (different types of) fairness concerns in obesity policy perceptions and to test potential ways to help inform these perceptions.

2. Methods

The study used an online experimental survey to measure perceptions of twelve obesity prevention policies. Participants were randomly assigned to see a specific version of each policy: a control version, a version with an effectiveness reasoning for the policy, or a version with a fairness reasoning for the policy. We compare policy support across versions, and examine the potential moderating effects of underlying beliefs, attitudes, and perceptions around obesity. The study was pre-registered on the Open Science Framework.[3]

2.1. Participants

The study used a sample of 1,353 participants recruited from the online panels of two market research agencies.[4] Recruitment quotas based on gender, age, region, and social grade were used to ensure a broadly nationally representative sample.[5] Participants were paid a nominal fee (€2) to compensate them for their time. Table 1 summarises the sample's demographic characteristics. Participants' BMIs (using self-reported height and weight) are in line with national figures, although with the caveat that a substantial group (19.5%) did not know or disclose their height or weight (Department of Health 2024).[6]

Table 1. Sample characteristics

	Summary
N	1,353
Age (categorical)	
Under 40	520 (38.4%)
40-59	474 (35.0%)
60 or older	359 (26.5%)
Male	666 (49.2%)
University degree	571 (42.2%)
Social grade	
ABC1	715 (52.8%)
C2DE	564 (41.7%)
Farmer/unsure	74 (5.5%)
Employed	887 (65.6%)

[3] https://osf.io/yznhv

[4] RED-C and Pureprofile. As a robustness check, we reproduced the models with a control for panel provider and we found consistent results.

[5] The ABC1 group is slightly overrepresented (as is typical of online samples in Ireland). As a robustness check, we reproduced the models with a control for social grade and we found consistent results.

[6] As a robustness check, we reproduced the models with a control for BMI and we found consistent results.

Rural	514 (38.0%)
Region	
Dublin	342 (25.3%)
Rest of Leinster	421 (31.1%)
Munster	377 (27.9%)
Connacht or Ulster	213 (15.7%)
Born in Ireland	1,075 (79.5%)
Parent or guardian of a child <18	428 (31.6%)
BMI (self-reported, kg/m^2)	
<18.5	20 (1.5%)
18.5 to <25	419 (31.0%)
25 to <30	406 (30.0%)
30+	244 (18.0%)
Unsure/prefer not to say	264 (19.5%)

Notes: ABC1 includes higher and intermediate managerial, professional, and administrative occupations; supervisory or clerical junior managerial, professional, and administrative occupations; and students. C2DE includes skilled, semi-skilled, or unskilled manual workers, casual workers, unemployed people, and full-time carers. The "unsure / prefer not to say" BMI category also includes 12 participants whose self-reported height or weight was an extreme outlier (likely reflecting a mistake in the unit used).

2.2. Survey questionnaire

Participants first answered screening questions before seeing the study information sheet and consent form. The survey measured perceptions of obesity policies (section 2.2.1), as well as beliefs, attitudes, and perceptions about obesity (section 2.2.2). Half of the participants were randomly assigned to see the policy perceptions section first in order to avoid order effects. Finally, the survey collected socio-demographic information (section 2.2.3). An instructed response question was also included as an attention check.[7] The full survey questionnaire is available on the Open Science Framework.

2.2.1. Policy perceptions

We measured participants' perceptions of twelve obesity prevention policies, summarised in Table 2. The policies span across four "intrusiveness" levels based on how much they impede on individual freedom and responsibility (adapted from Nuffield Council on Bioethics, 2007). These levels include "information" interventions, "subsidy" interventions to encourage healthy choices, "taxes" to discourage unhealthy choices such as buying foods that are High in Fat, Salt, or Sugar (HFSS foods), and "restrictions" such as bans (from least to most intrusive, respectively).

We randomised the order in which the twelve policies were shown to minimise order effects. Policies were first split into two blocks (balanced across intrusiveness levels) and participants were randomly assigned to see either block first. The order of the policies within blocks was also randomised, with one restriction rule to exclude randomisations where taxes are next to each other (i.e., end of first block and start of second block), since the effectiveness or fairness reasoning provided in relation to one tax policy is also relevant to the other tax policy.

[7] 4% of participants (56) failed one attention check but corrected their answer when prompted. As a robustness check, we reproduced the models while excluding these 56 participants and we found consistent results. A further 45 participants failed twice and were automatically rejected from the survey.

Table 2. Obesity prevention policies included in the survey

Type	Description	Block
Restriction	Ban displays of HFSS foods and drinks near supermarket checkouts	A
Restriction	Limit the amounts of fat, salt, and sugar in processed foods	A
Restriction	Mandate smaller plates and utensils in public buildings (e.g., schools)	A
Restriction	Ban special offers (e.g., "buy 1 get 1", discounts) on HFSS products	B
Restriction	Ban online/TV ads for unhealthy foods and drinks targeting children	B
Tax	Tax HFSS foods	A
Tax	Increase the sugar tax on fizzy drinks	B
Subsidy	Give free fruit to all children at school	A
Subsidy	Give vouchers for healthy foods to low-income households	B
Information	Put colour-coded nutritional labels on the front of all food packages	A
Information	Put visible lines on snack packages to show recommended portion size	B
Information	Put meal calories beside prices on menus (including online delivery)	B

Note: Policies are reworded here for brevity but were shown to participants using simplified language.

Participants were randomly assigned to see only one version of each policy. Possible versions included a control version (basic description), an effectiveness version (basic description + effectiveness reasoning), and one or two fairness versions (basic description + fairness reasoning). The effectiveness and fairness treatments were tailored to each policy based on relevance, and any factual statements were based on the research literature (e.g., when stating that sugar taxes can lead to manufacturers reformulating products, or that children from disadvantaged families spend more time watching TV). We report the full list of treatments and corresponding references for any factual statements made in Appendix 1.

Fairness versions spanned several potential dimensions depending on relevance, including autonomy, protection from harm, and distributive and procedural fairness. Autonomy and harm protection versions also varied in whether they focused on businesses (e.g., stopping harmful business practices) or individuals (e.g., discouraging unhealthy choices).

Table 3 shows examples of each experimental condition (each possible version of a policy). There were one effectiveness version and up to two fairness versions for each policy. The number of fairness versions, the type of fairness, and the policy target of the fairness reasoning where applicable (business or individual) were chosen based on the relevance of different fairness reasonings to each specific policy, as well as to ensure that a range of fairness types and policy targets were included in the study, while preserving statistical power by limiting fairness versions to two per policy.

Table 3. Examples of experimental conditions (full list in Appendix 1)

Policy version	Text displayed
Control	*Ban adverts for unhealthy foods and drinks from children's TV and social media*.
Effectiveness	*Ban adverts for unhealthy foods and drinks from children's TV and social media*. Scientific research has shown that advertising unhealthy foods and drinks to children increases their risk of obesity.
Fairness (distributive)	*Give free fruit to all children at school.* This policy could particularly help children from low-income families, who may find it harder to access fresh fruit every day.

Fairness (procedural)	*Put limits on the amounts of fat, salt, and sugar in processed foods*. This policy would follow a recent survey of the Irish public in which the majority of people agreed with making food companies reduce the amount of unhealthy ingredients in their products
Fairness (autonomy, individuals)	*Ban displays of foods and drinks that have a lot of fat, salt, and sugar in areas close to supermarket checkouts.* People could still buy these foods and drinks, but they would only be displayed away from the checkouts. This policy aims to help people so that they aren't tempted to buy unhealthy products while waiting to pay.
Fairness (autonomy, businesses)	*Ban displays of foods and drinks that have a lot of fat, salt, and sugar in areas close to supermarket checkouts.* Food companies pay to display unhealthy snacks at checkouts, using colourful packets to appeal to people, especially children who may try to get their parents to buy these products. This policy aims to stop food companies from influencing people in this way.
Fairness (harm protection, individuals)	*Tax foods that contain large amounts of fat, salt, and sugar*. This policy aims to reduce the negative effects that buying and eating large amounts of these foods have on people's health.
Fairness (harm protection, businesses)	*Put limits on the amounts of fat, salt, and sugar in processed foods.* Food companies put a lot of fat, salt, and sugar in processed foods, making them harmful to health. The policy aims to protect people by making the food industry offer healthier processed foods.

Notes: Participants were randomly assigned to see one version of each policy. Each policy was randomised individually. Each policy has a control, effectiveness, and (one or two) fairness versions.

Policy perceptions: For each policy, we asked participants if they thought the policy would be effective at reducing obesity rates (on a 7-point numeric response scale, from 1 "No, not at all effective" to 7 "Very effective"), if it would be a fair way to do so (from 1 "No, very unfair" to 7 "Yes, very fair"), and finally if they would support the policy (1 "No, fully oppose" to 7 "Yes, fully support").

2.2.2. Beliefs, attitudes, and perceptions

We measured several individual-level measures likely to be relevant to people's policy perceptions.

Empathy: We showed participants a short scenario in which an individual goes to the doctor and is told they are at risk of obesity due to their weight (the gender of the protagonist was randomised). We then asked participants to complete the 10-item version of the Empathy Response Scale (Campbell & Babrow, 2004; Skurka et al., 2020). This scale required participants to rate how much they agreed with 10 statements (e.g., "I wish I could do something to help the person described in the story," "I feel no concern for people like the one described in the story") on a 7-point numeric scale from 1 "Strongly disagree" to 7 "Strongly agree". The items were shown in random order. We averaged responses across all items (reversing scores as needed) to calculate a mean empathy score for each participant.

Blame: We asked participants how much they believe individuals, government, and private businesses such as food manufacturers and supermarkets are to blame for the obesity epidemic (adapted from Robertson et al. 2023). Participants used three sliders to assign a percentage of the total blame to each of the three actors (percentages were required to add up to 100%). Actors were listed in random order.

Concern for groups: We asked participants to rank seven groups in society based on how much the government should prioritise the needs of each of these groups when making obesity policies. The groups included: children, people on low incomes or who rely on welfare assistance, parents, food

manufacturers, restaurants and cafés, supermarkets, and farmers (shown in random order). Participants ranked groups from highest to lowest priority by dragging them up or down in a list. We compiled scores from 1 "lowest priority" (ranked at the bottom) to 7 "highest priority" (ranked at the top).

Causes of obesity: We provided participants with a list of 6 potential causes of the obesity epidemic, and asked them to rate how much each one contributed to the epidemic on 7-point numeric scales (from 1 "Not at all" to 7 "To a large extent"). The causes were shown in random order and included two biological/psychological causes ("People inherit genes or have hormonal disruptions that contribute to weight gain" and "People are addicted to food"), two causes related to individual behaviour ("People don't make enough effort to eat healthily" and "People don't want to learn about healthy diets"), and two societal/environmental causes ("Unhealthy foods are heavily advertised, cheap, and widely available" and "Portion sizes in restaurants, fast-food shops, cafés and pubs are large"). The items are adapted from Robertson et al. (2023) (who drew on McGlynn & McGlone, 2019; Pearl & Lebowitz, 2014; Reynolds et al., 2020; Robinson et al., 2022; von dem Knesebeck et al., 2019). We compiled average ratings for the two causes in each type to rank the relative perceived influence of each type.

2.2.3. Socio-demographic variables

We collected the following socio-demographic information: age, gender, region, social grade, country of birth, living area (urban or rural), educational attainment, and employment status. We also asked participants to indicate whether they are a parent, guardian, or carer for any child under the age of 18. Finally, we measured self-reported weight and height. Participants had the option to report their measurements in metric or imperial units. They could also opt out of these questions if they preferred. We used the height and weight data provided to calculate BMI.

2.3. Procedure

Participants completed the survey online using a phone, tablet, or laptop. They were informed in advance that the study was about their opinions on issues in society and related public policies. Over 80% of the sample completed the survey in under 16 minutes, and over 90% in under 22 minutes.

2.4. Hypotheses

We pre-registered two hypotheses on the main treatment effects as follows.[8]

Hypothesis 1: Providing fairness reasoning for policies increases policy support.

Hypothesis 2: Providing effectiveness reasoning for policies increases policy support.

We also pre-registered four hypotheses on the role of beliefs, attitudes, and perceptions as follows.

Hypothesis 3: Empathy for people living with obesity positively moderates the effect of providing fairness reasoning for policies.

[8] We re-ordered the hypotheses and made minor language changes for consistency and ease of reading. The pre-registration is available at: https://osf.io/yznhv.

Hypothesis 4: Blaming businesses for the obesity crisis positively moderates the effect of providing fairness reasoning for policies.

Hypothesis 5: Concern for specific groups (a) influences support for policies targeting these groups and (b) moderates the effect of providing fairness reasoning that focuses on these groups.[9]

Hypothesis 6: The interaction between providing effectiveness reasoning and being aware of environmental causes of obesity is positive.

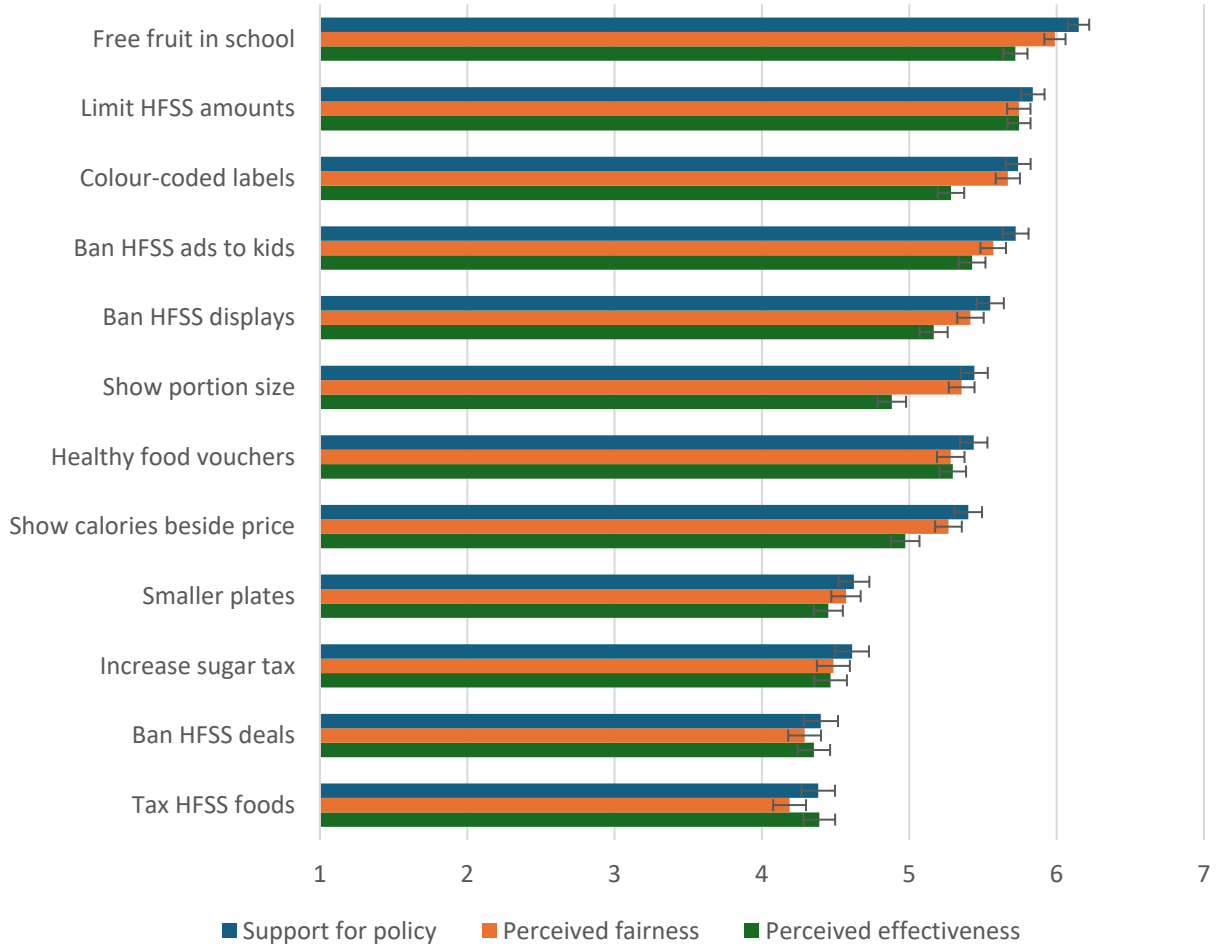
3. Results

We now report our findings on how providing fairness and effectiveness reasoning impacts policy support.

We first show descriptive results on policy perceptions. Figure 1 shows average support, perceived fairness, and perceived effectiveness by policy (the figure does not differentiate by policy version). Participants are broadly supportive of obesity prevention policies: average ratings are over 4 (midpoint) for all 12 policies. Average support ranges from 4.4 (SD=2.1) for taxing HFSS foods to 6.2 (SD=1.3) for giving free fruit at school. These standard deviations suggest substantial variation between and within policies. Average fairness rankings match support rankings, but there are some differences in effectiveness rankings (e.g., ranks within the top two and bottom two policy pairs are swapped).

Figure 1. Average support, perceived fairness, and perceived effectiveness for each policy

[9] The full hypothesis also specifies effect directions: "*The direction of these effects will vary by group: concern for children and those on low incomes will increase support and positively moderate the effect of providing fairness reasoning, while concern for food manufacturers, restaurants and cafés, supermarkets and farmers will decrease support and negatively moderate the effect of providing fairness reasoning."*

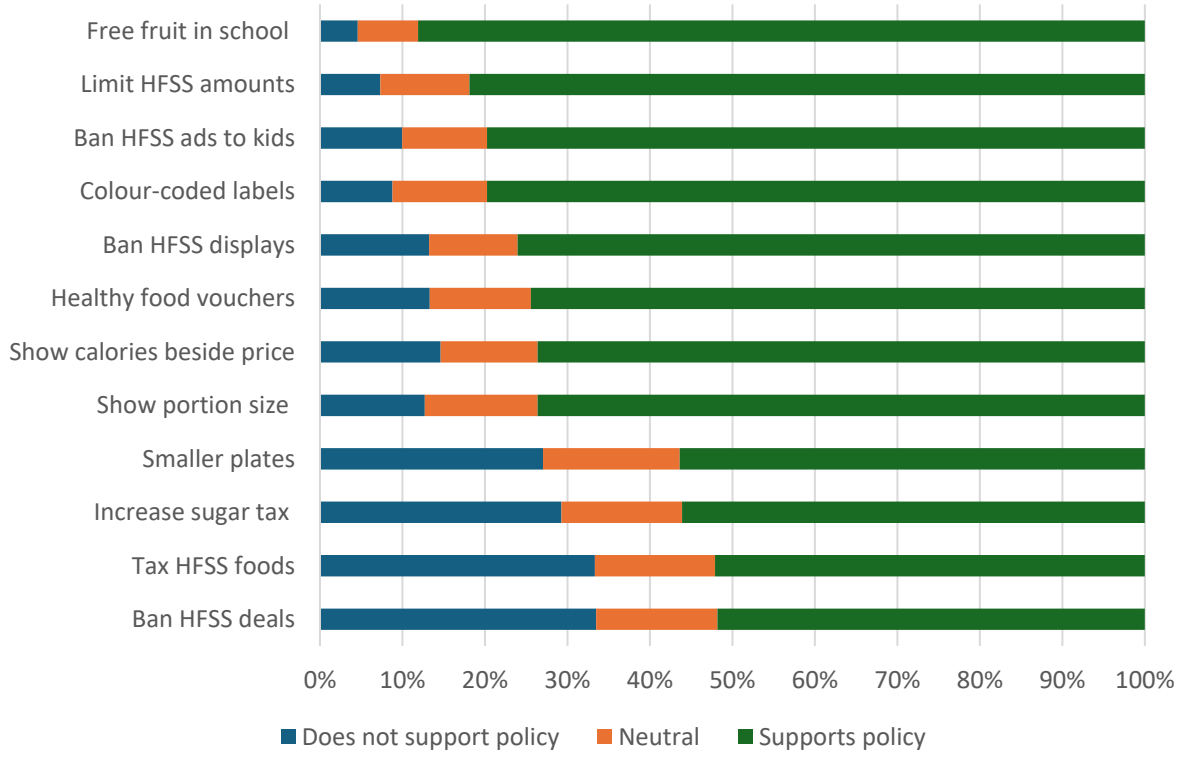


Notes: Error bars are 95% confidence intervals. A rating of 1 (7) represents the lowest (highest) possible rating of support, fairness, or effectiveness for the policy. Standard deviation of support (pooled) is 1.9.

In general, price interventions (taxes, banning special offers) are rated the lowest, while highly rated policies span across subsidy-, restriction-, and information-based interventions (see Figure 1). However, participants are still more supportive of all policies than not, including of price interventions. Indeed, Figure 2, which shows the (aggregated) distributions of support for each policy, shows that over 50% of participants support increasing the sugar tax, taxing HFSS foods, and banning special offers on HFSS products (i.e., rated it above 4), while a third or less do not support these policies (rating below 4).

Histograms of the full (7-point scale) distributions of support for each policy are provided in Figure A1 in Appendix 2. They show that while most policies have a clear left-tailed distribution with most people reporting high support (banning HFSS ads to children), other distributions are closer to uniform (taxes).

Figure 2. Distribution of support for each policy



Notes: "Does not support policy" includes ratings below 4, "Neutral" includes ratings of 4, and "Supports policy" includes ratings above 4, on a 7-point rating scale from 1 (fully oppose) to 7 (fully support).

3.1. Does providing fairness and effectiveness reasoning increase policy support?

3.1.1. Effects on pooled policy support

We first examine differences in support by treatment condition, pooling ratings across policies. This offers a simple and useful first look at the results, as it maximises statistical power and limits noise.[10]

Figure 3 shows average policy support by treatment condition, pooled across policies. Average support is higher in the effectiveness and fairness conditions (5.32 for both treatment types, compared to 5.17 in the control condition), although the size of this difference is modest (equivalent to 0.08 SD).

We test whether differences in policy support by treatment condition are statistically significant, using pooled ordered logistic regressions that control for policy, age, and gender.[11] The models include random intercepts by person[12] and clustered standard errors at the person level. As discussed above,

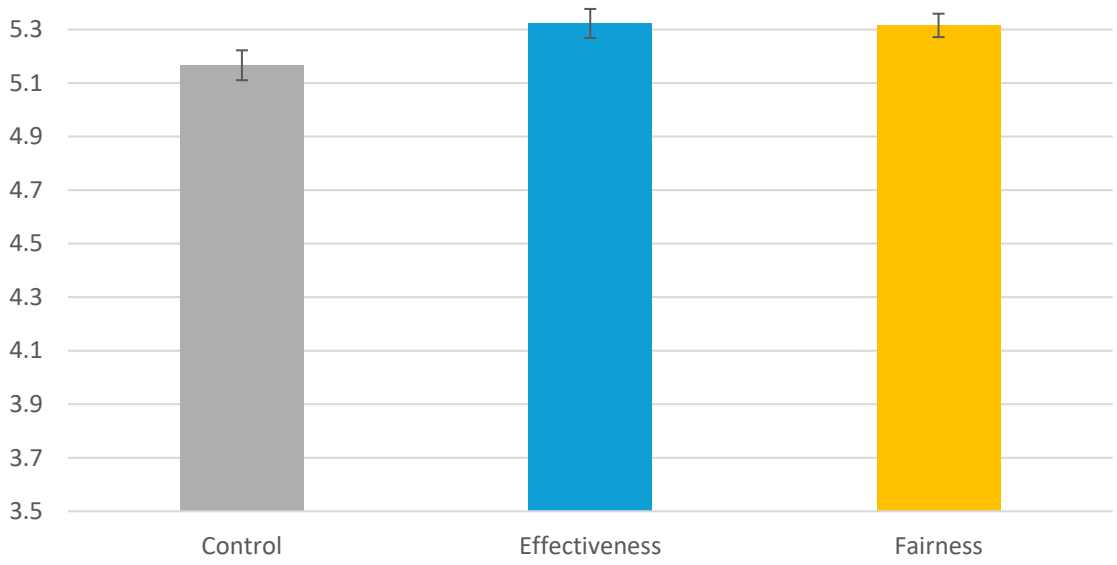
[10] Note that this pooled approach is only our (pre-registered) primary analysis method for testing effectiveness effects (not fairness effects), since different fairness conditions are not as directly comparable as effectiveness conditions. Instead, for fairness this analysis is pre-registered as secondary.
[11] The pre-registration mentions controlling for policy type (intrusiveness level), but we control for individual policy in the analysis instead, after observing substantial variation in support within policy types (e.g. see Figure 1).
[12] The pre-registration does not mention using random effects, but we include them here after observing that average policy support has a roughly unimodal (censored at the highest rating) distribution.

this pooled approach constitutes the primary analysis for effectiveness but not fairness treatment effects.

Table 4 shows the results of the pooled models. We use two separate models. In Model 1, the treatment variable pools all fairness conditions together (as pre-registered). Additionally, we use Model 2 (not pre-registered), where the treatment variable is further disaggregated by fairness type (distributive, procedural, autonomy with individual target, autonomy with business target, harm protection with individual target, and harm protection with business target).

The results of Model 1 show that both effectiveness and fairness treatments significantly increase policy support on average. However, the results of Model 2 show that the size and significance of fairness treatment effects varies by fairness type. Autonomy reasoning (targeting individuals) has the largest effect and it is statistically significant ($p<.05$), followed by autonomy reasoning (targeting businesses) and reasoning about procedural fairness, which provide directional evidence ($p<.10$). There is also a smaller effect of harm protection reasoning (targeting businesses), however it is not statistically significant ($p=.10$). Finally, there is little to no evidence for distributive fairness reasoning or harm protection reasoning (targeting individuals). This variation by fairness type may be partly explained by statistical noise and power limitations, as each type only appears two to four times.

Figure 3. Average policy support by condition (pooling all policies)



Note: Y-axis is re-scaled to 1 SD (=1.9). Error bars are 95% confidence intervals. Ratings span from 1 ("No, fully oppose") to 7 ("Yes, fully support").

Table 4. Effect of fairness and effectiveness reasoning on policy support, ordered logit (pooled)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")			
	(1)		(2)	
	Coef. (SE)	p-value	Coef. (SE)	p-value
Treatment group				
Effectiveness	.18	p=.00	.18	p=.00
	(.04)		(.04)	
Fairness	.10	p=.01		

(pooled)	(.04)			
Autonomy			.17	p=.01
(individuals)			(.06)	
Autonomy			.14	p=.07
(businesses)			(.08)	
Protection			.04	p=.67
(individuals)			(.08)	
Protection			.12	p=.10
(businesses)			(.07)	
Distributive			-.00	p=.99
			(.07)	
Procedural			.14	p=.08
			(.08)	
Control for policy		Yes		Yes
Age	.19	p=.00	.19	p=.00
	(.03)		(.03)	
Male	-.26	p=.01	-.26	p=.01
	(.10)		(.10)	
Observations	16236		16236	

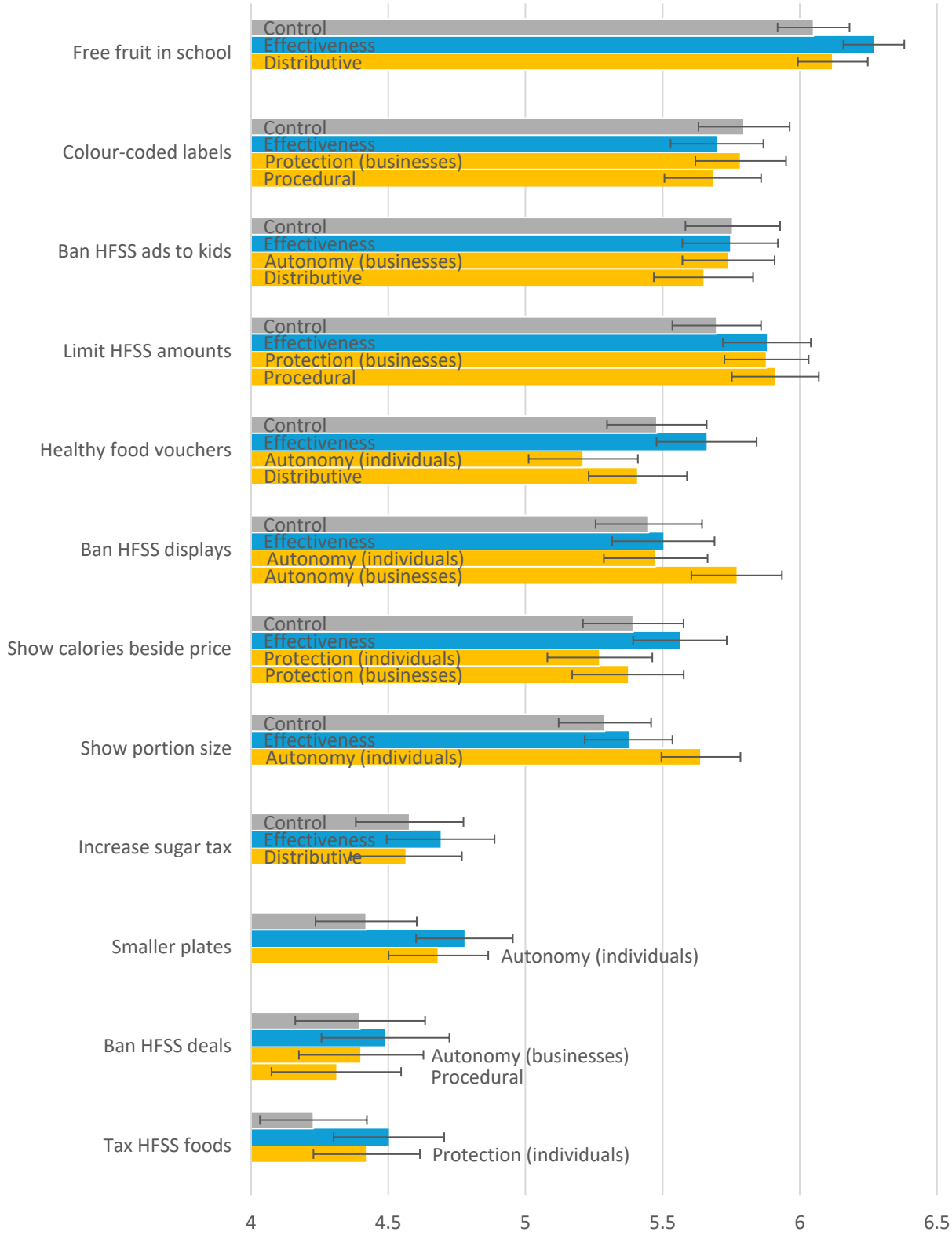
Notes: Coefficients from ordered logistic regressions with individual random intercepts. There are 12 observations per person (1 per policy). Standard errors are clustered at the individual level. Note all models use a categorical age variable (in 10-year intervals), as per the pre-registered analysis plan.

3.1.2. Effects by individual policy

We examine differences in support by treatment condition within each policy. This is the primary pre-registered analysis for fairness (and pre-registered as secondary for effectiveness), as different fairness types are relevant to each policy, and there may be policy-specific patterns obscured in pooled models.

Figure 4 shows average support by condition for each policy. In 10 out of 12 policies, average support is higher in the effectiveness condition compared to the control condition, in line with the pooled analysis. However, there is substantial variation across fairness conditions: in some policies, average support is higher in the fairness conditions compared to the control condition (e.g., portion size information), while in others, support is lower in the fairness conditions (e.g., healthy food vouchers).

Figure 4. Average policy support by treatment condition (by policy)



Notes: Error bars are 95% confidence intervals. Ranked by support for control version. Ratings span from 1 (“No, fully oppose”) to 7 (“Yes, fully support”). Standard deviation of policy support is 1.9.

We use ordered logistic regressions of policy support on treatment condition, controlling for age and gender, to test whether differences in support by condition are significant (1 model per policy). Table 5 shows the results of this analysis. Effectiveness treatment effects are almost all positive, although they are only statistically significant for three policies (and marginally significant for one more).

Regarding fairness treatments, four of them significantly increase support. Three of these are about preserving autonomy, including two targeting individual choices (smaller plates, show portion sizes) and one targeting business behaviour (ban HFSS food displays). The fourth significant treatment is on procedural fairness (limit HFSS in foods). More broadly, six policies show positive effects of providing fairness reasoning, although half of the individual treatments are not statistically significant. These policies include three restrictions (limit HFSS in foods, smaller plates, ban HFSS displays), one tax (tax HFSS foods), one subsidy (free fruit in schools), and one information policy (show portion sizes). Finally, fairness treatment effects are negative, although not statistically significantly so, in two information policies (showing calories, colour-coded labels), two restrictions (ban HFSS deals, ban ads to children), one tax (increase sugar tax), and one subsidy (healthy foods vouchers). In summary, fairness treatments have positive effects in six policies, but only four individual treatments are statistically significant. In the other six policies, treatment effects were negative and non-significant. Although there is debate over whether the sign of non-significant coefficients should be interpreted, examining the pattern of results in this model shows that despite having significant positive effects in the aggregate, fairness treatments do not necessarily lead to increased support for each individual policy, and policy context matters.

Table 5. Effect of fairness and effectiveness reasoning on policy support, ordered logit (by policy)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p	Coef. (SE) p
Treatment group												
Effectiveness	.08 (.14) p=.59	.30 (.14) p=.03	.23 (.12) p=.05	.33 (.12) p=.01	.35 (.13) p=.01	-.06 (.14) p=.67	.02 (.14) p=.88	-.05 (.14) p=.74	.08 (.12) p=.48	.03 (.12) p=.81	.23 (.14) p=.11	.15 (.14) p=.26
Autonomy (individual)	.01 (.14) p=.96			.25 (.12) p=.03						.35 (.12) p=.00	-.25 (.14) p=.07	
Autonomy (business)	.34 (.14) p=.02						-.06 (.13) p=.65	-.10 (.14) p=.48				
Protection (individual)			.15 (.12) p=.18									-.11 (.14) p=.42
Protection (business)		.23 (.14) p=.10				-.01 (.14) p=.95						-.00 (.14) p=.97
Distributive					.19 (.13) p=.16			-.15 (.14) p=.30	-.02 (.12) p=.85		-.05 (.14) p=.69	
Procedural		.32 (.14) p=.02				-.07 (.14) p=.61	-.08 (.14) p=.55					

Age	.21	.24	.13	.14	.06	.12	.23	.15	.17	.06	-.01	.08
	(.03)	(.03)	(.03)	(.03)	(.04)	(.03)	(.03)	(.03)	(.03)	(.03)	(.03)	(.03)
	p=.00	p=.00	p=.00	p=.00	p=.12	p=.00	p=.00	p=.00	p=.00	p=.05	p=.67	p=.01
Male	-.35	-.42	-.04	-.22	-.19	-.16	-.14	-.15	.01	-.34	-.22	-.20
	(.10)	(.10)	(.10)	(.10)	(.11)	(.10)	(.10)	(.10)	(.10)	(.10)	(.10)	(.10)
	p=.00	p=.00	p=.67	p=.02	p=.09	p=.12	p=.16	p=.14	p=.91	p=.00	p=.03	p=.05
Observations	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353

Notes: Coefficients from ordered logistic regressions.

3.1.3. Underlying mechanisms

We conduct additional analyses, pre-registered as exploratory, to understand the mechanisms that may underlie the main treatment effects. We first test whether providing fairness (effectiveness) reasoning increases perceived fairness (effectiveness). We find that both conditions significantly increase their respective outcomes, using pooled ordered logistic regressions that control for policy, age, and gender, with random intercepts by person and person-level clustered standard errors. However, when distinguishing between fairness conditions, they all lose significance, except autonomy (individuals) (see Table A1 in Appendix 2), in line with the main effects on policy support observed in section 3.1.1.

Furthermore, when using policy-specific models (ordered logistic regressions controlling for age and gender), some effectiveness conditions do not significantly increase perceived effectiveness, and the only fairness conditions that significantly increase perceived fairness are the same four conditions where we observe significant main effects on policy support in section 3.1.2 (see Tables A2 and A3 in Appendix 2). In addition, one fairness condition significantly decreases perceived fairness (distributive fairness condition in the policy banning ads on children's TV, which highlights that the policy could especially help disadvantaged children, as they spend more time using screens and are at higher risk of obesity).

Finally, we test the associations between perceived fairness and effectiveness on one hand, and policy support on the other hand, using ordered logistic regressions that control for age and gender. We find significant positive associations for both fairness and effectiveness throughout, both in pooled models (that also control for policy and include a random intercept by person and person-level clustered standard errors) and in policy-specific models (see Tables A4 and A5 in Appendix 2).

3.2. Do beliefs, attitudes, and perceptions play a role?

3.2.1. Empathy

Participants score an average of 4.6 (SD=1.17) on the empathy index (average of 10 items scored from 1 to 7, with 7 corresponding to the highest level of empathy, reverse-coding items as needed).[13] To test whether empathy positively moderates the effect of providing fairness reasoning, we include the empathy index and its interaction with fairness treatments to the policy-specific ordered logistic regression models used to test fairness treatment effects, controlling for age and gender.

We find that empathy is positively and significantly associated with policy support, across all policies, except banning HFSS deals and advertising to children, where this positive association is not statistically significant (see Table A7 in Appendix 2). However, we find little to no evidence of a moderating effect of

[13] Men score lower on the empathy index, but neither the (randomised) gender of protagonist in the empathy scenario, nor its interaction with participant gender, significantly impacts empathy (see Table A6 in Appendix 2).

empathy, with only one statistically significant interaction (positive moderating effect of empathy on support for banning HFSS deals with procedural fairness treatment). The fairness treatments also all lose statistical significance in this model (except for a negative effect of procedural fairness reasoning on support for banning HFSS deals), although this may be partly due to the lower statistical power.[14]

3.2.2. Blame

Participants assign blame for the obesity epidemic most strongly to individuals (43.4% of total blame is assigned to individuals on average, SD=22.5), then businesses (34.1%, SD=18.1), and they assign the least blame to the government (22.5%, SD=15.3). To test whether blaming businesses positively moderates fairness reasoning treatment effects, we include the level of blame assigned to businesses and its interaction with fairness treatments to the policy-specific ordered logistic regression models used to test fairness treatment effects, controlling for age and gender. We exclude policies where business blame is irrelevant (free fruit, healthy food vouchers, and smaller plates, as pre-registered).

We find a positive and statistically significant association between assigning blame to businesses and policy support in four policies (the association is marginally significant in one more policy and not significant in the other five policies) (see Table A9 in Appendix 2). However, we find little to no evidence of a moderating effect of blaming businesses: only one, negative interaction is statistically significant (interaction with harm protection treatment targeting individuals in the policy on taxing HFSS foods). In addition, three of the significant fairness treatment effects lose significance, though this may be partly driven by lower statistical power, and a previously non-significant effect gains significance (harm protection treatment targeting individuals in the policy on taxing HFSS foods).[15]

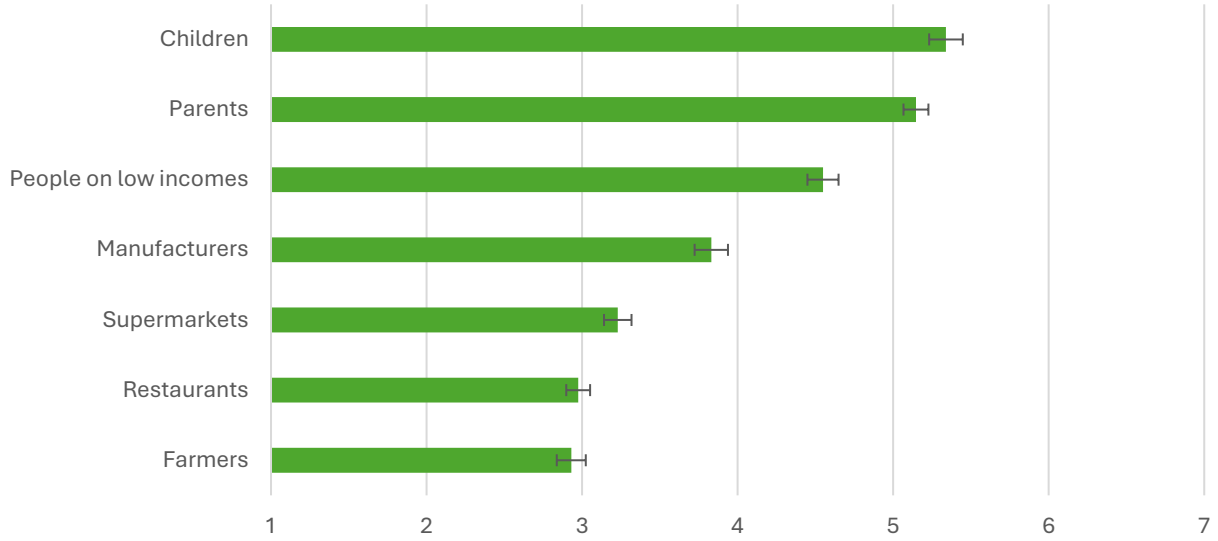
3.2.3. Concern for groups

Participants rank children as the highest priority group when asked whose needs should be considered by government when making policies to reduce obesity, among different groups in society. On average, children are ranked 5.3 (SD=2.0), where 7 is the highest-ranked group and 1 is the lowest-ranked group. Figure 5 reports the average ranking of each group. It shows that in addition to children, participants also prioritise parents and people on low incomes, while food producers and providers (manufacturers, supermarkets, restaurants, and farmers) receive lower rankings.

Figure 5. Average priority assigned to each group (ordinal ranking)

[14] As a secondary analysis, we also include empathy and its interaction with fairness conditions in the pooled models (ordered logistic regressions that control for policy, age, and gender, with random intercepts by person and person-level clustered standard errors). We again find positive and significant effects of empathy on policy support, but no significant fairness condition effects or interaction effects, except for a positive significant interaction between empathy and distributive fairness (see Table A8 in Appendix 2).

[15] As a secondary analysis, we include blaming businesses and its interaction with fairness conditions in the pooled models (ordered logistic regressions that control for policy, age, and gender, with random intercepts by person and person-level clustered standard errors). We find that blaming businesses significantly increases policy support. When separating fairness conditions, only autonomy (individuals) and protection (individuals) are significant (both positive), and the only significant interaction is that between protection (individuals) and blaming businesses, and it is negative (see Table A10 in Appendix 2).



Notes: Error bars are 95% confidence intervals. SDs range from 1.4 (restaurants) to 2.02 (children). Participants rank each group on a scale from highest- to lowest-priority in terms of addressing needs.

We test the role of concern for specific groups in influencing policy support and moderating the effect of fairness treatments. To do so, we include the ranks of relevant groups and their interaction with fairness treatments in the policy-specific ordered logistic regression models used to test fairness treatment effects. For example, we include concern for children in policies such as using smaller plate sizes in public buildings (e.g., schools), and concern for supermarkets in policies such as banning HFSS displays at checkouts. While two or more groups are often relevant to a given policy, we only include one group per model to avoid collinearity risk (since the rank of each specific group is a function of other groups' rank).

The effects of concern on policy support vary across groups of interest (see Table A11 in Appendix 2). Concern for those on low incomes is negatively associated with support for both of the taxes and for banning deals on HFSS foods, and positively associated with support for healthy food subsidies, although only the latter two associations are statistically significant. Concern for restaurants is significantly and positively associated with support for calories on menus.[16] There are no significant effects of concern for other groups (including children) on policy support, although ceiling effects may partly explain this due to the high overall level of concern for children. We find little to no evidence of a moderating effect of concern for groups on policy support, with only one significant interaction coefficient (between concern for low-income groups and autonomy reasoning targeting business practices in banning HFSS deals).[17,18]

[16] This is despite the pre-registered hypothesis predicting the opposite effect (that being concerned for restaurants lowers policy support). A possible explanation is that participants misinterpreted this item and used a high ranking to say that the *role* of restaurants (rather than their *needs*) should be prioritised when designing obesity policies.
[17] As a robustness check, we run further analyses with alternative group of interests as relevant (this includes a treatment for banning HFSS displays that discusses effects on children, and treatments for free fruit and banning ads that discuss effects on children from low-income households). We find no significant effects or interactions.
[18] As pre-registered, we only use policy-specific models (not pooled models) for the analysis on concern for groups, since different groups of concern are relevant to different policies.

Finally, none of the main fairness treatment effects are statistically significant except for a negative effect of providing autonomy reasoning targeting harmful business practices in banning HFSS deals.[19]

3.2.4. Perceived causes of obesity

Participants rate the two environmental causes of the obesity epidemic as contributing the most (availability of unhealthy foods, m=6.0, SD=1.3) and the least (large portion sizes when eating out, m=4.7, SD=1.7) to the epidemic, respectively, out of a list of six potential causes that they are asked to rate (the other two types of causes to choose from are biological causes, such as genes, and individual causes, such as motivation; see Figure A2 in Appendix 2 for full list and average ratings).

To test the impact of the perceived role of environmental causes, we add perceived role and its interaction with the effectiveness treatments to the pooled models used to test these treatment effects. The ordered logistic regression models pool all policies and control for policy, age, and gender. They include random intercepts by person and person-level clustered standard errors. We use four different models with different outcome variables. The first two models use the average rating of environmental causes and the rank of this rating compared to other causes,[20] as pre-registered. Since the two environmental causes are rated the highest and lowest respectively, we add two further models (not pre-registered) that use the rating of each individual environmental cause as the outcome variable.

In all models, we find a positive and significant association between the perceived importance of environmental causes and policy support (see Table A13 in Appendix 2). However, we only find a significant (positive) interaction between perceived importance and effectiveness in Model 4 (unhealthy foods availability). The effectiveness treatment effects are no longer statistically significant.[21]

4. Discussion and Conclusion

The findings of the study show that support for obesity policy is relatively high but varies across policies; that providing reasoning for policies based on their effectiveness or fairness (especially regarding personal autonomy) can increase support; and that these effects apply across the population regardless of beliefs, perceptions, and attitudes (although these factors do influence support). We also find that the public is especially concerned about children and low-income households when considering policies.

These findings have significant implications for the selection, implementation, and communication of an obesity prevention policy mix.

[19] As a robustness check, in further models we control for being a parent, guardian, or carer for a child where concern for children is relevant, with no significant changes in results (both the effects of concern for children and their interaction with fairness treatments are non-significant, and signs are consistent). Being a parent is positively and significantly associated with support for free fruit in schools, but the positive associations for the other two policies are not significant (see Table A12 in Appendix 2).

[20] Environmental causes were ranked higher than individual or biological causes when they had a rating equal or greater than these causes (in case of two types of causes having the same average rating).

[21] As a secondary analysis, we use policy-specific models with ordered logistic regressions of policy support on each measure separately and its intersection with effectiveness treatments, with age and gender controls. The effects of perceived importance are consistent, but only three interactions in the model on unhealthy foods availability are significant, and one of them is negative (banning HFSS ads to children) (see Tables A14-A17 in Appendix 2).

First, the public is broadly supportive of obesity prevention policies, even those that are more restrictive: more than 4 in 5 participants support the mandatory reformulation of HFSS foods, and over half support taxing and banning special deals on HFSS products, although price interventions are least supported overall. However, there is still substantial variation in support across policies. These findings may help inform the sequencing of policies, by prioritising policies the public see as fair and effective.

Second, providing reasoning for policies based on their effectiveness and fairness can increase policy support. Our experimental findings show small but statistically significant effects of providing each type of reasoning. As the experiment involves a light-touch, single-sentence treatment, sustained and cohesive messaging from trusted messengers on the effectiveness and fairness of policies may lead to significantly larger effects. The findings are also highly applicable to real-world policy communications contexts, as all treatment messages are based on real, publicly available information.

Third, the impact of providing a fairness reasoning depends on the type of fairness statement. Overall, the strongest findings are for: showing that policies do not impede on individuals' autonomy; stating when policies aim to stop businesses from impeding on this autonomy; and showing the procedural fairness of policies.[22] In contrast, there is little to no support for highlighting that policies have positive distributive effects (for example on children or low-income groups) or aim to protect people from health issues. The effects do vary by policy, however.

Fourth, the public's beliefs, attitudes, and perceptions about obesity matter for policy support, but they do not moderate the impact of providing reasoning. Participants with more empathy towards people living with obesity, those who blame businesses for the obesity epidemic, and those who see environmental factors as playing an important role in the obesity epidemic have higher support for policies (as in previous research, see Robertson et al. 2023; n.d.), but the effects of providing reasoning apply broadly across the population, regardless of these individual-level factors.

Finally, the public is most concerned about children, parents, and low-income households (in line with previous literature, e.g., Bos et al. 2013; Barnhill & King, 2013) when asked whose needs should be prioritised in obesity policy (as opposed to food suppliers). In some cases, these preferences influence policy support based on whether the policy is likely to be seen as helping or harming this group (e.g., low-income households). However, they do not impact the effect of providing reasoning. More broadly, the public cares about various groups, yet our distributive fairness treatments do not significantly impact policy support. One explanation may be that the public ranks concerns such as financial equity higher than health when judging the fairness of policies that impact low-income groups, such as taxes. Highlighting positive distributive effects on health may backfire if it activates perceived negative distributive effects on other outcomes.

Regarding limitations, we find that few fairness treatments are statistically significant when using policy-specific analysis models. This is partly due to lower statistical power and increased noise (such as a treatment failing to address a relevant concern, or floor and ceiling effects in support levels). The aim of the policy-specific models is to uncover variability across policies rather than test individual hypotheses, and the results underscore the importance of policy context.

[22] One possible limitation of the finding on procedural fairness is that the treatments highlighted that the public had been consulted about the policy via a survey and were broadly in favour of the policy, which may also have activated behavioural mechanisms other than procedural fairness judgments, such as social norms.

Regarding future research, it would be valuable to further examine how seeing policies as targeting businesses (that influence people's choices) rather than individuals (who make the choices) might impact fairness perceptions. Our results show higher support for restrictions on business behaviour (mandatory reformulation, banning ads), compared to restrictions that happen closer to the individual's choice set (banning special offers). Furthermore, within the two policies that allow for directly comparing business-focused and individual-focused fairness treatments (banning HFSS displays and showing calories on menus), average support is higher in the business conditions. Future research may help confirm the effect of business versus individual focused policy frames and test applications.

In conclusion, fairness and effectiveness perceptions are important determinants of support for obesity prevention policies, and providing reasoning about the fairness and effectiveness of these policies can increase support. This has implications both for choosing policies that the public see as fair and effective, and for communicating about chosen policies. Fairness messages about autonomy have the largest (and only statistically significant) effect, compared to dimensions such as distributive fairness. However, fairness concerns – and reasoning for policies that may address these concerns – are highly context-specific. Therefore, understanding the public's fairness concerns over specific policies is crucial to design fair policies and communicate about the fairness of these policies.

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Appendix 1: Full list of treatments used in the policy perceptions experiment

Control / basic description	Effectiveness reasoning	Fairness reasoning 1	Fairness reasoning 2
Ban displays of foods and drinks that have a lot of fat, salt, and sugar in areas close to supermarket checkouts.	Scientific research has shown that moving unhealthy foods away from checkouts makes people less likely to buy them *(Ejlerskov et al., 2018; Vogel et al., 2021)*.	**Autonomy (individuals):** People could still buy these foods and drinks, but they would only be displayed away from the checkouts. This policy aims to help people so that they aren't tempted to buy unhealthy products while waiting to pay.	**Autonomy (businesses):** Food companies pay to display unhealthy snacks at checkouts, using colourful packets to appeal to people, especially children who may try to get their parents to buy these products *(Bite Back, 2024; Hecht et al., 2020; Rivlin, 2016)*. This policy aims to stop food companies from influencing people in this way.
Put limits on the amounts of fat, salt, and sugar in processed foods.	Scientific research has shown that people eat less fat, salt, and sugar when processed foods contain less of these ingredients, and that this can improve their health *(Federici et al., 2019; Gressier et al., 2020)*.	**Harm protection (businesses):** Food companies put a lot of fat, salt, and sugar in processed foods, making them harmful to health *(World Health Organisation, 2024)*. The policy aims to protect people by making the food industry offer healthier processed foods.	**Procedural:** This policy would follow a recent survey of the Irish public in which the majority of people agreed with making food companies reduce the amount of unhealthy ingredients in their products *(Heinen et al., 2022)*.
Tax foods that contain large amounts of fat, salt, and sugar.	Scientific research has shown that taxing unhealthy foods can lead the food industry to sell healthier foods, and can also reduce the amount of unhealthy foods that people buy *(Bíró, 2015; Sacks et al., 2021; Smed et al., 2016; Taillie et al., 2017; World Health Organisation, 2015)*.	**Harm protection (individuals):** This policy aims to reduce the negative effects that buying and eating large amounts of these foods have on people's health.	
Introduce a rule to use smaller plates, bowls, and spoons in public buildings, for example in school and hospital canteens.	Scientific research has shown that people eat more when larger plates and bowls are used, and that using smaller ones can reduce the amount of food people eat without making them feel less satisfied with their meal *(Abeywickrema & Peng, 2023;*	**Autonomy (individuals):** People would still be able to eat as much as they want, but this policy aims to make it easier for them to choose a healthy amount of food.	

	Ayaz et al., 2016; Hollands et al., 2015).		
Give free fruit to all children at school.	Scientific research has shown that giving fresh fruits and vegetables to children at school leads them to eat more healthily *(Murrin et al., 2016; University College Dublin, 2016)*.	**Distributive:** This policy could particularly help children from low-income families, who may find it harder to access fresh fruit every day *(The Food Foundation, 2024)*.	
Introduce a rule to put colour-coded labels on the front of all food packages to show how healthy or unhealthy they are	Scientific research has shown that colour-coded labels can lead food companies to sell healthier foods, and can also lead people to buy healthier snacks *(De Marchi et al., 2023; Robertson et al., 2023; Roberto et al., 2021; Shangguan et al., 2019; Vandevijvere and Vanderlee, 2019)*.	**Procedural:** The Government asked the Irish public to give opinions on this policy idea, and the majority of people agreed with adding these colour-coded labels to packaged foods *(Department of Health & Food Safety Authority of Ireland, 2021)*.	**Harm protection (businesses):** Labels on food packages are currently written by food companies, who can use confusing information to hide how unhealthy some products are. The policy aims to stop this by making companies use clear, science-based labels.
Ban special offers such as "buy one get one free" deals and discounts on foods and drinks that have a lot of fat, salt, and sugar.	Scientific research has shown that special offers lead people to buy more of these unhealthy foods and drinks *(Public Health England, 2015; Watt et al., 2023)*.	**Autonomy (businesses):** Supermarkets use special offers to try to get people to buy more of these unhealthy foods and drinks *(Safefood, 2024)*. This policy aims to stop supermarkets from influencing how much people choose to buy.	**Procedural**: This policy would follow a recent survey of the Irish public in which the majority of people agreed with banning special offers on unhealthy foods *(Heinen et al., 2022)*.
Ban adverts for unhealthy foods and drinks from children's TV and social media.	Scientific research has shown that advertising unhealthy foods and drinks to children increases their risk of obesity *(Boyland & Tatlow-Golden, 2017; WHO, 2022)*.	**Autonomy (businesses):** Food companies use adverts to make children want unhealthy foods and drinks *(WHO, 2022)*. This policy aims to stop ads from influencing what children and parents choose to buy.	**Distributive:** This policy could particularly help children from disadvantaged families, who spend more time using screens and are at higher risk of obesity *(Bohnert & Gracia, 2021, 2023; Kilduff et al., 2024)*.
Increase the tax on fizzy drinks that are high in sugar.	Scientific research has shown that sugar taxes have led drinks companies to reduce the amount of sugar in their drinks, and also reduced the amount of sugary drinks that people buy *(Hofman et al., 2021; Houghton et al., 2023; Public*	**Distributive:** This policy could especially influence the choices of people on low incomes, who also have a higher risk of obesity *(Department of Health, 2019)*. The policy aims to encourage people to choose healthier drinks options.	

	Health England, 2020; Scarborough et al., 2020).		
Introduce a rule to put visible lines on snack packages to show people the size of a healthy portion (for example, two biscuits).	Scientific research has shown that this can reduce the amount of snacks that people eat and make them less likely to eat more than one portion *(Robertson et al., 2021)*.	**Autonomy (individuals):** People would still be able to buy and eat the snacks they want, but this policy aims to help them by showing them how much is a healthy amount to eat.	
Give vouchers for healthy foods to people who are disadvantaged (for example, those who live on a low income or rely on social welfare).	Scientific research has shown that helping people who are on low incomes to pay for fruit and vegetables leads them to buy more of these healthy foods *(Andreyeva et al., 2022; Engel & Ruder, 2020; Griffith et al., 2018)*.	**Autonomy (individuals):** People would still be able to choose what foods they buy, but the vouchers aim to provide extra help to make it easier for them to afford healthy foods if they want to.	**Distributive:** These people may find it hard to afford healthy foods, and they are at higher risk of obesity than other Irish people *(Department of Health, 2019)*. This policy aims to give them an equal chance to access healthy foods.
Introduce a rule to put the calories in different meals beside the price on menus, including online delivery menus.	Scientific research has shown that putting clearly visible calorie information on menus leads people to choose lower-calorie meals, without reducing how satisfied they feel after eating *(Robertson & Lunn, 2020)*.	**Harm protection (individuals):** People often order foods that have a lot more calories than the recommended amount for one meal *(Tan et al., 2024; World Health Organisation, 2021)*. This policy aims to protect people from the harm that these meals do to their health.	**Harm protection (businesses):** Restaurants and takeaways often sell foods that have a lot more calories than the recommended amount for one meal *(Tan et al., 2024; World Health Organisation, 2021)*. This policy aims to protect people from the harm that these meals do to their health.

Note: References (italicised) were not included in the text displayed to participants.

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Appendix 2: Supplementary tables and figures

Table A1. Effect of treatments on perceived fairness and effectiveness, ordered logit (pooled)

	Perceived effectiveness (rated 1-7)		Perceived fairness (rated 1-7)			
	(1)		(2)		(3)	
	b (SE)	p-value	b (SE)	p-value	b (SE)	p-value
Treatment						
Effectiveness	.19	p=.00				
	(.04)					
Fairness			.11	p=.00		
(Pooled)			(.04)			
Fairness					.18	p=.01
(Autonomy, I)					(.07)	
Fairness					.11	p=.16
(Autonomy, B)					(.08)	
Fairness					.04	p=.66
(Protection, I)					(.09)	
Fairness					.09	p=.25
(Protection, B)					(.08)	
Fairness					.07	p=.30
(Distributive)					(.07)	
Fairness					.14	p=.10
(Procedural)					(.08)	
Policy control	Yes		Yes		Yes	
Age	.05	p=.09	.14	p=.00	.14	p=.00
	(.03)		(.03)		(.03)	
Male	-.19	p=.05	-.18	p=.06	-.18	p=.06
	(.10)		(.09)		(.09)	
Observations	9220		11639		11639	

Notes: Coefficients from ordered logistic regressions with individual random intercepts. There are up to 12 observations per person (1 per policy). Standard errors are clustered at the individual level. Discrepancies in observations are due to excluding fairness conditions (Model 1) or effectiveness conditions (Models 3 and 4).

Table A2. Effect of fairness treatments on perceived fairness, ordered logit (by policy)

	Perceived fairness of policy (from 1 "Very unfair" to 7 "Very fair")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b	b	b	b	b	b	b	b	b	b	b	b
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
	p	p	p	p	p	p	p	p	p	p	p	p
Treatment												
Autonomy	.04			.25						.33	-.18	
(individual)	(.14)			(.12)						(.12)	(.14)	
	p=.75			p=.03						p=.01	p=.18	
Autonomy	.29						-.06	-.17				
(business)	(.14)						(.14)	(.14)				
	p=.04						p=.64	p=.23				
Protection			.14									-.08
(individual)			(.12)									(.13)
			p=.23									p=.54
Protection		.24				-.05						.02
(business)		(.14)				(.14)						(.14)
		p=.08				p=.72						p=.91
Procedural		.35				-.11	-.08					
		(.14)				(.14)	(.14)					
		p=.01				p=.44	p=.57					
Distributive					.23			-.32	.01		.11	
					(.13)			(.14)	(.12)		(.14)	
					p=.06			p=.02	p=.91		p=.40	
Age	.23	.21	.06	.12	.01	.09	.22	.14	.10	.07	-.04	.02
	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)
	p=.00	p=.00	p=.12	p=.00	p=.83	p=.02	p=.00	p=.00	p=.01	p=.08	p=.22	p=.59
Male	-.26	-.51	-.10	-.22	-.23	-.06	-.14	-.09	.09	-.21	-.09	-.08
	(.12)	(.12)	(.12)	(.12)	(.13)	(.12)	(.11)	(.12)	(.12)	(.12)	(.11)	(.11)
	p=.03	p=.00	p=.40	p=.07	p=.07	p=.60	p=.21	p=.46	p=.43	p=.08	p=.44	p=.46
Observations	1007	1019	909	912	890	1005	1016	1022	897	925	1032	1005

Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding effectiveness conditions.

Table A3. Effect of effectiveness treatments on perceived effectiveness, ordered logit (by policy)

	Perceived effectiveness of policy (from 1 "Not at all effective" to 7 "Very effective")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b	b	b	b	b	b	b	b	b	b	b	b
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
	p	p	p	p	p	p	p	p	p	p	p	p
Effectivemess	.11	.34	.21	.27	.31	-.08	-.04	-.07	.05	.24	.08	.20
treatment	(.14)	(.14)	(.12)	(.12)	(.12)	(.14)	(.14)	(.14)	(.12)	(.12)	(.14)	(.14)
	p=.44	p=.02	p=.08	p=.02	p=.01	p=.56	p=.79	p=.62	p=.65	p=.04	p=.56	p=.13
Age	.03	.08	.04	.09	-.05	-.01	.18	.07	.08	.03	-.10	-.03
	(.04)	(.05)	(.04)	(.04)	(.04)	(.05)	(.04)	(.05)	(.04)	(.04)	(.05)	(.04)
	p=.58	p=.07	p=.30	p=.02	p=.19	p=.84	p=.00	p=.10	p=.03	p=.49	p=.03	p=.53
Male	-.24	-.17	.22	-.10	-.04	-.39	-.02	-.04	.03	-.45	-.29	-.38
	(.14)	(.14)	(.12)	(.12)	(.12)	(.14)	(.14)	(.14)	(.12)	(.12)	(.14)	(.14)
	p=.08	p=.23	p=.07	p=.39	p=.77	p=.00	p=.88	p=.79	p=.79	p=.00	p=.04	p=.01
Observations	675	694	902	899	880	678	669	679	925	870	655	694

Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding fairness conditions.

Table A4. Effect of perceived fairness and effectiveness on policy support, ordered logit (pooled)

	Support for policy (from 1 “Fully oppose” to 7 ”Fully support”)					
	(1)		(2)		(3)	
	b (SE)	p-value	b (SE)	p-value	b (SE)	p-value
Perceived effectiveness	1.65 (.03)	p=.00			.85 (.03)	p=.00
Perceived fairness			2.18 (.04)	p=.00	1.72 (.05)	p=.00
Policy control	Yes		Yes		Yes	
Age	.23 (.03)	p=.00	.11 (.02)	p=.00	.16 (.02)	p=.00
Male	-.15 (.08)	p=.07	-.20 (.06)	p=.00	-.18 (.07)	p=.01
Observations	16236		16236		16236	

Notes: Coefficients from ordered logistic regressions with individual random intercepts. There are 12 observations per person (1 per policy). Standard errors are clustered at the individual level.

Table A5. Effect of perceived fairness and effectiveness on policy support, ordered logit (by policy)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b	b	b	b	b	b	b	b	b	b	b	b
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
	p	p	p	p	p	p	p	p	p	p	p	p
Treatment												
Effectiveness	.58	.80	.80	.76	.71	.73	.67	.55	.60	.62	.84	.71
reasoning	(.06)	(.07)	(.06)	(.06)	(.06)	(.06)	(.05)	(.06)	(.05)	(.05)	(.06)	(.06)
	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00
Fairness	1.83	2.00	1.55	1.68	1.51	1.64	1.69	1.73	1.53	1.64	1.62	1.68
reasoning	(.08)	(.09)	(.07)	(.07)	(.08)	(.07)	(.07)	(.08)	(.06)	(.07)	(.07)	(.07)
	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00
Age	.13	.16	.14	.13	.09	.09	.12	.07	.18	.04	.06	.11
	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)
	p=.00	p=.00	p=.00	p=.00	p=.03	p=.02	p=.00	p=.07	p=.00	p=.25	p=.14	p=.00
Male	-.17	.01	-.11	-.11	-.26	-.10	-.16	-.16	-.17	-.23	-.23	-.08
	(.12)	(.13)	(.12)	(.11)	(.13)	(.12)	(.12)	(.12)	(.12)	(.12)	(.12)	(.12)
	p=.17	p=.93	p=.34	p=.32	p=.05	p=.39	p=.18	p=.19	p=.15	p=.04	p=.05	p=.50
Observations	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353

Notes: Coefficients from ordered logistic regressions.

Table A6. Interaction between gender of participant and gender of empathy scenario protagonist

	Empathy (index)	
	b (se)	p-value
Male (participant)	-.40	p=.00
	(.09)	
Female protagonist	.03	p=.73
	(.09)	
Male * Female protag.	-.08	p=.50
	(.12)	
Age	.09	p=.00
	(.02)	
Constant	4.60	p=.00
	(.07)	
Observations	1353	

Notes: Linear regression. Male is the gender of the participant. Female protagonist is the (randomly assigned) gender of the protagonist in the empathy scenario. Empathy is the average of 10 empathy items scored from 1 to 7 (from least to most empathetic, with some items reverse-coded as needed).

Table A7. Moderating effect of empathy, ordered logit (by policy)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b	b	b	b	b	b	b	b	b	b	b	b
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
	p	p	p	p	p	p	p	p	p	p	p	p
Empathy	.30	.46	.20	.23	.31	.42	.09	.16	.28	.44	.38	.40
	(.09)	(.09)	(.07)	(.07)	(.08)	(.09)	(.09)	(.09)	(.08)	(.08)	(.09)	(.08)
	p=.00	p=.00	p=.01	p=.00	p=.00	p=.00	p=.32	p=.07	p=.00	p=.00	p=.00	p=.00
Treatment												
Fairness 1	.05	.78	.00	-.21	-.03	.37	-.94	-.64	.05	.76	.16	-.49
	(.58)	(.60)	(.48)	(.49)	(.54)	(.62)	(.55)	(.59)	(.50)	(.51)	(.59)	(.57)
	p=.93	p=.19	p=.99	p=.67	p=.95	p=.55	p=.09	p=.28	p=.92	p=.14	p=.79	p=.39
Fairness 2	.65	.71				.28	-1.27	-.86			-.52	.18
	(.59)	(.60)				(.60)	(.58)	(.60)			(.58)	(.57)
	p=.28	p=.24				p=.64	p=.03	p=.15			p=.37	p=.75
Empathy *	-.01	-.13	.03	.11	.05	-.08	.20	.12	-.01	-.08	-.09	.08
Fairness 1	(.12)	(.13)	(.10)	(.10)	(.12)	(.13)	(.12)	(.13)	(.11)	(.11)	(.13)	(.12)
	p=.96	p=.30	p=.76	p=.31	p=.69	p=.55	p=.09	p=.32	p=.89	p=.46	p=.49	p=.51
Empathy *	-.06	-.09				-.07	.25	.16			.10	-.03
Fairness 2	(.13)	(.13)				(.13)	(.12)	(.13)			(.12)	(.12)
	p=.64	p=.51				p=.59	p=.04	p=.21			p=.42	p=.79
Age	.23	.22	.06	.12	.07	.10	.22	.14	.14	.10	-.07	.04
	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)
	p=.00	p=.00	p=.13	p=.00	p=.10	p=.01	p=.00	p=.00	p=.00	p=.02	p=.06	p=.29
Male	-.29	-.34	.01	-.14	-.24	.02	-.06	-.12	.17	-.25	-.01	-.03
	(.12)	(.12)	(.12)	(.12)	(.14)	(.12)	(.11)	(.12)	(.12)	(.12)	(.12)	(.12)
	p=.02	p=.01	p=.90	p=.27	p=.07	p=.86	p=.60	p=.31	p=.16	p=.04	p=.93	p=.77
Observations	1007	1019	909	912	890	1005	1016	1022	897	925	1032	1005

Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding participants who saw the effectiveness version of the policy. Fairness coefficients are listed in the same order as in Table 5 but shown under the joint headings "Fairness 1" and "Fairness 2" to keep table length to one page.

Table A8. Moderating effect of empathy, ordered logit (pooled)

	Support for policy (from 1 “Fully oppose” to 7 ”Fully support”)					
	(1)			(2)		
	Coef.	SE	p-value	Coef.	SE	p-value
Empathy	.38	(.05)	p=.00	.38	(.05)	p=.00
Treatment						
Fairness	-.17	(.17)	p=.33			
Autonomy (I)				-.01	(.28)	p=.97
Autonomy (B)				-.02	(.29)	p=.93
Protection (I)				.13	(.32)	p=.69
Protection (B)				-.28	(.31)	p=.36
Distributive				-.55	(.28)	p=.05
Procedural				-.15	(.30)	p=.63
Empathy * Fairness	.06	(.04)	p=.10			
Empathy * Autonomy (I)				.05	(.06)	p=.45
Empathy * Autonomy (B)				.03	(.06)	p=.59
Empathy * Protection (I)				-.02	(.07)	p=.78
Empathy * Protection (B)				.09	(.07)	p=.18
Empathy * Distributive				.13	(.06)	p=.03
Empathy * Procedural				.06	(.06)	p=.37
Policy control	Yes			Yes		
Age	.16	(.03)	.00	.16	(.03)	.00
Male	-.10	(.10)	.29	-.10	(.10)	.30
Observations	11639			11639		

Notes: Coefficients from ordered logistic regressions with individual random intercepts. There are up to 12 observations per person (1 per policy). Standard errors are clustered at the individual level. Discrepancies in observations are due to excluding effectiveness treatment conditions.

Table A9. Moderating effect of blaming businesses, ordered logit (by policy)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")								
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Calorie next to price
	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p
Blame businesses	.01 (.01) p=.05	.01 (.01) p=.31	.02 (.00) p=.00	.00 (.01) p=.76	.01 (.01) p=.03	.02 (.01) p=.00	.01 (.00) p=.09	.01 (.00) p=.04	.01 (.01) p=.10
Treatment									
Fairness 1	.18 (.30) p=.55	.20 (.30) p=.50	.88 (.25) p=.00	-.37 (.31) p=.24	.09 (.29) p=.76	.18 (.31) p=.56	-.06 (.25) p=.81	.68 (.26) p=.01	.42 (.30) p=.16
Fairness 2	.45 (.31) p=.14	.03 (.30) p=.93		.16 (.31) p=.61	-.29 (.30) p=.33	.06 (.31) p=.83			-.12 (.28) p=.67
Blame * Fairness 1	-.01 (.01) p=.50	.00 (.01) p=.85	-.02 (.01) p=.00	.01 (.01) p=.19	-.00 (.01) p=.53	-.01 (.01) p=.31	.00 (.01) p=.85	-.01 (.01) p=.16	-.01 (.01) p=.10
Blame* Fairness 2	-.00 (.01) p=.63	.01 (.01) p=.24		-.01 (.01) p=.42	.01 (.01) p=.47	-.01 (.01) p=.37			.00 (.01) p=.96
Age	.25 (.04) p=.00	.26 (.04) p=.00	.07 (.04) p=.07	.13 (.04) p=.00	.24 (.04) p=.00	.16 (.04) p=.00	.17 (.04) p=.00	.14 (.04) p=.00	.07 (.04) p=.05
Male	-.40 (.12) p=.00	-.50 (.12) p=.00	-.06 (.12) p=.60	-.13 (.12) p=.29	-.16 (.11) p=.17	-.23 (.12) p=.06	.05 (.12) p=.70	-.43 (.12) p=.00	-.20 (.11) p=.09
Observations	1007	1019	909	1005	1016	1022	897	925	1005

Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding participants who saw the effectiveness version of the policy.

Table A10. Moderating effect of blaming businesses, ordered logit (pooled)

	Support for policy (from 1 “Fully oppose” to 7 ”Fully support”)					
	(1)			(2)		
	Coef.	SE	p-value	Coef.	SE	p-value
Blame placed on businesses	.01	(.00)	p=.00	.01	(.00)	p=.00
Treatment						
Fairness	.18	(.10)	p=.07			
Autonomy (I)				.46	(.19)	p=.02
Autonomy (B)				-.03	(.16)	p=.87
Protection (I)				.39	(.18)	p=.03
Protection (B)				.30	(.17)	p=.08
Distributive				-.17	(.19)	p=.37
Procedural				.17	(.18)	p=.35
Blame * Fairness	-.00	(.00)	p=.31			
Blame * Autonomy (I)				-.01	(.00)	p=.10
Blame * Autonomy (B)				.00	(.00)	p=.36
Blame * Protection (I)				-.01	(.00)	p=.02
Blame * Protection (B)				-.01	(.00)	p=.24
Blame * Distributive				.00	(.00)	p=.38
Blame * Procedural				-.00	(.00)	p=.73
Policy control	Yes			Yes		
Age	.24	(.04)	p=.00	.24	(.04)	p=.00
Male	-.28	(.11)	p=.01	-.28	(.11)	p=.01
Observations	8805			8805		

Notes: Coefficients from ordered logistic regressions with individual random intercepts. There are up to 9 observations per person (1 per policy, excluding three policies that are not relevant to businesses). Standard errors are clustered at the individual level. Discrepancies in observations are due to excluding effectiveness treatment conditions.

Table A11. Moderating effect of concern for groups, ordered logit (by policy)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p	b (SE) p
Treatment												
Fairness 1	-.20 (.31) p=.51	.41 (.31) p=.18	.14 (.32) p=.65	.22 (.33) p=.51	.02 (.37) p=.95	-.24 (.31) p=.44	-.82 (.36) p=.02	-.37 (.41) p=.37	.02 (.32) p=.94	.29 (.26) p=.26	.34 (.38) p=.38	.21 (.31) p=.50
Fairness 2	.22 (.32) p=.49	-.15 (.30) p=.62				-.11 (.31) p=.71	-.36 (.35) p=.30	.02 (.39) p=.95			.18 (.36) p=.61	.21 (.33) p=.52
Concerned for												
Children				-.06 (.04) p=.14	.03 (.05) p=.54			.02 (.05) p=.67				
Low-income			-.04 (.05) p=.37				-.11 (.05) p=.04		-.04 (.04) p=.37		.24 (.05) p=.00	
Supermarket	-.03 (.06) p=.64											
Manufacturers		-.01 (.05) p=.90				.02 (.05) p=.69				.01 (.04) p=.76		
Restaurants												.16 (.07) p=.02
Concerned * Fairness 1	.07 (.09) p=.44	-.04 (.07) p=.53	.00 (.06) p=.94	.01 (.06) p=.90	.03 (.06) p=.64	.06 (.07) p=.38	.16 (.07) p=.02	.05 (.07) p=.51	-.01 (.06) p=.88	.02 (.06) p=.78	-.13 (.08) p=.09	-.11 (.10) p=.25
Concerned * Fairness 2	.04 (.09) p=.65	.13 (.07) p=.07				.01 (.07) p=.87	.06 (.07) p=.40	-.03 (.07) p=.64			-.05 (.07) p=.48	-.07 (.10) p=.48
Age	.25 (.04) p=.00	.26 (.04) p=.00	.08 (.04) p=.03	.14 (.04) p=.00	.10 (.04) p=.02	.13 (.04) p=.00	.25 (.04) p=.00	.16 (.04) p=.00	.17 (.04) p=.00	.13 (.04) p=.00	-.05 (.04) p=.19	.07 (.04) p=.05
Male	-.37 (.12) p=.00	-.50 (.12) p=.00	-.10 (.12) p=.40	-.28 (.12) p=.02	-.37 (.13) p=.01	-.13 (.12) p=.27	-.18 (.11) p=.11	-.21 (.12) p=.08	.03 (.12) p=.79	-.43 (.12) p=.00	-.10 (.12) p=.40	-.20 (.11) p=.08
Observations	1006	1019	909	911	889	1004	1015	1021	897	925	1031	1004

Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding participants who saw the effectiveness version of the policy.

Table A12. Moderating effect of concern for children, ordered logit (by policy), controlling for being a parent, carer, or guardian of a child under 18

	Support for policy (from 1 “Fully oppose” to 7 ”Fully support”)		
	Smaller plate sizes	Free fruit in school	Ban HFSS kid ads
	b (SE) p-value	b (SE) p-value	b (SE) p-value
Concerned for children	-.06 (.04) p=.14	.02 (.05) p=.63	.02 (.05) p=.64
Treatment group			
Fairness 1	.23 (.33) p=.49	.00 (.37) p=1.00	-.34 (.41) p=.41
Fairness 2			.04 (.39) p=.91
Concerned * Fairness 1	.01 (.06) p=.93	.03 (.06) p=.61	.04 (.07) p=.56
Concerned * Fairness 2			-.03 (.07) p=.62
Age	.15 (.04) p=.00	.12 (.04) p=.01	.18 (.04) p=.00
Male	-.28 (.12) p=.02	-.35 (.13) p=.01	-.21 (.12) p=.08
Carer / parent / guardian of child	.13 (.13) p=.33	.39 (.15) p=.01	.17 (.13) p=.18
Observations	911	889	1021

Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding participants who saw the effectiveness version of the policy.

Table A13. Role of the perceived importance of environmental drivers of obesity, ordered logit (pooled)

	Support for policy (from 1 “Fully oppose” to 7 ”Fully support”)							
	(1)		(2)		(3)		(4)	
	b (SE)	p-value	b (SE)	p-value	b (SE)	p-value	b (SE)	p-value
Effectiveness treatment	-.14 (.21)	p=.53	.23 (.14)	p=.10	.14 (.14)	p=.31	-.33 (.20)	p=.10
Envi. cause (average)	.64 (.04)	p=.00						
Envi. cause (rank)			.48 (.07)	p=.00				
Envi. cause (portion size)					.36 (.03)	p=.00		
Envi. cause (availability)							.52 (.04)	p=.00
Effectiveness * Envi. cause	.06 (.04)	p=.12	-.02 (.06)	p=.72	.01 (.03)	p=.75	.09 (.03)	p=.01
Policy control	Yes		Yes		Yes		Yes	
Age	.13 (.03)	p=.00	.17 (.03)	p=.00	.15 (.03)	p=.00	.15 (.03)	p=.00
Male	.02 (.09)	p=.86	-.14 (.10)	p=.17	-.04 (.10)	p=.69	-.13 (.10)	p=.17
Observations	9220		9220		9220		9220	

Notes: Coefficients from ordered logistic regressions with individual random intercepts. There are up to 12 observations per person (1 per policy). Standard errors are clustered at the individual level. Discrepancies in observations are due to excluding fairness conditions.

Table A14. Role of the perceived importance of environmental drivers of obesity (average of both social causes), ordered logit (by policy)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b	b	b	b	b	b	b	b	b	b	b	b
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
	p	p	p	p	p	p	p	p	p	p	p	p
Effectiveness treatment	-.10	-.92	-.34	1.23	-.34	.02	-.17	.24	-.25	.74	-.71	-.50
	(.63)	(.65)	(.56)	(.56)	(.62)	(.66)	(.66)	(.66)	(.55)	(.56)	(.67)	(.64)
	p=.87	p=.16	p=.55	p=.03	p=.58	p=.98	p=.80	p=.72	p=.65	p=.19	p=.29	p=.43
Envi. cause (average)	.50	.48	.53	.70	.23	.51	.61	.49	.56	.59	.14	.38
	(.09)	(.08)	(.07)	(.08)	(.08)	(.09)	(.09)	(.09)	(.07)	(.07)	(.09)	(.08)
	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.10	p=.00
Effectiveness* Envi. cause	.03	.21	.10	-.15	.13	-.01	.04	-.04	.08	-.14	.18	.12
	(.12)	(.12)	(.10)	(.10)	(.11)	(.12)	(.12)	(.12)	(.10)	(.10)	(.12)	(.12)
	p=.82	p=.08	p=.33	p=.15	p=.26	p=.93	p=.73	p=.74	p=.43	p=.18	p=.15	p=.31
Age	.10	.20	.12	.13	-.01	.05	.21	.12	.15	-.02	-.04	.03
	(.05)	(.05)	(.04)	(.04)	(.04)	(.05)	(.05)	(.05)	(.04)	(.04)	(.05)	(.05)
	p=.03	p=.00	p=.00	p=.00	p=.76	p=.33	p=.00	p=.01	p=.00	p=.70	p=.44	p=.52
Male	-.07	-.12	.27	.07	-.02	-.14	.22	.06	.10	-.15	-.18	-.04
	(.15)	(.15)	(.12)	(.12)	(.14)	(.15)	(.14)	(.15)	(.12)	(.13)	(.15)	(.14)
	p=.64	p=.43	p=.03	p=.55	p=.90	p=.34	p=.13	p=.69	p=.39	p=.25	p=.22	p=.76
Observations	675	694	902	899	880	678	669	679	925	870	655	694

Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding participants who saw the fairness version of the policy.

Table A15. Role of the perceived importance of environmental drivers of obesity (rank of social causes), ordered logit (by policy)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b	b	b	b	b	b	b	b	b	b	b	b
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
	p	p	p	p	p	p	p	p	p	p	p	p
Effectiveness treatment	-.21	-.14	.40	.85	.48	-.25	-.33	-.41	-.39	.70	.47	.36
	(.43)	(.46)	(.37)	(.38)	(.43)	(.45)	(.44)	(.43)	(.37)	(.40)	(.46)	(.43)
	p=.63	p=.76	p=.29	p=.02	p=.26	p=.57	p=.45	p=.34	p=.29	p=.08	p=.31	p=.40
Envi. cause (rank)	.29	.26	.51	.59	-.00	.22	.31	.20	.39	.43	.14	.23
	(.12)	(.12)	(.10)	(.11)	(.12)	(.13)	(.12)	(.13)	(.11)	(.11)	(.13)	(.12)
	p=.02	p=.04	p=.00	p=.00	p=.98	p=.10	p=.01	p=.13	p=.00	p=.00	p=.27	p=.06
Effectiveness* Envi. cause	.09	.17	-.07	-.21	-.05	.08	.14	.16	.21	-.27	-.10	-.09
	(.18)	(.18)	(.15)	(.15)	(.17)	(.18)	(.17)	(.18)	(.15)	(.16)	(.18)	(.17)
	p=.60	p=.35	p=.66	p=.16	p=.76	p=.66	p=.43	p=.35	p=.16	p=.08	p=.57	p=.59
Age	.12	.21	.15	.15	.01	.07	.23	.14	.18	.01	-.02	.06
	(.05)	(.05)	(.04)	(.04)	(.04)	(.05)	(.04)	(.05)	(.04)	(.04)	(.05)	(.05)
	p=.01	p=.00	p=.00	p=.00	p=.89	p=.16	p=.00	p=.00	p=.00	p=.82	p=.69	p=.19
Male	-.20	-.23	.13	-.06	-.14	-.25	.03	-.05	-.03	-.26	-.24	-.18
	(.14)	(.14)	(.12)	(.12)	(.14)	(.15)	(.14)	(.15)	(.12)	(.12)	(.15)	(.14)
	p=.17	p=.12	p=.29	p=.62	p=.30	p=.09	p=.83	p=.71	p=.81	p=.03	p=.10	p=.19
Observations	675	694	902	899	880	678	669	679	925	870	655	694

Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding participants who saw the fairness version of the policy.

Table A16. Role of the perceived importance of environmental drivers of obesity (cause: portion sizes), ordered logit (by policy)

	Support for policy (from 1 "Fully oppose" to 7 "Fully support")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b	b	b	b	b	b	b	b	b	b	b	b
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
	p	p	p	p	p	p	p	p	p	p	p	p
Effectiveness treatment	-.44	-.02	.22	1.04	.30	-.08	.17	-.59	-.06	.52	.29	.28
	(.41)	(.42)	(.36)	(.37)	(.40)	(.43)	(.43)	(.42)	(.36)	(.37)	(.42)	(.40)
	p=.29	p=.96	p=.54	p=.00	p=.46	p=.86	p=.70	p=.16	p=.86	p=.16	p=.49	p=.50
Envi. cause (portions)	.18	.21	.36	.51	.08	.23	.39	.10	.33	.33	.05	.20
	(.06)	(.06)	(.05)	(.05)	(.06)	(.06)	(.06)	(.06)	(.05)	(.05)	(.06)	(.06)
	p=.00	p=.00	p=.00	p=.00	p=.17	p=.00	p=.00	p=.09	p=.00	p=.00	p=.38	p=.00
Effectiveness* Envi. cause	.10	.06	-.00	-.13	.01	.01	-.02	.12	.04	-.11	-.01	-.03
	(.08)	(.09)	(.07)	(.07)	(.08)	(.09)	(.09)	(.08)	(.07)	(.07)	(.09)	(.08)
	p=.23	p=.51	p=.99	p=.08	p=.89	p=.94	p=.81	p=.16	p=.54	p=.14	p=.87	p=.73
Age	.12	.20	.12	.13	-.00	.06	.21	.13	.16	-.01	-.02	.04
	(.05)	(.05)	(.04)	(.04)	(.04)	(.05)	(.05)	(.05)	(.04)	(.04)	(.05)	(.05)
	p=.01	p=.00	p=.00	p=.00	p=.95	p=.20	p=.00	p=.01	p=.00	p=.76	p=.70	p=.36
Male	-.14	-.19	.25	.11	-.09	-.19	.19	-.03	.07	-.19	-.25	-.10
	(.14)	(.15)	(.12)	(.12)	(.14)	(.15)	(.14)	(.15)	(.12)	(.13)	(.15)	(.14)
	p=.33	p=.20	p=.04	p=.35	p=.53	p=.20	p=.18	p=.83	p=.55	p=.13	p=.09	p=.50
Observations	675	694	902	899	880	678	669	679	925	870	655	694

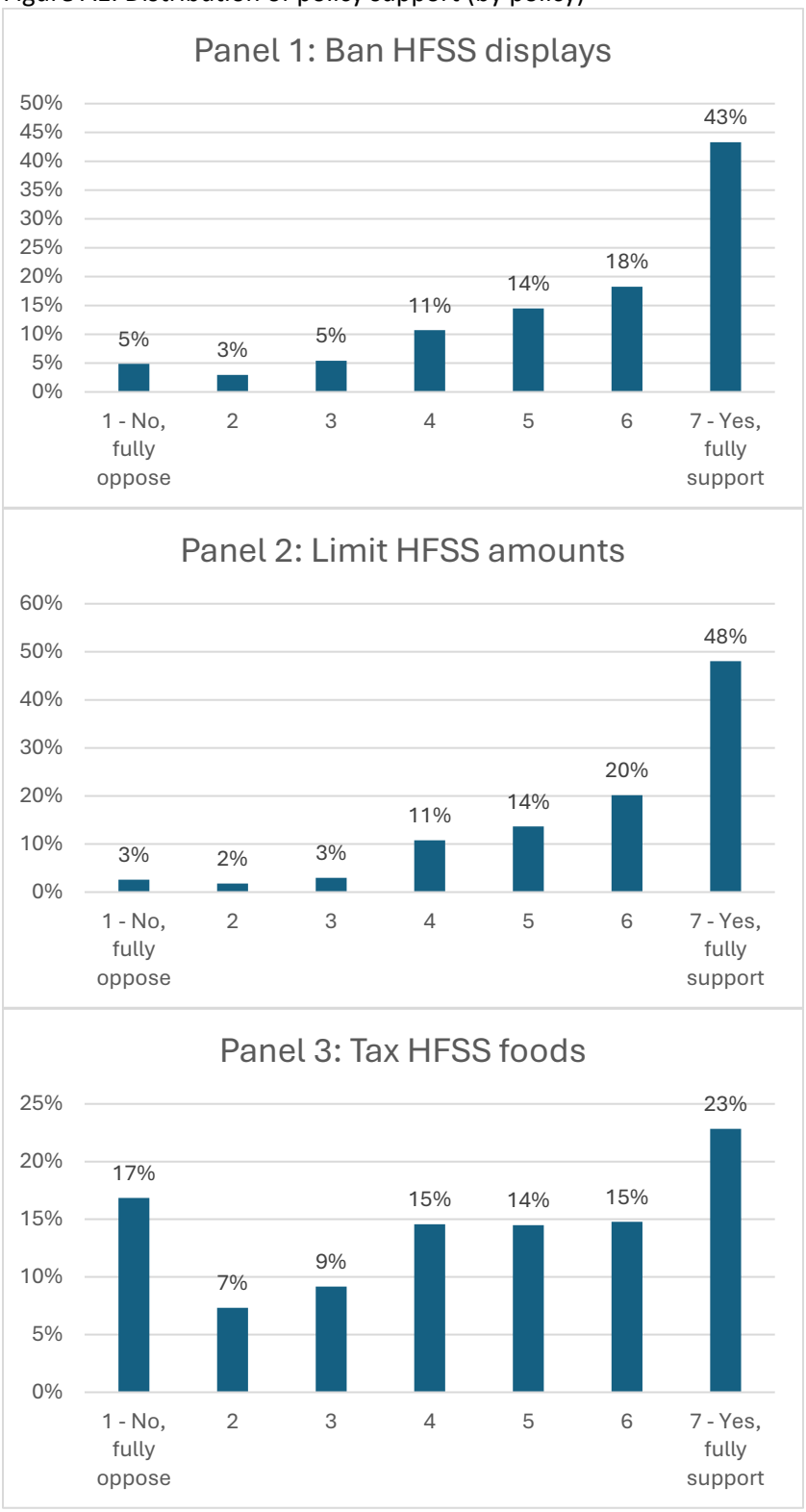
Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding participants who saw the fairness version of the policy.

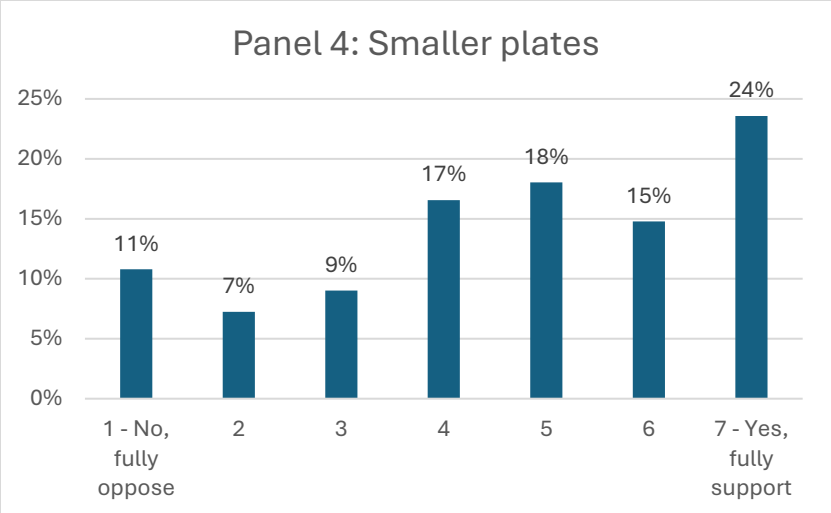
Table A17. Role of the perceived importance of environmental drivers of obesity (cause: availability of unhealthy food), ordered logit (by policy)

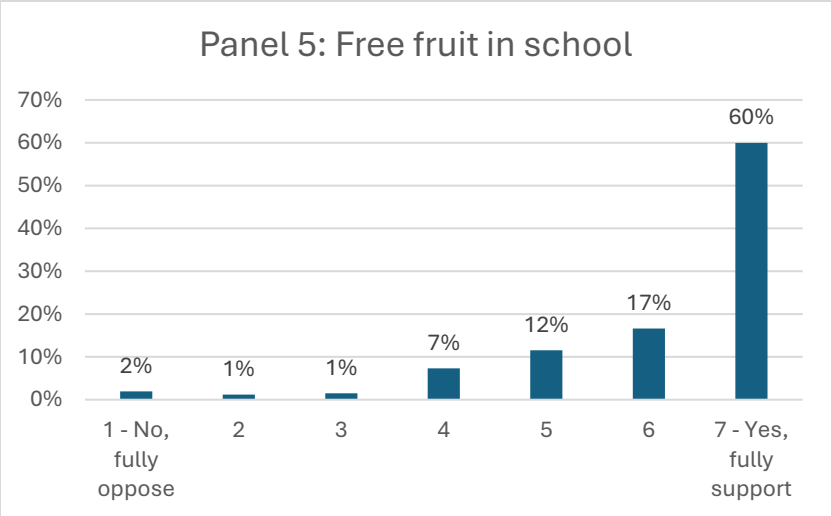
	Support for policy (from 1 "Fully oppose" to 7 "Fully support")											
	Ban HFSS display	Limit HFSS in foods	Tax HFSS foods	Smaller plate sizes	Free fruit in school	Colour coded labels	Ban HFSS deals	Ban HFSS kid ads	Higher sugar tax	Show portion size	Health food subsidy	Calorie next to price
	b	b	b	b	b	b	b	b	b	b	b	b
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
	p	p	p	p	p	p	p	p	p	p	p	p
Effectiveness treatment	.32	-.97	-.60	.81	-.67	-.61	-.52	1.71	-.43	.61	-1.57	-1.24
	(.66)	(.68)	(.60)	(.58)	(.63)	(.66)	(.68)	(.68)	(.57)	(.58)	(.70)	(.69)
	p=.63	p=.15	p=.32	p=.16	p=.29	p=.36	p=.45	p=.01	p=.45	p=.29	p=.03	p=.07
Envi. cause (available)	.52	.51	.31	.35	.27	.41	.40	.65	.37	.46	.15	.32
	(.08)	(.08)	(.07)	(.07)	(.07)	(.08)	(.08)	(.08)	(.07)	(.07)	(.08)	(.08)
	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.00	p=.06	p=.00
Effectiveness* Envi. cause	-.04	.20	.13	-.07	.17	.09	.09	-.28	.09	-.10	.30	.23
	(.11)	(.11)	(.10)	(.09)	(.10)	(.11)	(.11)	(.11)	(.09)	(.10)	(.12)	(.11)
	p=.73	p=.07	p=.17	p=.44	p=.10	p=.42	p=.41	p=.01	p=.32	p=.31	p=.01	p=.04
Age	.12	.21	.14	.15	-.00	.05	.23	.12	.16	.01	-.04	.04
	(.05)	(.05)	(.04)	(.04)	(.04)	(.05)	(.04)	(.05)	(.04)	(.04)	(.05)	(.05)
	p=.01	p=.00	p=.00	p=.00	p=.92	p=.29	p=.00	p=.01	p=.00	p=.90	p=.39	p=.40
Male	-.16	-.21	.10	-.11	-.07	-.23	.02	-.01	-.03	-.24	-.20	-.15
	(.14)	(.15)	(.12)	(.12)	(.14)	(.15)	(.14)	(.15)	(.12)	(.12)	(.15)	(.14)
	p=.28	p=.16	p=.39	p=.36	p=.62	p=.11	p=.88	p=.95	p=.77	p=.05	p=.18	p=.30
Observations	675	694	902	899	880	678	669	679	925	870	655	694

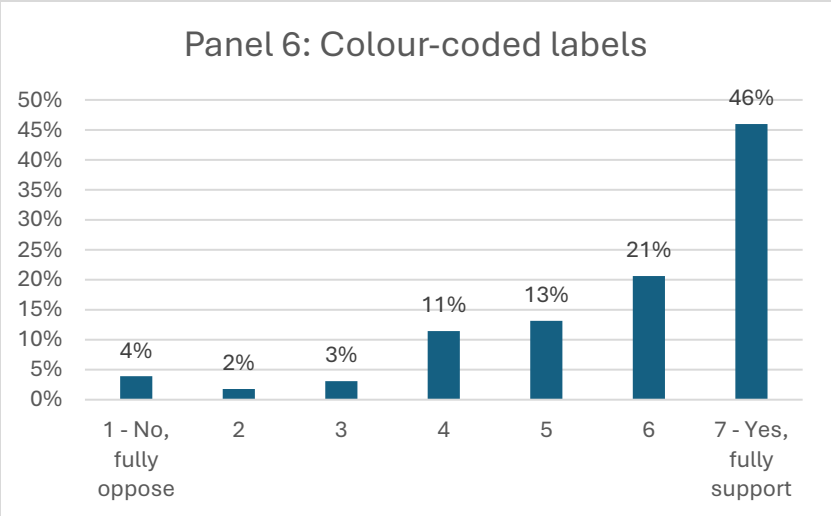
Notes: Coefficients from ordered logistic regressions. Discrepancies in observations are due to excluding participants who saw the fairness version of the policy.

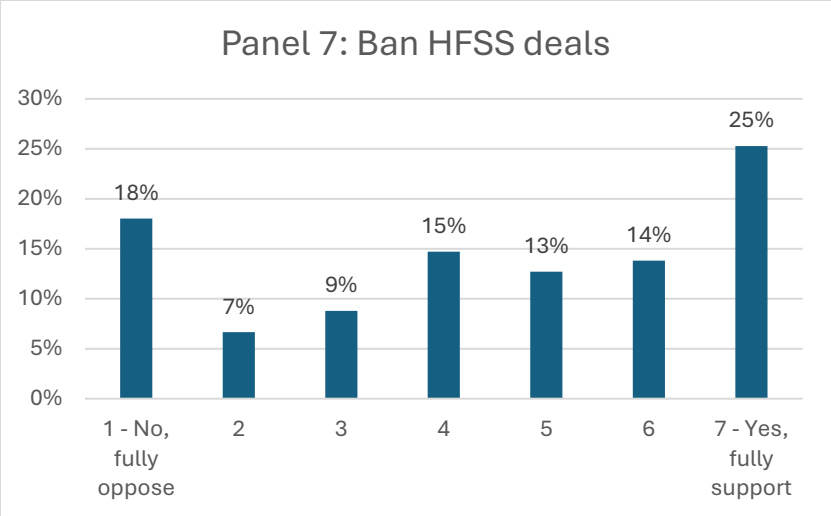
Figure A1. Distribution of policy support (by policy)

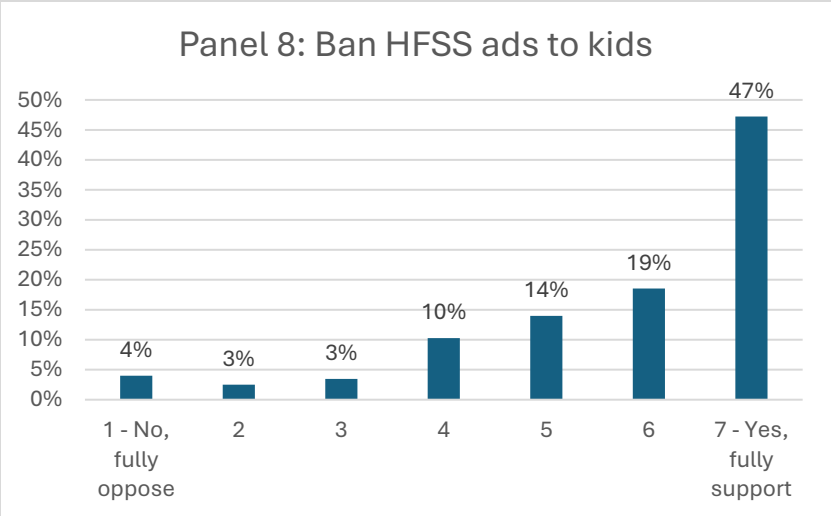


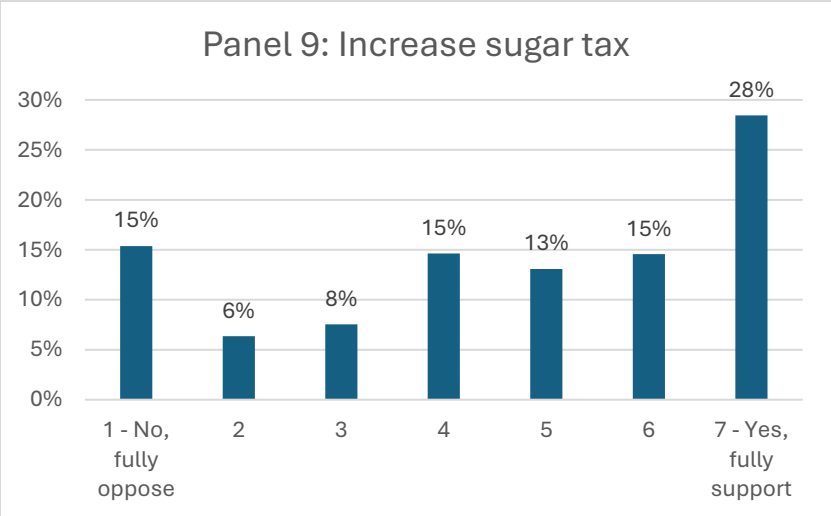

Panel 4: Smaller plates
25%
20%
15%
10%
5%
0%
11%
7%
9%
17%
18%
15%
24%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support

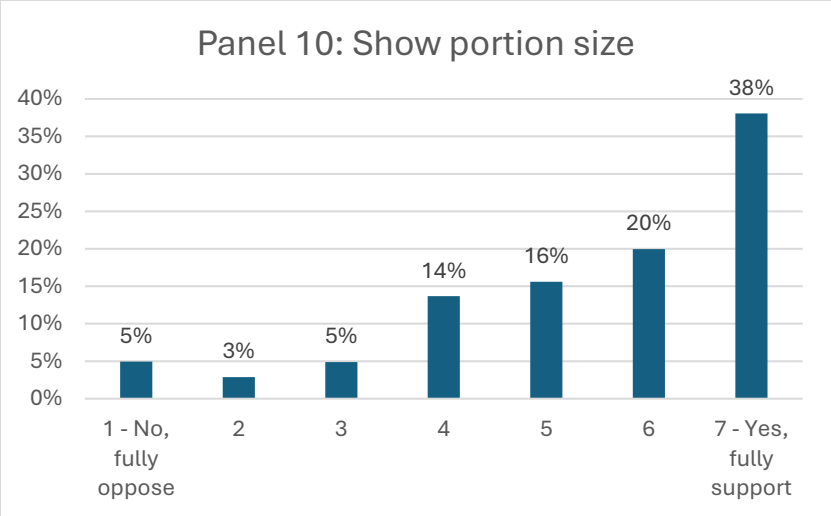

Panel 5: Free fruit in school
70%
60%
50%
40%
30%
20%
10%
0%
2%
1%
1%
7%
12%
17%
60%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support

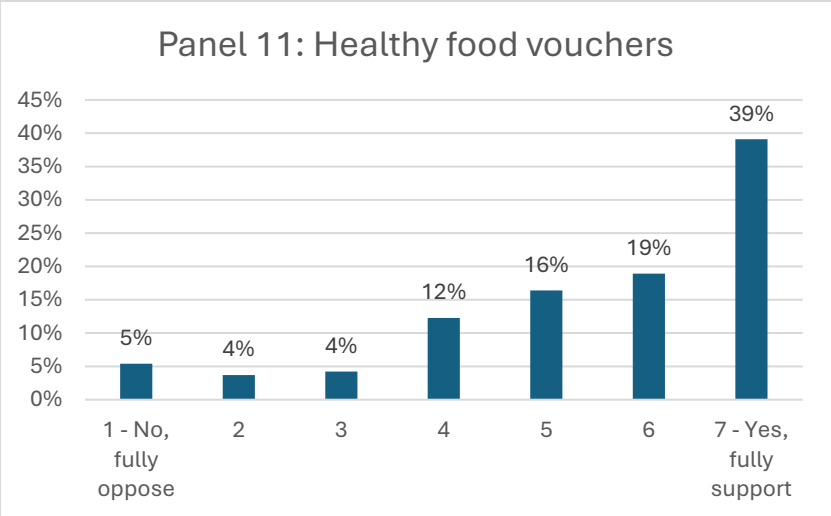

Panel 6: Colour-coded labels
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
4%
2%
3%
11%
13%
21%
46%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support


Panel 7: Ban HFSS deals
30%
25%
20%
15%
10%
5%
0%
18%
7%
9%
15%
13%
14%
25%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support


Panel 8: Ban HFSS ads to kids
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
4%
3%
3%
10%
14%
19%
47%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support


Panel 9: Increase sugar tax
30%
25%
20%
15%
10%
5%
0%
15%
6%
8%
15%
13%
15%
28%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support


Panel 10: Show portion size
40%
35%
30%
25%
20%
15%
10%
5%
0%
5%
3%
5%
14%
16%
20%
38%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support


Panel 11: Healthy food vouchers
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
5%
4%
4%
12%
16%
19%
39%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support

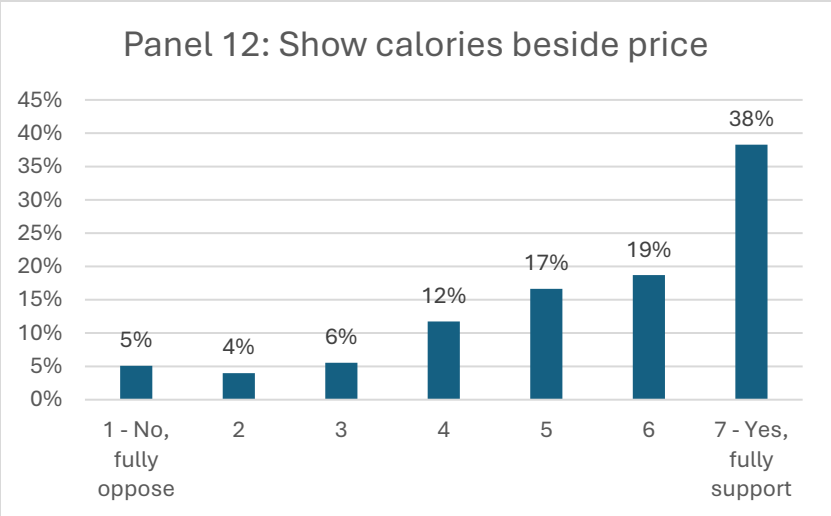
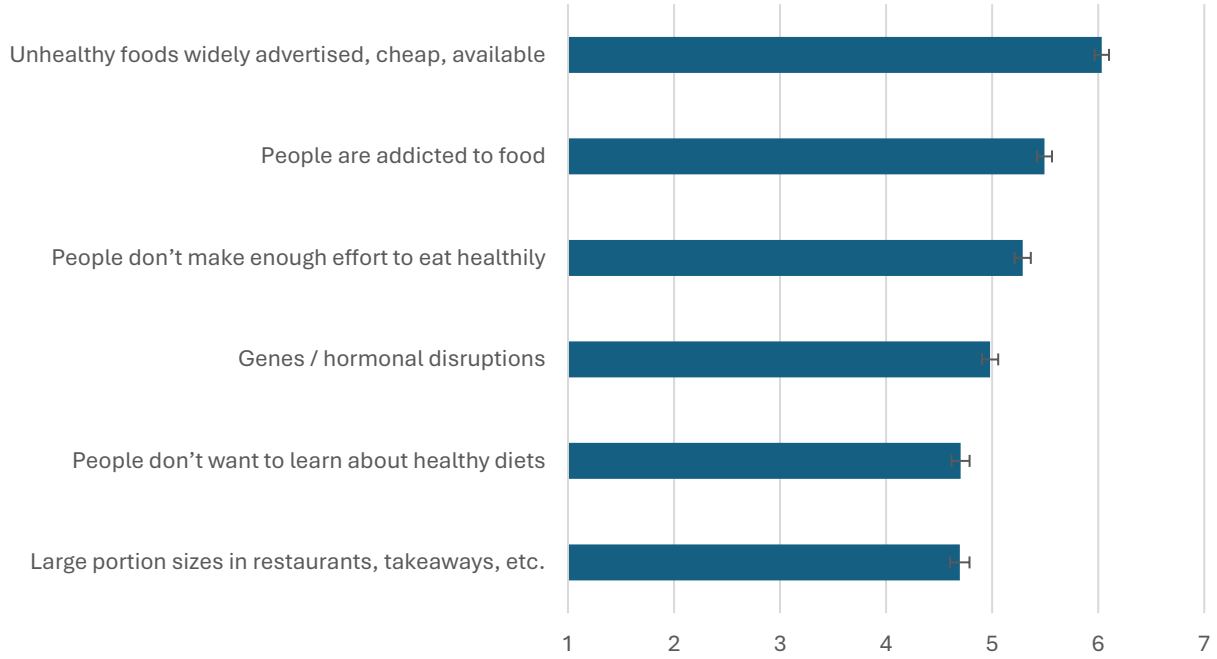

Panel 12: Show calories beside price
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
5%
4%
6%
12%
17%
19%
38%
1 - No, fully oppose
2
3
4
5
6
7 - Yes, fully support

Figure A2. Average ratings for each potential cause of the obesity epidemic



Notes: Error bars are 95% confidence intervals. Scale is from 1 ("Not at all") to 7 ("To a large extent"). Standard deviations range from 1.3 (food addiction, availability) to 1.7 (large portion sizes).