I'll Have What She's Had! Popularity Beliefs Moderate the Preference for Scarce Options
in the Choice of Food Items.

Sabine Topf¹ & Maarten Speekenbrink¹

¹ University College London

Author Note

Department of Experimental Psychology, University College London

Department of Experimental Psychology, University College London

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All data and an analysis script can be found at <https://osf.io/d6t9g/> [not
anonymised]

The authors made the following contributions. Sabine Topf: Conceptualization,
Formal analysis, Methodology, Software, Supervision, Visualization, Writing - Original
Draft Preparation, Writing - Review & Editing; Maarten Speekenbrink: Formal analysis,
Supervision, Writing - Review & Editing.

Correspondence concerning this article should be addressed to Sabine Topf, 26
Bedford Way, London WC1H 0AP, United Kingdom. E-mail: sabine.topf.14@ucl.ac.uk

Abstract

Information from traces of other people's behaviour can give clues about the quality of a behaviour or option. In three experiments we test whether the number of food items allegedly already consumed by others (scarcity-due-to-popularity effect) as well as the space allocated to the options (default effect) influence people's choice of food. In the first two experiments, we find a preference for fuller trays (reversed scarcity effect) but no effect for the size of trays. For the choice within plant and within meat options as well as among the unlabelled options, the preference for fullness is moderated by scarcity-due-to-popularity beliefs, such that a stronger belief that scarcity relates to popularity lessens or even reverses the preference for fuller trays. When it is made explicit that the options are of equal freshness, participants showed a preference for emptier trays. This preference was more pronounced the stronger their scarcity-due-to-popularity beliefs and is a novel finding for food choices. Contrary to previous research, we show that scarcity positively affects the desirability of food items, but only when scarcity is attributed to popularity and when there are no strong prior preferences guided by labels (plant- vs meat-based options).

Keywords: Behavioural traces, Food choice, Scarcity beliefs, Popularity, Vegan, Vegetarian

Word count: 6932

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When choosing between options that vary along several attributes, does it help to know what others have decided? For instance, when you find yourself at a reception and trays with various types of canapés are passed on (none of which you have tried before), would you be influenced by which options others before you have chosen? One obvious benefit of using information about other people's behaviour is that you may learn something about the options' quality, without having to try the options yourself first. In other words, rather than strategies such as sampling from all options and then choosing the best in the future, you can exploit knowledge already gathered by others. Especially in circumstances where it is not possible to sample from all options, for instance due to time constraints (the waiter passes the trays on quickly) or availability (the waiter cannot carry more than two trays at a time and some trays may never make it to where one stands), relying on other people's knowledge may be a superior strategy to maximise your culinary experience.

It may not be possible, and even impolite, to ask other people's opinions about the canapés. And most certainly the conversations are too interesting to spend too much time keeping track of what other people do. In this absence of direct observation or communication about the options, you could resort to relying on behavioural traces. Behavioural traces are changes made to the shared environment by other agents as a (by-)product of their actions (Topf & Speekenbrink, 2021). Although usually referring to objects added to the shared environment, such as waste on the ground after littering or an added paragraph on a shared manuscript, here the information lies in the missing items: the behavioural trace captures what has already been consumed. Behavioural traces generally increase the probability that later agents engage in the same behaviour which caused the trace (Heylighen, 2016). From this we would expect that if an option has been

chosen frequently in the past and the resulting behavioural traces (i.e., the removal of items from a tray or shelf, thereby leaving a noticeable empty space) are both observed and correctly interpreted, subsequent people would choose this option more often. The first aim of this paper is to investigate whether, in the absence of direct communication or observation, people pay attention to the behavioural traces of other people's choices and if so, what they conclude from it and to what extent it influences their own behaviour.

The observation that “any commodity will be valued to the extent it is unavailable” (Brock, 1968, p. 246), also known as scarcity, is behind the idea that people prefer rarer goods. This scarcity can be due to low supply, high demand, or both (see Hamilton et al., 2019 for a review of scarcity). When scarcity due to demand was manipulated, participants generally prefer the rarer option (Gierl & Huettl, 2010; Roy & Sharma, 2015; Verhallen & Robben, 1994; Worchel, Lee, & Adewole, 1975), unless they have a high need for uniqueness (Roy & Sharma, 2015) or the goods are meant for conspicuous consumption (Gierl & Huettl, 2010). When people think that scarcity is due to accidental reasons or retailer manipulation, they are not influenced in their decisions (Verhallen & Robben, 1994). In these studies the reason why a product was scarce was made explicit (popularity). But consumers are also more likely to choose a product when they only see traces of other people having chosen the product before them, manifested as empty shelf space (Castro, 2010; Herpen, Pieters, & Zeelenberg, 2009; Parker & Lehmann, 2011) or incomplete stacks (Razzouk, Seitz, & Kumar, 2002). The general inference people make from this scarcity is that the product is popular and of higher quality (Herpen et al., 2009). We therefore expect that people choose more often from plates with empty spaces, particularly when they believe that this is due to popularity-induced scarcity (Parker & Lehmann, 2011). None of these studies looking into behavioural traces of high demand found the effect with food (Castro, Morales, & Nowlis, 2013; Parker & Lehmann, 2011). This could be the case because food is perishable and plentiness suggests freshness. This may apply particularly to unpackaged items, but does not appear to be due to fear of contamination (Fazri, Afiff,

88 & Balqiah, 2017). Another possible explanation is that there are individual differences
89 under which circumstances people perceive low numbers of an item either as being due to
90 popularity or due to low supply. Since the studies did not control for this, we will explicitly
91 investigate the interplay of scarcity-due-to-popularity beliefs and choice.

92 **H1a and H1b.** People will notice when an option category (e.g., a certain type of
93 canapé) has missing items (is emptier; H1a) and associate this with popularity of that
94 category (H1b).

95 **H2a and H2b.** People generally choose from an option category with more missing
96 items (H2a) and particularly so if they think that this corresponds to other people having
97 chosen those items (scarcity-due-to-popularity belief; H2b).

98 Another way to learn about superior options is indirectly, via the way the host or
99 supermarket presents these. Assuming that many people have chosen a certain option in
100 the past, the host will be inclined to offer more of these in the future. Equivalently,
101 supermarkets will dedicate more shelf space to products that are frequently bought,
102 compared to products that have low demand. These structural changes can be understood
103 to denote an anticipated choice default, irrespective of how many items have been chosen
104 on a particular day from a particular tray or shelf. Products are chosen more frequently the
105 more shelf space has been allocated to it. This is a well-known effect in retailing, also called
106 “space-elastic demand” (Eisend, 2014). For instance, increasing the availability of a snack
107 from 25% to 75% of shelf space also increased the probability of it being chosen (Van Kleef,
108 Otten, & Van Trijp, 2012). This suggests that people will choose an item from a more
109 prominent presentation, particularly if they interpret this to mean higher demand over
110 time. The second aim of this study is therefore to assess whether people notice differences
111 in tray size, and if so, what it signifies to them and whether it influences their choice:

112 **H3a and H3b.** People will notice when an option is allocated more space (H3a) and
113 associate this with popularity (H3b).

H4a and H4b. People generally choose from a larger tray (H4a) and particularly so if they think that this corresponds to people having chosen from it in the past (default-due-to-popularity belief; H4b).

There is good evidence that people understand the information provided by other people's choices in terms of popularity and quality, for instance between unbranded wines (Parker & Lehmann, 2011). For food items, however, the scarcity effect is generally reversed, meaning that people are less likely to choose a more depleted option. This has been observed for instance for branded canned soups (Parker & Lehmann, 2011) and unbranded (unfamiliar) chocolates (Ku, Kuo, Yang, & Chung, 2013). Castro et al. (2013) also found a reversed scarcity effect for branded but not for unbranded yoghurt, popcorn, juice and eggs. In the latter set of experiments, the scarce category had only a single item left. This may have triggered participants' bias against taking the last item (Meadowcroft & Bernard, 2016; Parker & Lehmann, 2011). Moreover, the scarcity manipulation was sometimes confounded with other factors, such as an untidy display, which generally decreases the likelihood of a purchase (Castro et al., 2013; Fazri et al., 2017). None of the studies assessing the effect of scarcity on choice between food items asked participants to what extent they believed scarcity was due to demand, as opposed to accidental reasons. If a store waits with restocking items until the last one is sold, the remaining items are likely to be older. For perishable items such as food, this would mean they are less desirable. Moreover, all of the studies compared different options within categories (e.g., two types of soups), but not between categories. We wanted to see whether scarcity and default effects can also sway choices between different categories of food, in particular the choice between meat-based and plant-based options.

Our interest in assessing the effect of behavioural traces on choice between meat- and plant-based food options stems from environmental and health concerns. Meat consumption is linked to health issues and is environmentally unsustainable (Godfray et al., 2018) due to associated greenhouse gas emissions, freshwater pollution, and biodiversity

loss from deforestation (Chai et al., 2019; Machovina, Feeley, & Ripple, 2015; Mekonnen & Hoekstra, 2012). In contrast, plant-based diets are more sustainable (Pimentel & Pimentel, 2003) and may even help to prevent and treat conditions such as diabetes and heart disease (McMacken & Shah, 2017; Tusso, Stoll, & Li, 2015). Whether someone follows a plant-based diet depends on their gender, age, political views and education. For example, younger people see veganism as healthier than older people; higher educated people think veganism is more ethical; vegetarian meals are perceived as more “tasty” and more “enjoyable” by women compared to men (Bryant, 2019). Demographic variables will thus be included in the analysis as covariates. It may also depend on situational factors such as how hungry someone feels, since meat-based options are believed to be more filling (Michel, Hartmann, & Siegrist, 2021). People more frequently report that they are willing to try plant-based meals when presented with changing norms about eating behaviour (Sparkman & Walton, 2017). Although subtle changes in the choice environment such as tray or shelf size or the number of items chosen by other people may not lead to a complete overhaul of someone’s diet, in an informal setting such as a reception, it may lead people to try novel foods they have never tried before and thus expand what they find palatable. Indeed, not wanting to eat strange and unusual foods (17%) is among the ten most frequent reasons why people do not adopt a plant-based diet, while the other reasons are mainly structural, such as plant-based options not being available, or someone else deciding on meals (Lea, Crawford, & Worsley, 2006). Thus seeing that other people have chosen from plant-based options may make one more inclined to give these a try when they would not otherwise have done so.

In summary, when presented with options that show evidence of other people’s choices, one can use this information to learn something about the option’s popularity and hence quality. For instance, if relatively many items on a shelf, stack, or tray are missing, this could be an indication that other people find this option superior to other ones (behavioural traces). The way options are presented, such as on larger shelf spaces or bigger trays, can deliver additional information for people’s long-term preferences

(defaults). In this study, we aim to assess to what extent these factors affect people's choices for food items.

Experiment 1

In Experiment 1 we tested our hypotheses in the context of a reception where different canapés (finger food) are presented, with a choice between four trays at a time. Two options were always meat-based, and two plant-based. To test hypotheses H1 and H2, we presented options that are either “Empty” or “Full”. In other words, options either had *many* empty spaces (Empty: supposed traces of other people having chosen them) or *few* empty spaces (Full: few trace of others' choices). Since people generally avoid taking the last item (Meadowcroft & Bernard, 2016; Parker & Lehmann, 2011), the design ensured each tray had at least two items on it, so that people were not confronted with having to choose the last item from an option. Conversely, they were not presented with completely full trays. To test hypotheses H3 and H4, we presented options in either a “Small” or “Large” context, by varying the tray size on which options were presented. In addition to choices made, we also measured participants' beliefs about popularity as implied by scarcity and defaults.

Methods

Design. The experiment had a 2 (Meat: Full/Empty) x 2 (Plant: Full/Empty) x 2 (Meat: Small/Large) x 2 (Plant: Small/Large) design (*Figure 1*). Participants made a choice in four randomly chosen conditions in a partly within-subjects design.

Participants. In total, 195 people recruited from Prolific (www.prolific.co) took part in the online experiment. Three participants did not provide demographical information, and one reported to not be able to see the task on screen; these were excluded from analysis. We also excluded 15 participants who ignored our warnings that the task

Figure 1. Design of Experiment 1 with the sixteen possible combinations of tray size (small/large) and number of traces (full/empty) for meat and plant-based options. Meat and plant-based options were always represented by two trays of equal size (both either large or small) and equal traces (both either full or empty) but the number of traces sometimes differed by 1.

might not work on the “Safari” browser. This left 177 participants (48% Female, age M = 32 years, SD = 11.51). The majority of participants described themselves as omnivore (76.30%), followed by “flexitarians” (12.40%), vegetarians (6.20%), pescatarians (3.40%) and vegans (1.70%). Six participants chose “Other” as their diet. All of these also reported that meat was part of their diet, and we classified them as “Flexitarian” if meat was in less than half of their meals (2 instances) or as “Omnivore” otherwise (4). Participants were paid £0.40 for completing the study. The study had approval from the UCL Ethics Committee.

Pilot. Before conducting the experiment, we selected 26 images of canapés found on the internet and asked 20 people recruited amongst friends, family, and colleagues to rate each item on a scale from 0 (not appealing at all) to 6 (very appealing). The resulting mean ratings per canapé ranged from 2 to 4.30; standard deviations were similar across ratings (*Figure 2*). We discarded the five lowest and the five most highly rated canapés. The remaining 16 canapés were included as visual stimuli in Experiments 1-3.

Figure 2. The 26 canapé images tested for appeal in the pilot study with mean (SD) ratings. Only items in black were presented in Experiments 1-3. Items in green (highest ratings) and in red (lowest ratings) were discarded.

Food choice task. The food choice task was programmed with the jsPsych library (Leeuw, 2015). In the task, participants were presented with four images of trays with a varying number of food items and a button underneath each, labelled “Plant-based” or “Meat-based”, to register their choice. To allow participants subscribing to either an exclusively plant- or meat-based diet to make meaningful choices, there were always two

plant- and two meat-based options. These did not differ in size of tray or fullness, but differed in the visual appearance of the canapés presented. On each trial, four canapé images were randomly sampled from the 16 images selected in the pilot study so that each tray contained a different kind of canapé. Trays varied in size to be either “large” (with 16 white round napkins as placeholders) or “small” (with 7 napkins). “Full” trays had canapés placed on all but 1 to 2 napkins; “empty” trays had canapés placed on only 2 or 3 of the napkins. The exact number of items within the two meat- or plant-based options was randomly chosen and could therefore differ by 1. See *Figure 3* for an example of four trials for a single participant.

Popularity beliefs and follow-up questions. Participants were first asked an open-ended question about what they believed influenced their choices. Next, we specifically asked what they thought few or many canapés as well as small or large tray sizes meant from a list of five and three possible explanations, respectively. They could select as many reasons as they wanted and state any additional reasons. From this, we calculated a *scarcity-due-to-popularity* score that captured how much people believed that missing items related to popularity as compared to accidental reasons, by counting the number of scarcity items they agreed with and subtracting the number of accidental items they agreed with. The resulting score could take any value between -2 and 3 (which was transformed to a z-score for analysis) with higher values indicating a stronger popularity-induced scarcity belief. We also calculated a score that inferred popularity from *default* by counting the number of items participants agreed with that meant that these options were expected to be more popular and subtracting the number of accidental items they agreed with. The resulting possible score was between -1 and 2 (again used as a z-score for analysis), with higher values indicating stronger default beliefs (see *Table 1* for all items).

We further asked how realistic they found the images, how hungry they were, how satisfied they were with their choice as well as how appealing and healthy they judged the

Figure 3. Four trials of a randomly chosen participant in Experiment 1. All participants saw the four possible combinations of trays: small/small (Panel A), large/large (Panel B), small/large (Panel C), and large/small (Panel D) in randomized order. Tray size was always the same for both meat and both plant-based options, respectively. Whether the trays were 'full' (one or two canapés missing) or 'empty' (two or three canapés) was randomly chosen. The appearance of meat/plant-based options on the left or right was counterbalanced between participants but the same for any one participant.

meat- and plant-based options. These questions were answered on a scale from 0 (“not at all”) to 6 (“very”). Finally we asked about the participant’s current diet, as well as how often their meals in the previous week had included meat/fish and eggs/dairy, respectively. For this, they could answer on a slider scale from 0 (none) to 100 (all). All questions and the exact wording can be found in the *Supplementary Materials*.

Procedure. The study was hosted on the Gorilla testing platform (www.gorilla.sc; Anwyl-Irvine, Massoné, Flitton, Kirkham, & Evershed, 2020). Once directed from the recruitment platform to the study page, participants read the information sheet and consented to participation in the study. They then completed the food choice task, in which they were asked to imagine which food items (canapés) they would choose at a party. Participants were then asked the follow-up questions about the task, their diet, and demographics. The debrief page explained the purpose of the study in detail and gave participants contact details of researchers as well as a chance to leave any comments if they wished to do so.

Results

Popularity beliefs: scarcity and defaults. Most people (93.80%) noticed that there were different number of items on the trays. This is significantly different from the 50% chance of clicking the item randomly, $M = 0.94$, 95% CI [0.90, 0.97], $t(176) = 24.06$, $p < .001$ and the results thus support H1a that participants noticed the missing items. Scarcity scores were significantly higher than zero, $M = 0.55$, 95% CI [0.40, 0.70], $t(176) = 7.33$, $p < .001$, which supports H1b that missing items are thought to relate to the popularity of an option (at least moderately so).

Only half of participants (57.10%) reported that they had noticed a difference in tray sizes. This is not significantly different from chance, $M = 0.57$, 95% CI [0.50, 0.64], $t(176) = 1.89$, $p = .060$, and hence there is no support for hypothesis H3a. Default scores were significantly higher than zero, $M = 0.33$, 95% CI [0.21, 0.44], $t(176) = 5.64$, $p < .001$,

Table 1

Scarcity and default items and percentages of participants agreeing with these (multiple selection possible).

Belief	Item	Percentage
Scarcity	Fewer items meant many people liked it	72.88
	Fewer items meant one person took many of them	11.86
	Fewer items meant supply was low (Reverse)	18.64
	Many items meant people didn't like it	22.03
	Many items meant they were freshly made (Reverse)	32.77
Default	The host only had these trays available (Reverse)	23.16
	The host expected options on smaller trays to be less popular	21.47
	The host expected options on larger trays to be more popular	29.94

meaning that at least among those who noticed any difference, larger trays were believed to be the more popular options. This supports H3b.

Choice between meat and plant-based options. On average, meat-based options (53.90%) were chosen slightly more frequently than plant-based options (46.10%). A number of participants ($n = 34$) only ever chose plant-based options. As expected, this group included everyone who stated that their diet was “vegan”, “vegetarian” or “pescatarian”, as well as seven “flexitarians” and seven “omnivores”. A similar number ($n = 38$) only ever chose meat-based options. These were mainly “omnivores” as well as three “flexitarians”.

We tested hypotheses H2a (preference for *Empty*), H2b (increased preference for *Empty* with higher scarcity beliefs), H4a (preference for *Large*) and H4b (increased preference for *Large* with higher default beliefs) with a mixed-effects logistic regression model. The model predicted the likelihood of choosing the plant-based options, and

included fixed effects for the difference in the number of canapés between plant- and meat-based options (*Trace difference*), the difference in size of trays between meat- and plant-based options (*Tray size difference*), scarcity and default beliefs, as well as interactions between scarcity belief and *Trace difference*, and default belief and *Tray size difference*. The model included participant-specific random intercepts, which fitted better than a model without random effects, $\chi^2(1) = 76.43$, $p < .001$. The results did not differ when participants who were restricted to the plant-based option based on their diet were excluded from the analysis. The logistic regression showed a significant effect only for the *Trace difference*, where plant was chosen more frequently from fuller plates, $b = 0.25$, $z = 3.87$, $p < .001$ (*Table 2, Figure 4*). This finding is stable when additional predictors *gender*, *age*, how *hungry* someone felt, how *appealing* and how *healthy* the meat and plant-based options appeared, respectively, were included, $b = 0.26$, $z = 3.83$, $p < .001$ (*Table 3*). In other words, participants were 1.30 times more likely to select the plant option if it was on a fuller plate. Participants were also more likely to choose plant-based options the more appealing they thought them, $b = 1.07$, $z = 7.21$, $p = .575$, and they were less likely to choose plant the more appealing they thought the meat options looked, $b = -1.01$, $z = -6.38$, $p = .721$. Note that we randomly chose images to represent meat and plant-based options so that one image may have been presented as a “plant-based” option for one participant, but as a “meat-based” option for another participant. This effect is therefore entirely driven by the labelling of options and not by the options themselves. There were no effects for default, scarcity, trays or their interactions.

Exploratory analysis: Choice within meat-based and plant-based options.

Participants may have had quite strong *a priori* preferences for plant- or meat-based options, which may have overshadowed any effects of the traces on this general choice. However, because the exact number of canapés was chosen randomly, there is an opportunity to explore whether the number of traces affects which plate participants chose *within* the set of two meat-based, or two plant-based options. The numbers of canapés were

Table 2

Results of the logistic regression on the likelihood of choosing plant over meat.

	b	95% CI	z	p
Intercept	-0.22	[-0.37, -0.07]	-1.49	.137
Scarcity	-0.18	[-0.33, -0.02]	-1.14	.252
Trace difference	0.25	[0.19, 0.32]	3.87	<.001 ***
Default	0.18	[0.03, 0.34]	1.18	.237
Tray size difference	0.04	[-0.03, 0.1]	0.56	.575
Scarcity x Trace difference	-0.02	[-0.09, 0.04]	-0.36	.721
Default x Tray difference	-0.01	[-0.07, 0.05]	-0.18	.855

Figure 4. Percentage of the plant-based option chosen with a significant effect for fuller trays but no effect for the size of trays.

Table 3

Results of the logistic regression on the likelihood of choosing plant over meat with additional predictors (all additional predictors were Z-transformed)

	b	95% CI	z	p
Intercept	-0.19	[-0.3, -0.09]	-1.79	.074
Gender (Male +1, Female -1)	0.17	[0.05, 0.28]	1.48	.139
Age	0.05	[-0.05, 0.16]	0.49	.624
Hungry (0-6)	-0.05	[-0.16, 0.07]	-0.42	.677
Plant appealing (0-6)	1.07	[0.92, 1.22]	7.21	<.001 ***
Meat appealing (0-6)	-1.01	[-1.16, -0.85]	-6.38	<.001 ***
Plant healthy (0-6)	0.08	[-0.04, 0.21]	0.65	.517
Meat healthy (0-6)	-0.13	[-0.26, 0.01]	-0.93	.351
Scarcity	-0.03	[-0.14, 0.08]	-0.28	.778
Trace difference	0.26	[0.19, 0.33]	3.83	<.001 ***
Default	0.02	[-0.08, 0.13]	0.23	.820
Tray size difference	0.02	[-0.05, 0.08]	0.26	.793
Scarcity x Trace difference	-0.03	[-0.09, 0.04]	-0.45	.656
Default x Tray size difference	0.00	[-0.07, 0.06]	-0.04	.971

Table 4

Results of the logistic regression on the likelihood of choosing left within plant or within meat options.

	b	95% CI	z	p
Intercept	0.00	[-0.08, 0.08]	-0.01	.995
Scarcity	0.10	[0.03, 0.18]	1.36	.173
Trace difference	0.36	[0.25, 0.48]	3.27	.001 **
Scarcity x Trace difference	-0.24	[-0.35, -0.13]	-2.20	.028 *

randomly chosen to be 2-3 left over (*Empty*) or 1-2 missing (*Full*), such that sometimes there were an equal number of canapés for the two meat- or plant-based options, and sometimes one plate had one more canapé. We fitted a logistic regression model for the likelihood of choosing the left option within the meat or plant options presented. The predictors were the difference in the number of traces, scarcity belief, and their interaction. Default effects were not included since the tray size was always the same for both options. A mixed-effects version of this model with participant-specific random intercepts did not have a better fit, $\chi^2(1) = 0$, $p = 1.000$. Hence, we used a model with only fixed effects.

Overall, participants were more likely to choose from fuller trays, $b = 0.36$, $z = 3.27$, $p = .001$. More precisely, participants were 1.43 times more likely to select the left option if it was on a fuller tray. However, scarcity belief also had an effect: People were less likely to choose from a fuller tray the more they believed that “empty” indicated scarcity due to popularity, $b = -0.24$, $z = -2.20$, $p = .028$ (*Table 4*). *Figure 5* illustrates this effect: for every 1 SD increase in their scarcity belief, participants are 0.79 times less likely to choose from a fuller plate.

Rating of food items. We asked a number of questions as manipulation checks. On average people found the canapés fairly realistic, $M = 4.10$ ($SD = 1.42$). When asked

Figure 5. Percentage of choosing the left option within plant and within meat options, respectively, by difference in trace numbers and scarcity beliefs. Although this pattern appears to be reversed for very low and very high scarcity beliefs, note that only very few participants scored -2 and 3, respectively, on the scarcity belief.

after the task, participants reported to be generally satisfied with the choice they made, $M = 4.80$ ($SD = 1$), and that they were moderately hungry, $M = 3.50$ ($SD = 1.77$). The meat-based options were slightly more appealing ($M = 4.10$, $SD = 1.73$) than the plant-based options ($M = 3.70$, $SD = 1.49$), but not significantly so, $t(176) = 2.04$, $p = .043$. In contrast, the plant-based options were judged to be more healthy, $M = 4.60$ ($SD = 1.08$), compared with the meat based option, $M = 3.20$ ($SD = 1.35$). This difference was significant $t(176) = -11.59$, $p < .001$ (but it did not influence the choice of plant over meat).

Reasons for choice made. For responses to the open-ended question about reasons for their choices, we applied qualitative text analysis. Two raters scanned the data independently and identified themes which were then unified by discussion. The raters classified all responses by these themes independently. After this second round, a total of 363 separate reasons were coded with an agreement between raters of 81%. Most of the 69 disagreements were either between “Appealing” vs “Appearance” (17 instances) or when one coder had missed to code the reason (18). These and other instances of disagreement were resolved through discussion. *Table 5* summarises what participants thought had influenced them.

The most frequent themes were with regards to *Appearance* (150), followed by *Preference* (85) and *Traces* (50). Note that similar numbers of people gave “emptier” and “fuller” trays as the reason why they chose a certain canapé. When we had a closer look at these responses, 12 of the 15 people who preferred choosing from emptier trays mentioned some version of scarcity (“I went with what seemed to have been the most popular and had been chosen most”). For the 11 people who preferred choosing from fuller trays there was less consensus. Five reported that “fuller” looked more appealing (e.g. “... a full plate looks more inviting than only a few items left”), three that they did not want to choose from the last two items (e.g. “I did not want to take the second to last one so chose something else”), and two that they wanted to leave enough for other people (e.g. “... then when they were running low I went for another with more food on as I wanted to save some for other people”). The theme *Trays* had the fewest mentions (9) and choosing from a small tray was never given as a reason.

Discussion

Experiment 1 showed that participants generally prefer fuller trays unless they believe in scarcity-due-to-popularity explanations for the number of traces. The number of traces influenced participants’ choices between meat and plant based options: In contrast to our hypothesis, fuller trays were preferred, even after we accounted for how appealing these options looked and a number of other demographic factors. Also in contrast to our hypothesis, there was no preference for larger plates. When we looked at the choice within the meat and plant-based options, we found that participants are still more likely to choose from a fuller tray, but this is attenuated by their scarcity belief — the higher the scarcity belief, the more likely they are to choose from an empty tray. Note that due to the design of Experiment 1, the difference in number of traces was only ever ± 1 between “fuller” and “emptier”. Nevertheless, even such small differences appeared to sway participants towards one option over another. When asked after the task what had prompted them to choose,

Table 5

Themes coded from the question about reasons for choosing sorted by topic.

Topic	Theme	Main	Other	Sum
Appearance	Appearance (not specified)	31.00	19.00	50.00
	Appealing	7.00	14.00	21.00
	Colour	30.00	23.00	53.00
	Shape	1.00	3.00	4.00
	Size	2.00	2.00	4.00
	Tastiness	3.00	15.00	18.00
Preference	Meat as default	37.00	15.00	52.00
	Plant as default	24.00	9.00	33.00
Presentation	Presentation (not specified)	6.00	4.00	10.00
	Label	1.00	1.00	2.00
	Arrangement	1.00	5.00	6.00
Traces	Trace number (not specified)	9.00	15.00	24.00
	Emptier tray (more traces)	5.00	10.00	15.00
	Fuller tray (fewer traces)	2.00	9.00	11.00
Trays	Tray size (not specified)	0.00	7.00	7.00
	Larger tray	2.00	0.00	2.00
Other	Familiarity	0.00	2.00	2.00
	Filling	1.00	3.00	4.00
	Ingredients	7.00	18.00	25.00
	Safety	0.00	2.00	2.00
	Variety	0.00	2.00	2.00

Note. Main themes where any reasons mentioned first. Other themes where reasons mentioned in second to fifth place. Themes that were mentioned only once are omitted from the table.

emptier and fuller trays were mentioned nearly equally often. Reasons for emptier trays were generally related with scarcity beliefs, while reasons for full trays were a mix of how inviting the option looked and not wanting to deprive other people of trying an option. Tray size was not noticed by almost half of participants and hardly mentioned as a reason for their choice. We also found evidence that there is not only a “last-item” bias, but also a bias against second-to-last or perhaps even third-to-last items. This may explain why both Ku et al. (2013) and Castro et al. (2013) found reversed scarcity effects with their displays containing only one or two items in the scarcity condition.

It is possible that in this experiment scarcity considerations were overshadowed by the more salient choice between plant and meat-based options. The scarcity effect is often reversed with branded options (Castro et al., 2013; Parker & Lehmann, 2011), and this may extend to strong preferences such as certain diets. Although we find evidence that scarcity beliefs have an impact on participants’ secondary choices within plant and meat options, the current design did not allow us to look at the effect of tray size on this secondary choice. Also, the difference in traces was rather small and limited to ± 1 . In Experiment 2, we therefore simplified the design and omitted the meat and plant labels, to allow us to look in more detail at the effects of traces and tray sizes in combination with scarcity and default beliefs.

Experiment 2

Experiment 2 was designed to test our hypotheses in a simplified design that ignored plant and meat based labels. The main aim was to replicate the unexpected effect of traces, the interaction of traces and scarcity beliefs, and absence of an effect of tray size found in Experiment 1.

Methods

Except for changes highlighted below, the methods were identical to that in Experiment 1.

Design. We only presented two trays at a time in a 2 (Size of tray: Large/Small) by 2 (Traces: Full/Empty) design (see *Figure 6* for an example of four trials of a single participant).

Figure 6. Four trials of a randomly chosen participant in Experiment 2. All participants saw the four possible combinations of trays: small/small (Panel A), large/large (Panel B), small/large (Panel C), and large/small (Panel D) in randomized order. Whether the trays were 'full' (one or two canapés missing) or 'empty' (two or three canapés left) was randomly chosen.

Participants. Sample size calculation showed that in order to find the effect of choosing plant from fuller (54%) over emptier (37%) with $\alpha = .05$ and 85% power, we needed 306 single choices or 76 people with four choices each. In total, 76 people recruited from Prolific (www.prolific.co) took part in the experiment (42.10% Female, age $M = 27.10$ years, $SD = 8.59$).

Food choice task. This time the buttons were not labelled as meat or plant-based options. Instead, we told participants in the instructions that “all food is free of allergens (free from nuts, gluten, etc.) and plant-based” so that it was accessible to all diets.

Follow-up questions. Follow-up questions were presented in five sections. Section 1 asked about whether people’s choice was influenced by a number of canapé features, including the colour, ingredients, and how tasty it looked. Next we asked whether they noticed a difference in tray size and number of canapés, respectively. In Sections 3 and 4 we listed a number of reasons of why one would want to choose from fuller/emptier/smaller/larger trays, derived from the results of Experiment 1. We asked participants how strongly they agreed with these reasons on a scale from 0 (Strongly disagree) to 6 (Strongly agree). We calculated a *scarcity-due-to-popularity* score for each participant as the mean score on items that suggested this type of belief and reverse coded items that provided alternative explanations. We also calculated a *default* score in the same way (Table 6). Higher scores meant higher scarcity and default beliefs, respectively. In the final section we asked how realistic they thought the displays were and how hungry they felt after the task. All questions and exact wording can be found in the *Supplementary Materials*.

Results

Scarcity, default, and last-item beliefs. Everyone (100%) noticed that the number of items differed. By contrast, less than half of participants (36.80%) noticed that

Table 6

Agreement with possible reasons for choice made regarding the number of canapés (scarcity beliefs), the size of trays (default beliefs) and last-item bias.

Belief	I preferred choosing from...	Mean	SD
Scarcity	fewer because I'd want to have a chance to taste it before it was gone.	2.70	2.02
	fewer because many people liked it	2.00	1.91
	more because this meant that they were freshly made. (R)	3.60	2.05
	more because I would not want them to go to waste. (R)	4.70	1.89
Default	larger because there was a larger supply of those canapés.	2.10	1.69
	smaller because those canapés were rarer and special.	1.80	1.69
Last-item	fewer because others don't like taking from the last few items (R).	5.70	1.39
	larger because they have more options to choose from.	2.40	1.82
	more because I do not like taking from the last few items.	2.70	2.09
	smaller because it is easier to choose from fewer options (R).	5.10	1.71

Note. All items on a scale from 0 to 6. Items with (R) were reverse coded.

417 tray sizes differed. This is below chance, $M = 0.37$, 95% CI [0.26, 0.48], $t(75) = -2.36$,
 418 $p = .021$. In summary, the findings support H1a but not H3a.

419 *Table 6* lists the items of scarcity and default beliefs and participants' agreement with
 420 those, together with items measuring the agreement with last-item avoidance. Average
 421 scarcity beliefs were low but not significantly lower than the centre of the scale (3),
 422 $M = 2.77$, 95% CI [2.52, 3.02], $t(75) = -1.81$, $p = .075$. Average default beliefs were also
 423 low and below the centre of the scale, $M = 1.96$, 95% CI [1.63, 2.29], $t(75) = -6.28$,
 424 $p < .001$. Together, this lends weak support for H1b, but contradicts H3b. There was
 425 higher average agreement about wanting to avoid the last item, $M = 3.49$ ($SD = 0.76$).

Table 7

Results of the logistic regression predicting the probability of choosing the left tray.

	b	95% CI	z	p
Intercept	-0.07	[-0.2, 0.06]	-0.56	.575
Scarcity	0.18	[0.03, 0.32]	1.17	.241
Difference in traces	0.39	[0.29, 0.49]	3.78	<.001 ***
Default	0.16	[0.04, 0.29]	1.29	.196
Difference in trays	-0.01	[-0.14, 0.11]	-0.11	.912
Scarcity x Trace difference	-0.71	[-0.83, -0.59]	-5.95	<.001 ***
Default x Tray difference	-0.12	[-0.25, 0]	-1.03	.305

Choice made. We estimated the likelihood of choosing the left option with a logistic regression where the predictors were difference in the number of traces, scarcity belief, and their interaction as well as size of trays, default beliefs, and their interaction. A mixed-effects logistic regression with random intercepts for participants did not have a better fit than this simple logistic regression model, $\chi^2(1) = 0$, $p = 1.000$.

As in Experiment 1, we find a preference for fuller trays, $b = 0.39$, $z = 3.78$, $p < .001$ (*Figure 7*). Participants were 1.48 times more likely to choose left when this tray was fuller than the right tray. There again was also evidence of an interaction between scarcity beliefs and the trace difference, $b = -0.71$, $z = -5.95$, $p < .001$. In other words, participants were 0.49 times less likely to choose from the fuller tray, for every SD increase in their scarcity belief score. *Figure 8* illustrates this effect. There were no effects of tray size, default beliefs or their interaction (*Table 7*). The results are comparable in direction and significance when actual difference in number of traces, rather than the binary variable fuller/emptier, is included.

Figure 7. Percentage of left option chosen with a significant effect for fuller trays but no effect for the size of trays.

Rating of food items. On average people found the canapés generally realistic, $M = 4.10$ ($SD = 1.47$). When asked after the task, participants were moderately hungry, $M = 3.30$ ($SD = 1.74$). The ratings are very similar to levels in Experiment 1. *Table 8* lists other reasons that may have influenced the choice and how much participants agreed with those.

Discussion

Experiment 2 replicated the results from Experiment 1. As before, people tend to choose from fuller trays but this is moderated by scarcity beliefs, with higher scarcity beliefs meaning people are more likely to choose from emptier trays. As in Experiment 1, we do not find effects for tray size or an interaction of tray size with default beliefs. Also as before, variations in the number of items are noticed, while variations in the size of trays is generally not. Although we used different questions and methods to calculate the scarcity and default belief scores, the pattern of results is comparable to that in Experiment 1.

Experiment 3

The finding that participants prefer fuller trays is replicated across the two experiments. Nevertheless, we do find a preference for scarce items the more participants

Figure 8. Likelihood of choosing the left option by difference in trace numbers and scarcity beliefs.

Table 8

Agreement with possible additional reasons for choice made regarding the number of canapés.

To what extent was your choice influenced by...	Mean	SD
the general appearance	5.10	0.96
how appealing (tasty) they looked	5.00	1.12
the colour	4.40	1.59
the ingredients	3.60	1.88
how healthy they looked	1.80	1.81

Note. All items on a scale from 0 to 6.

believe that this scarcity is due to popularity, contradicting previous evidence that scarcity effects can only be found for non-food items (e.g., Parker & Lehmann, 2011). This leads to a new hypothesis: If demand-induced scarcity beliefs are sufficiently increased, a preference for empty displays may also be found for food items.

There is variation in how much people express beliefs that scarcity is due to popularity. The main question is whether this is something that can be emphasised through the design of the task. First, scarcity must not be due to delivery shortages (Herpen et al., 2009), thus the design must either imply or explicitly state that trays are refilled at the same time. At the dinner party scenario of Experiments 1 and 2, the trays may have been prepared at different times and thus fuller trays imply freshness. Indeed, the belief that fuller trays were freshly made was the second most endorsed reason in Experiment 1. A context with equal refill rates, but where one product is scarcer, should lead to increased popularity beliefs and thus preference of the scarcer product. Second, scarcity due to popularity beliefs may increase when other people are present, even when the others' choices cannot be directly observed.

Methods

Design. Participants again made four choices from trays that were either both full, both empty, or one full and one empty. The design was similar to Experiment 2, with the following changes: Because we had not found any effects of tray size, we only included large trays as the stimulus material. To avoid last-item or second-to-last-item effects, the trays had three or four items on them when empty and three or four items missing when full. We included an animation that showed trays with canapés arriving (“New canapés have arrived!”), then a crowd of people rushing towards the trays and moving away to the right, after which the participant could make their choice (“It’s your turn to make a choice!”; see *Figure 9* for an example of a trial and the Appendix for full instructions). Since colour had a self-reported influence on choice in Experiments 1 and 2, pictures were

Figure 9. One trial of a randomly chosen participant in Experiment 3.

colour-matched in eight pairs, four of which were randomly selected for each participant. In addition to the questions asked in Experiment 2, we asked additional question to check that they had seen and understood the animation, such as “Fewer canapés (food items) left on the trays meant that many people had chosen this option”. We removed any questions pertaining to tray size.

Participants. Sample size calculations showed that in order to find the effect of choosing from fuller (59%) over emptier trays (38%), as found in Experiment 2, with $\alpha = .05$ and 85% power, we needed 200 single choices or 50 people with four choices each. Since we were also interested in the effect of scarcity beliefs, we decided to err on the side of caution and aim for the same number recruited in Experiment 2. In total, 76 people

recruited from Prolific (www.prolific.co) took part in the experiment (36.80% Female, age $M = 27.30$ years, $SD = 8.22$).

Results

Scarcity, last-item beliefs and manipulation checks. Most participants (96.05%) noticed that the number of items differed once the group had left. This is above chance, $M = 0.96$, 95% CI $[0.92, 1.01]$, $t(75) = 20.48$, $p < .001$. The finding lends additional support to H1a. However, about a fifth of participants (22.37%) thought that the number of traces differed on the trays when the waiter had just brought them in, when in fact both were full; the correct belief that they were equal is still above chance for the whole sample, $M = 0.78$, 95% CI $[0.68, 0.87]$, $t(75) = 5.74$, $p < .001$.

Table 9 lists the items of scarcity and default beliefs and participants' agreement with those, together with items measuring the agreement with last-item avoidance. Average scarcity beliefs were significantly higher than the centre of the scale (3), $M = 3.66$, 95% CI $[3.39, 3.93]$, $t(75) = 4.94$, $p < .001$, and significantly higher than in Experiment 2, $\Delta M = 0.89$, 95% CI $[0.53, 1.25]$, $t(149.41) = 4.84$, $p < .001$. This supports H1b. There was also medium agreement about wanting to avoid the last item, $M = 3$ ($SD = 0.86$), which was significantly lower than in Experiment 2, $\Delta M = -0.49$, 95% CI $[-0.75, -0.23]$, $t(147.83) = -3.74$, $p < .001$.

Choice made

We estimated the likelihood of choosing the left option with a logistic regression where the predictors were difference in the number of traces, scarcity belief, and their interaction. A mixed-effects logistic regression with random intercepts for participants did not have a better fit, $\chi^2(1) = 0$, $p = 1.000$.

In contrast to previous experiments, we find a preference for emptier trays, $b = -0.19$,

Table 9

Agreement with possible reasons for choice made regarding the number of canapés (scarcity beliefs), last-item bias, and manipulation checks.

I preferred choosing from...	Mean	SD
fewer because I'd want to have a chance to taste it before it was gone.	3.60	1.85
fewer because many people liked it	3.30	1.85
more because this meant that they were freshly made. (R)	4.90	1.88
more because I would not want them to go to waste. (R)	4.80	1.83
fewer because others don't like taking from the last few items (R).	5.30	1.61
fewer because it is easier to choose from fewer options (R).	5.40	1.68
more because I do not like taking from the last few items.	1.70	1.74
more because there were more options to choose from.	2.20	1.87
fewer because many people had chosen this option.	5.60	0.65
fewer because they had been on the tray for longer (R)	5.10	1.48
fewer because many people liked this option.	4.50	1.46
fewer because this option was of higher quality.	3.30	1.55
fewer because there were fewer of these from the start (R)	5.60	1.43

Note. All items on a scale from 0 to 6. Items with (R) were reverse coded.

Table 10

Results of the logistic regression predicting the probability of choosing the left tray.

	b	95% CI	z	p
Intercept	-0.05	[-0.17, 0.08]	-0.37	.708
Scarcity	-0.02	[-0.15, 0.11]	-0.14	.889
Difference in traces	-0.19	[-0.28, -0.09]	-2.00	.045 *
Scarcity x Trace difference	-0.59	[-0.71, -0.48]	-5.09	<.001 ***

$z = -2.00$, $p = .045$ (*Figure 7*). Participants were 1.21 times more likely to choose left when this tray was emptier compared to the right tray. This effect was moderated by an interaction with scarcity beliefs, $b = -0.59$, $z = -5.09$, $p < .001$. For every 1 SD increase in scarcity belief, participants were 1.80 times more likely to choose from the emptier tray. *Figure 11* illustrates this effect. The results are comparable in direction and significance when actual difference in number of traces, rather than the binary variable fuller/emptier, is included.

Rating of food items. On average people found the canapés generally realistic, $M = 4.10$ ($SD = 1.32$). When asked after the task, participants were moderately hungry, $M = 3.10$ ($SD = 1.94$). These ratings are similar to levels in Experiments 1 and 2. *Table 11* lists other reasons that may have influenced the choice and how much participants agreed with those. Results are similar to those in Experiment 2.

General discussion

In three experiments we find that people usually notice a difference in the number of food items presented on two or four trays. Whether missing items are associated with increased popularity of these options underlies individual differences in food choice

Figure 10. Percentage of left option chosen with a significant effect for fuller trays.

(Experiments 1 and 2), and this scarcity-due-to-popularity belief can be strengthened through manipulation (Experiment 3). People appear to generally prefer to choose from fuller trays, but this is attenuated or even reversed depending on their scarcity beliefs (Experiments 1 and 2). However, the preference for full trays in these experiments may have also been influenced by beliefs about the freshness of an option. When it is made obvious that the food arrived at the same time and thus is equal in freshness, the preference flips to one for empty trays — and this preference for items on empty trays increases with people’s scarcity beliefs (Experiment 3). We also find that people do not generally notice a difference in the size of the trays, and beliefs that larger trays relate to long-term popularity are weak. Consequently, participants’ choices were not influenced by the size of trays nor their beliefs regarding “default” options.

These results are in contrast with previous findings that inferences about popularity and a resulting preference for emptier trays or shelves is not applicable to food items (Castro et al., 2013; Ku et al., 2013; Parker & Lehmann, 2011). However, previous experiments did generally not control for equal freshness of the options, or measure beliefs about freshness to be able to control for these effects statistically. In contrast, the present study shows that people also take other people’s preference into account when making their choice about food items.

Figure 11. Likelihood of choosing the left option by difference in trace numbers and scarcity beliefs.

Table 11

Agreement with possible additional reasons for choice made regarding the number of canapés.

To what extent was your choice influenced by...	Mean	SD
how appealing (tasty) they looked	5.00	0.94
the general appearance	4.90	1.07
the colour	4.30	1.34
the ingredients	3.80	1.81
how healthy they looked	2.30	1.81

Note. All items on a scale from 0 to 6.

The findings imply that it may be useful to tell people explicitly when shelves were last restocked, in order to avoid food waste. For instance, instead of keeping shelves fully stocked until closing time to increase sales and then having to dispose of the left-overs, patrons could be made aware that options are equal in terms of freshness. What is unclear is why some people naturally have stronger beliefs in scarcity-due-to-popularity; future research could look into this. Through the manipulation of freshness in Experiment 3, the differentiation between direct observation of behaviour and indirect observation through behavioural traces is somewhat blurred. Although the actual consumption could not be observed in this design, Experiment 3 is further removed from the idea of behavioural traces communicating other people's preferences in the absence of direct observation. Behavioural traces can allow for a variety of interpretations and constraining their effects in one direction may then require additional information. Providing such additional information, or making it more salient, may provide a useful additional means of behaviour change.

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Supplementary Materials

Task instructions in Experiment 1

Imagine you are at a cocktail party and you get to choose canapés (finger food).

From the selection of trays, please choose the one you are most likely to choose in real life.

Follow-up questions in Experiment 1

Section 1 of 5. You will now be asked a few of questions about the task you just did. Please answer these questions as accurately and honestly as you can. There are no right or wrong answers.

- What do you think influenced your choice? Please list as many reasons as you can think of. *Open-field answers*

Section 2 of 5. What do you think explains the **number of items** on each tray? Select as many as apply.

- Fewer items meant many people liked it
- Fewer items meant one person took many of them
- Fewer items meant supply was low
- Many items meant people didn't like it
- Many items meant they were freshly made
- I did not notice any difference in number of items
- Other (please specify)

What do you think explains the **size of each tray**? Select as many as apply.

- The host only had these trays available
- The host expected options on smaller trays to be less popular
- The host expected options on larger trays to be more popular
- I did not notice any difference in size
- Other (please specify)

Section 3 of 5.

- How realistic did the task display appear to you (e.g., would you expect such a display of food at an event/party)? *Answer from 0 (Not realistic at all) to 6 (Very realistic)*
- How hungry are you right now? *Answer from 0 (Not hungry at all) to 6 (Very realistic)*
- How satisfied are you with the choice you made during the task? *Answer from 0 (Not satisfied at all) to 6 (Very satisfied)*

Section 4 of 5. *Answers from 0 (Not appealing at all) to 6 (Very appealing)*

- How appealing did the “Meat-based” options appear to you?
- How appealing did the “Plant-based” options appear to you?

Answers from 0 (Not healthy at all) to 6 (Very healthy)

- How healthy do you think the “Meat-based” options would have been?
- How healthy do you think the “Plant-based” options would have been?

Section 5 of 5.

- What is your gender? *Answers Male, Female, Other, or Prefer not to say*
- How old are you? *Open-field response*

- What is your current diet? *Answers Omnivore (would eat meat; fish; dairy and eggs), Pescatarian (would eat fish; dairy; eggs; but NO meat), Vegetarian (would eat dairy and eggs; but NO meat or fish), Vegan (would NOT eat meat; fish; dairy or eggs), Flexitarian (would mostly eat vegetarian food and occasionally eat meat)*

Answers from 0 (None) to 100 (All) * In the previous week, how many of your meals included meat and/or fish? * In the previous week, how many of your meals included dairy and/or eggs?

Task instructions in Experiment 2

Imagine you are at a cocktail party and you get to choose canapés (finger food).

From the selection of trays, please choose the one you are most likely to choose in real life.

Please note that all food is free of allergens (free from nuts, gluten, etc.) and plant-based.

Follow-up questions in Experiment 2

You will now be asked some questions about the task you just did. There are five sections in total. Please answer all questions as accurately and honestly as you can. There are no right or wrong answers.

Section 1 of 5. *Answers from 0 (Not influenced at all) to 6 (Strongly influenced)*

- To what extent was your choice influenced by the **colour** of the canapés (food items)?
- To what extent was your choice influenced by the **ingredients** of the canapés?
- To what extent was your choice influenced by the **general appearance** of the canapés?

- To what extent was your choice influenced by **how appealing (tasty)** the canapés looked?

- To what extent was your choice influenced by how **healthy** the canapés looked?

Section 2 of 5. *Answers Yes or No*

- Did you notice any difference in the number of canapés (food items) on the trays?
- Did you notice any difference in the size of the trays?

Section 3 of 5. Please read each statement below carefully and choose the response that most applies to you.

Answers from 0 (Strongly DISAGREE) to 6 (Strongly AGREE)

- I preferred choosing from a tray with **fewer** canapés (food items) **because this meant that many people liked it.**
- I preferred choosing from a tray with **fewer** canapés **because I'd want to have a chance to taste it before it was gone.**
- I preferred choosing from a tray with **fewer** canapés **because others don't like taking from the last few items.**
- I preferred choosing from a tray with **more** canapés **because I would not want them to go to waste.**
- I preferred choosing from a tray with **more** canapés **because I do not like taking from the last few items.**
- I preferred choosing from a tray with **more** canapés **because this meant that they were freshly made.**
- Do you have any other reasons for your choice related to the number of canapés on the tray? If not, leave blank. *Open-field response*

Section 4 of 5. Please read each statement below carefully and choose the response that most applies to you.

Answers from 0 (Strongly DISAGREE) to 6 (Strongly AGREE)

- I preferred choosing from a **larger** tray **because this meant there was a larger supply of those canapés.**
- I preferred choosing from a **larger** tray **because larger trays have more options to choose from.**
- I preferred choosing from a **smaller** tray **because this meant that those canapés were rarer and special.**
- I preferred choosing from a **smaller** tray **because it is easier to choose from fewer options.**

Do you have any other reasons for your choice related to the size of the trays? If not, leave blank. *Open-field response*

Section 5 of 5.

- How realistic did the task display appear to you (e.g., would you expect such a display of food at an event/party)? *Answer from 0 (Not realistic at all) to 6 (Very realistic)*
- How hungry are you right now? *Answer from 0 (Not hungry at all) to 6 (Very hungry)*
- What is your gender? *Answers Male, Female, Other, or Prefer not to say*
- How old are you? *Open-field response*

Task instructions in Experiment 3

Imagine you are at a formal reception and you get to choose canapés (finger food).

From the selection of trays, please choose the one you are most likely to choose in real life.

Please note that all food is free of allergens (free from nuts, gluten, etc.) and plant-based.

Follow-up questions in Experiment 3

You will now be asked some questions about the task you just did. There are five sections in total. Please answer all questions as accurately and honestly as you can. There are no right or wrong answers.

Section 1 of 5. *Answers from 0 (Not influenced at all) to 6 (Strongly influenced)*

- To what extent was your choice influenced by the **colour** of the canapés (food items)?
- To what extent was your choice influenced by the **ingredients** of the canapés?
- To what extent was your choice influenced by the **general appearance** of the canapés?
- To what extent was your choice influenced by **how appealing (tasty)** the canapés looked?
- To what extent was your choice influenced by how **healthy** the canapés looked?

Section 2 of 5. *Answers Yes or No*

Did you notice any difference in the number of canapés (food items) on the trays...

- ...when the waiter brought them in?
- ...after the group had left?

Section 3 of 5. Please read each statement below carefully and choose the response that most applies to you.

Answers from 0 (Strongly DISAGREE) to 6 (Strongly AGREE)

Fewer canapes (food items) left on the trays meant that...

- ... **many people had chosen** this option.
- ... **many people liked** this option.
- ... this option was of **higher quality**.
- ... they had **been on the tray for longer**.
- ... there were **fewer of these from the start**.

Section 4 of 5. Please read each statement below carefully and choose the response that most applies to you.

Answers from 0 (Strongly DISAGREE) to 6 (Strongly AGREE)

- I preferred choosing from a tray with **fewer** canapés (food items) **because this meant that many people liked it**.
- I preferred choosing from a tray with **fewer** canapés **because I'd want to have a chance to taste it before it was gone**.
- I preferred choosing from a tray with **fewer** canapés **because others don't like taking from the last few items**.
- I preferred choosing from a tray with **fewer** canapés **because it is easier to choose from fewer options**.
- I preferred choosing from a tray with **more** canapés **because I would not want them to go to waste**.
- I preferred choosing from a tray with **more** canapés **because I do not like taking from the last few items**.
- I preferred choosing from a tray with **more** canapés **because this meant that they were freshly made**.

- I preferred choosing from a tray with **more** canapés **because larger trays have more options to choose from.**

- Do you have any other reasons for your choice related to the number of canapés on the tray? If not, leave blank. *Open-field response*

Section 5 of 5.

- How **realistic** did the task display appear to you (e.g., would you expect such a display of food at an event/party)? *Answer from 0 (Not realistic at all) to 6 (Very realistic)*
- How **hungry** are you right now? *Answer from 0 (Not hungry at all) to 6 (Very hungry)*
- What is your **gender**? *Answers Male, Female, Other, or Prefer not to say*
- What is your **age**? *Open-field response*