Supplemental Material:
"Partitioning Menu Items to Nudge Single-item Choice"

Contents

1 Recoding Dropped Participants

Study 1A To prevent random or thoughtless responding, participants wrote out their preference in an open text field for each trial. For this study participants could write anything in the text field (i.e., there was no content validation requirements), and some participants provided unusable responses. The number of unusable responses ranged from 9 to 17 depending on the trial. A subset of unusable responses were cases where participants wrote the entire grouped category instead of a single item (e.g., a participant writing "an animal-based charity" instead of specifying a specific animal-based charity). Because omitting these responses potential biases results in favor of our hypothesis, here we examine the results when including all omitted responses and coding these observations to go *against* our hypothesis. Note that this represents a particularly conservative approach, as many unusable responses were responses that did not bias the results in a particular direction.

Table S1 provides a summary of the results using this more conservative coding scheme. Across trials we observe a 31 percentage point increase in choosing unpacked items compared to packed items ($p < 0.001$). In all four trials, choices reliably varied as a function of the menu partition (all p-values ≤ 0.001) and in two cases the unpacked category captured the majority of market share.

Study 1B For Study 2 participants indicated their gamble of choice by directly clicking on the graphic associated with a given gamble, so no data was excluded (i.e., all participants provided usable responses).

Study 2 To prevent random or thoughtless responding, participants wrote out their preference in an open text field. Like Study 1A, participants could write anything in the text field (i.e., there was no content validation requirements), and 35 participants provided unusable responses. Here, we examine the results when including all omitted responses and coding these observations to go *against* our hypothesis. Using this more conservative coding scheme, we again find that participants were more likely to choose indoor chores when those items were listed individually as opposed to when those same items were grouped together (68% vs. 54%; $z = 2.04$, $p = 0.042$).

Study 3 To prevent random or thoughtless responding, participants wrote out their preference in an open text field for each trial. Unlike Studies 1A and 2, we also required participants to input only usable answers in order to proceed to the next trial. Participants who wrote out an unusable response (e.g., they listed an item not on the menu, or listed the entire packed category) were given an error message and prompted to rewrite their response. In an open comments section at the end of the study, a small number of participants ($n = 11$) indicated that they had difficulty registering their preference. In the main text we include all responses in the analysis; here, we code all choices made

by participants who reported being unable to register a preference to go *against* our hypothesis. Note that this recoding scheme only applies to choices and is not needed for inferences of item popularity; as such, we only report results below that are affected by our recoding scheme.

Table S2 provides a summary of the results using this more conservative coding scheme. Across trials we observe a 23 percentage point increase in choosing unpacked items compared to packed items ($p < 0.001$). In three of the four trials, choices reliably varied as a function of the menu partition (p-values ranged from 0.430 to less than 0.001). Using the same mediation strategy we report in the main manuscript, we also continue to find that the menu partitioning effect is statistically mediated by judgments about item popularity, $b_{indirect} = 0.78$, SE = 0.18, 95% CI [0.46, 1.18].

Study 4 To prevent random or thoughtless responding, participants wrote out their preference in an open text field for each trial. Like Study 3, we also required participants to input only usable answers in order to proceed to the next trial. Participants who wrote out an unusable response were given an error message and prompted to rewrite their response. In an open comments section at the end of the study, a small number of participants ($n = 11$) indicated that they had difficulty registering their preference. In the main text we include all responses in the analysis; here, we code all choices made by participants who reported being unable to register a preference to go *against* our hypothesis. Note that this recoding scheme only applies to choices and is not needed for inferences of item popularity; as such, we only report results below that are affected by our recoding scheme.

Table S3 provides a summary of the results using this more conservative coding scheme. Across trials and conditions, we observe a 28 percentage point increase in choosing unpacked items compared to packed items ($p < 0.001$). In all four trials, choices reliably varied as a function of the menu partition (p-values ≤ 0.010).

Our primary prediction in Study 4 was that the partitioning effect would be attenutated (compared to our standard treatment) when participants first establish their beliefs about descriptive social norms before being exposed to menu partitions. In the partition-first condition we observed a 34 percentage point increase in choices for unpacked items as opposed to packed items, whereas the marginal effect decreased to 23 percentage points in the estimate-first condition ($p = 0.098$ for the interaction term between task order and menu partition on choices). As shown in Table S3, the decrease in partitioning effect is directionally consistent in all four trials.

We also conduct mediation tests using the same analysis strategy outlined in Study 4. Similar to the results reported in the main paper, judgments about an item's popularity reliably mediated the effect of menu partitions on choice for participants who were first exposed to the menu partition (i.e., partition-first condition), $b_{indirect} = 0.10$, SE = 0.05, 95% CI $[0.02, 0.22]$, whereas judgments of popularity did not reliably mediate the partitioning effect on choice when participants first

reported their estimates before exposure to the menu partitions (i.e., estimate-first condition), $b_{indirect} = -0.01$, SE = 0.07, 95% CI $[-0.16,\ 0.13]$.

Study 5 To prevent random or thoughtless responding, participants wrote out their preference in an open text field for each trial. For this study we required a content validation that was more permissive than Studies 3 and 4 (which only allowed participants to input one of the six items from a given menu, which had to be spelled exactly correct in order to proceed), but more stringent than Studies 1A and 2 (which allowed participants to input any response). This time, participants who tried to input an entire category option (e.g., "cultural event") were given a prompt that instructed them to select a specific item (i.e., "Please specify one activity from the list above. Don't just say 'Sports' or 'Culture,' but indicate a specific sporting or cultural activity."). Participants were allowed to input any response that didn't violate our (relatively permissible) content validation requirement. The number of participants who provided unusable responses ranged from 6 to 26 depending on the trial. Most of these responses were response items not listed on the menu (e.g., writing "South Korea" when the response options were France, Italy, Germany, China, Japan, and Vietnam). Like Studies 1A and 2, here we examine the results when including all unusable responses and coding these observations to go *against* our hypothesis. Note that this recoding scheme only applies to choices and is not needed for inferences of item popularity; as such, we only report results below that are affected by our recoding scheme.

Table S4 provides a summary of the results using this more conservative coding scheme. Across trials we observe a 21 percentage point increase in choosing unpacked items compared to packed items ($p < 0.001$). In all trials choices reliably varied as a function of the menu partition (p-values < 0.001). Using the same mediation strategy we report in the main manuscript, we also continue to find that the menu partitioning effect is statistically mediated by judgments about item popularity, $b_{indirect} = 1.21$, SE = 0.09, 95% CI [1.05, 1.39].

We next examined whether menu partitioning effects were reliably moderated by susceptibility to normative social influence (NSI), susceptibility to informational social influence (ISI), or both. We used the same analysis strategy as in the main text, in which we report and interpret OLS coefficients but use p-values based on logistic regression. First looking at NSI, we find a positive and marginally significant interaction term ($p = 0.032$), indicating that menu partitioning effects increased by 3 percentage points for every 1 point increase in NSI scores. We find a similar but weaker interaction effect between condition and ISI ($p = 0.076$), indicating that menu partitioning effects increased by 2.7 percentage points for every 1 point increase in ISI scores. Thus, menu partitioning effects were more pronounced for those most susceptible to interpersonal influence, especially normative social influence.

We next turn to where in the causal chain, from menu partitions to inferences about item

popularity or from inferences about item popularity to consumption decisions, that such moderation effects occur. Examining the first part of the casual chain (i.e., the *menu partition* $\longrightarrow$ *descriptive norm beliefs* pathway), we find a reliable interaction effect for both NSI scores ($p = 0.001$) and for ISI scores (model 4: $p = 0.039$). On average, the size of the "inference gap" across menu partitions increased by 1.9 percentage points for every 1-point increase in NSI scores, and by 1.3 percentage points for every 1-point increase in ISI scores. Thus, participants high in interpersonal influence were especially likely to view unpacked menu items as frequently chosen by others. Examining the second part of the causal chain (i.e., the *descriptive norm beliefs* $\longrightarrow$ *choice* pathway), we find a positive reliable interaction effect between inferences of item popularity and NSI scores ($p = 0.029$) but no reliable interaction effect between inferences and ISI scores ($p = 0.158$). Thus, participants high in normative social influence also placed greater weight on how frequently chosen an item was when making a consumption decision.

Table S1: Percentage of participants choosing an item from Group A (Study 1)

Domain	Group A	Group B	Group A Unpacked	Group A Packed	Difference
Charities	Animal	Environmental	84.5	56.8	28.7***
Movies	Science Fiction	Romantic Comedies	77.0	56.3	20.7***
Books	Behavioral Science	Life Science	78.0	36.2	41.8***
Magazines	Popular Science	World News	64.9	31.1	33.8***

Notes: "Difference" represents the difference in choice share for choosing an item from Group A when that category is unpacked versus packed. $^{*}p \leq 0.05$, $^{**}p \leq 0.10$, $^{***}p \leq 0.001$.

Table S2: Percentage of participants choosing an item from Group A (Study 3)

Domain	Group A	Group B	Group A Unpacked	Group A Packed	Difference
Vacations	Europe	Asia	62.8	56.6	06.2
Entertainment	Sports	Cultural	57.3	36.7	20.6**
Weekend Trip	West Coast	East Coast	72.0	55.7	16.3*
Desert	Cookies	Ice cream	76.2	27.0	49.2***

Notes: "Difference" represents the difference in choice share for choosing an item from Group A when that category is unpacked versus packed. $^{*}p \leq 0.05$, $^{**}p \leq 0.10$, $^{***}p \leq 0.001$.

Table S3: Percentage of participants choosing an item from Group A (Study 4)

			Choose, then Estimate (choice %)			Estimate, then Choose (choice %)		
Domain	Group A	Group B	Group A Unpacked	Group A Packed	Diff.	Group A Unpacked	Group A Packed	Diff.
Vacations	Europe	Asia	70.3	54.3	15.9*	69.6	57.4	12.3
Entertainment	Sports	Cultural	73.3	42.5	30.8***	64.5	35.2	29.3***
Weekend trip	West Coast	East Coast	78.2	46.8	31.4***	70.3	57.5	12.7
Desert	Cookies	Ice cream	80.5	24.4	56.2***	73.5	35.4	38.1***

Notes: "Difference" represents the difference in choice share for choosing an item from Group A when that category is unpacked versus packed. Any discrepancies in difference scores shown in the table are due to rounding error. $^{*}p \leq 0.05$, $^{**}p \leq 0.10$, $^{***}p \leq 0.001$.

Table S4: Percentage of participants choosing an item from Group A (Study 5)

Domain	Group A	Group B	Group A Unpacked	Group A Packed	Difference
Vacations	Europe	Asia	73.8	58.5	15.3***
Entertainment	Sports	Cultural	60.9	40.4	20.5***
Weekend Trip	West Coast	East Coast	67.3	50.2	17.2***
Desert	Cookies	Ice cream	66.9	35.4	31.5***

Notes: "Difference" represents the difference in choice share for choosing an item from Group A when that category is unpacked versus packed. Any discrepancies in difference scores shown in the table are due to rounding error. $^{*}p \leq 0.05$, $^{**}p \leq 0.10$, $^{***}p \leq 0.001$.

2 Study 3: Restricting Analysis to First Block

Here we report results for Study 3 when restricting the analysis to only the first block that participants completed (choices from menus, or judgments of item popularity). We do this in order to eliminate concerns that judgments about item popularity in the first block may have influenced choices in the second block, or vice versa.

Table S5 provides a summary of the results. First looking at choices, across trials we observe a 35 percentage point increase in choosing unpacked items compared to packed items ($p < 0.001$). In three of the four trials, choices reliably varied as a function of the menu partition (p-values ≤ 0.003). Unlike the results reported in the main text, when restricting our analysis to only the first block we do not observe a reliable interaction between menu partition and grouped-item position ($p = 0.192$ for the interaction term). Although the interaction is not statistically significant, the results are similar to those reported in the main text: the partitioning effect was larger when the packed category was placed at the bottom of the menu (45% marginal effect; $p < 0.001$) compared to when it was placed at the top of the menu (29% marginal effect; $p < 0.001$).

Menu partition also influenced inferences about descriptive social norms. On average, there was a 22 percentage point increase in judged popularity for unpacked items compared to packed items ($p < 0.001$). In all four trials, judgments reliably varied as a function of the menu partition (p-values ≤ 0.006). Similar to the results reported in the main text, we also observe a reliable interaction between menu partition and grouped-item position ($p = 0.026$ for the interaction term). Menu partitions had a larger effect on judgments on item popularity when the packed category was placed at the bottom of the menu (27% marginal effect; $p < 0.001$) than when it was placed at the top of the menu (14% marginal effect; $p = 0.001$).

3 Study 3: Additional Mediation Analysis

In Study 3, we examine if the data are compatible with the hypothesis that beliefs about item popularity (i.e., descriptive social norms concerning consumption decisions) causally mediate menu partition effects. In the main text of the manuscript, we conduct Sobel-Goodman tests using bootstrapped standard errors based on 10,000 resamples clustered at the participant level, along with trial fixed effects and adjustments to the test procedure to account for potential scaling artifacts that can arise when comparing different models using binary choice data (Karlson, Holm, & Breen, 2012; Shrout & Bolger, 2002). Table S6 presents the decomposition of the total effect, indirect effect, and direct effect. As shown in the Table, this procedure returns a reliable indirect effect, with judgments of item popularity statistically mediating 51% of the menu partitioning effect.

We also report results using a potential outcomes approach to causal mediation (Imai, Keele, & Tingley, 2010). This procedure first fits two separate models, similar in spirit to the structural equation modeling approach above. First, using OLS, judgments of item popularity are regressed onto menu partition condition, along with trial fixed effects. Second, using probit regression,[1] choices are regressed onto menu partition condition and judgments of item popularity, along with trial fixed effects. Both models use participant-clustered standard errors. For each regression, we perform 10,000 simulations of model parameters from their sampling distribution based on the quasi-Bayesian Monte Carlo normal approximation (King, Tomz, & Wittenberg, 2000). During each draw of the simulation, the procedure also simulates the potential value of the mediator and the potential outcome given the simulated values of the mediator. The procedure then calculates the average causal mediation effect, the average direct effect, and the average total effect of the simulated values. Table S7 provides the average total effect, indirect effect, and direct effect from these simulations, along with a decomposition of the indirect and direct effects for each condition.

[1] For the potential outcomes approach, we use a probit rather than logit regression to test for mediation. Although this approach is flexible enough to accomodate different nonlinear link functions, sensitivity analyses have currently only been worked out for probit regressions (Imai et al., 2010).

Table S5: Study 3 Results (Restricted to First Block Only)

			Choices (%)			Judgments (mean estimate)		
Domain	Group A	Group B	Group A Unpacked	Group A Packed	Diff.	Group A Unpacked	Group A Packed	Diff.
Vacations	Europe	Asia	64.1	51.3	12.8	69.7	55.3	14.4^{**}
Entertainment	Sports	Cultural	59.1	14.7	44.4^{***}	77.1	60.5	16.6^{**}
Weekend trip	West Coast	East Coast	85.0	55.3	29.7^{**}	66.9	43.2	23.6^{***}
Desert	Cookies	Ice cream	79.5	28.2	51.3^{***}	62.0	28.9	33.1^{***}

Notes: "Difference" represents the difference in choice share (or for judgment blocks, the difference in average estimated percentages) for choosing an item from Group A when that category is unpacked versus packed. Any discrepancies in difference scores shown in the table are due to rounding error. $^{**}p \leq 0.01$, $^{***}p \leq 0.001$.

As shown in the table, this procedure also returns a reliable indirect effect, with judgments of item popularity mediating 50% of the menu partitioning effect.

An advantage of the potential outcomes approach is that we can also conduct sensitivity tests of our observed mediation effect to potential violations of sequential ignorability (i.e., the degree that the error terms for the mediator and dependent variable are correlated; see Imai et al., 2010). Figure S1 plots the estimated average mediation effect as a function of the degree of potential confounding (extreme ρ values represent stronger violations of sequential ignorability). We find that the average mediation effect will be significant and in the expected direction so long as the degree of confounding (i.e., the correlation between the error terms of the mediator and dependent variables) is no greater than approximately 0.30.

Table S6: Karlson-Holm-Breen Decomposition (Study 3)

	Coefficient	Bootstrap S.E.	95% Confidence Interval
Total Effect	1.792	0.250	[1.291, 2.274]
Direct Effect	0.871	0.279	[0.320, 1.406]
Indirect Effect	0.921	0.199	[0.568, 1.335]

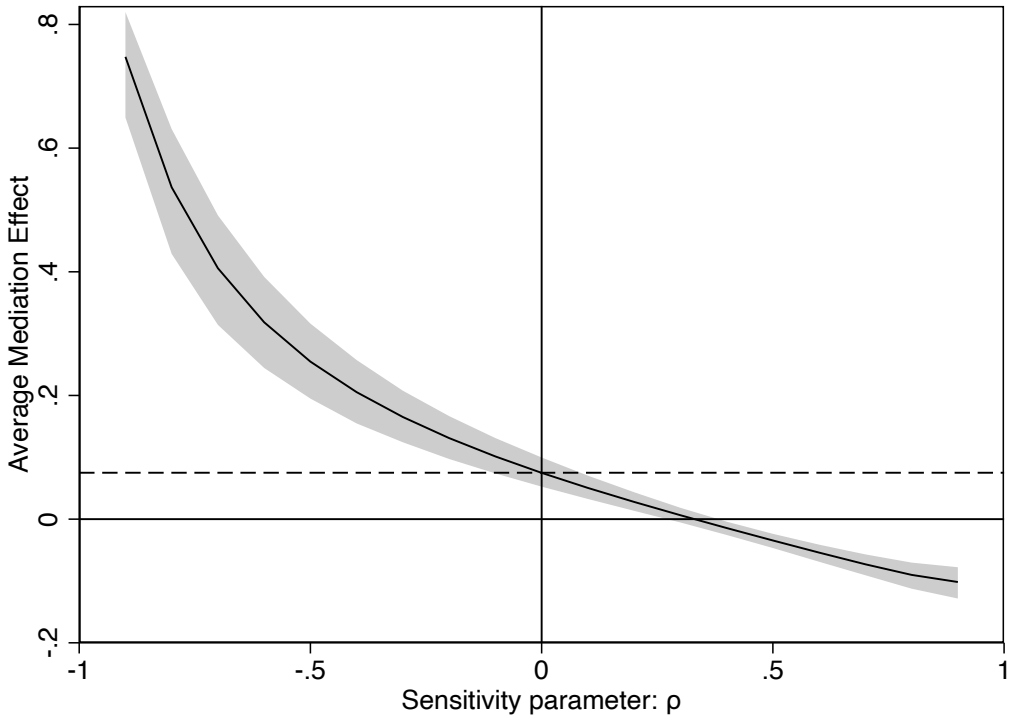
Notes: The total effect represents the coefficient for menu partition (1 = group A unpacked, 0 = group A packed) on menu choice (1 = item from group A selected, 0 = item from group A not selected) when judgments of item popularity are not included in the model. The direct effect represents the coefficient for menu partition when judgments of item popularity are included in the model, and the indirect effect represents the difference between the total and direct effect. All models use logit regression and include trial fixed effects, and make adjustments to the test procedure to account for potential scaling artifacts that can arise when comparing different models using binary choice data. Bootstrapped standard errors and bias-corrected confidence intervals are calculated based on 10,000 resamples clustered at the participant level.

Table S7: Potential Outcomes Decomposition (Study 3)

	Mean	95% Confidence Interval
Total Effect	0.355	[0.264, 0.441]
Avg Direct Effect	0.177	[0.070, 0.288]
Avg Indirect Effect	0.178	[0.121, 0.235]
Direct Effect$_{packed}$	0.185	[0.074, 0.298]
Direct Effect$_{unpacked}$	0.170	[0.067, 0.278]
Indirect Effect$_{packed}$	0.185	[0.129, 0.242]
Indirect Effect$_{unpacked}$	0.170	[0.112, 0.229]

Notes: All estimates are expressed as the increase in probability that the participant selected an item from group A (1 = item from group A selected, 0 = item from group A not selected). "Total Effect" represents the effect of menu partition (1 = group A unpacked, 0 = group A packed) on choice when judgments of item popularity are not included in the model. "Direct Effect$_{packed}$" and "Direct Effect$_{unpacked}$" represent the direct effect when category A is packed or unpacked, respectively; "Avg Direct Effect" represents the average direct effect pooled across conditions. "Indirect Effect$_{packed}$" and "Indirect Effect$_{unpacked}$" represent the indirect effect when category A is packed or unpacked, respectively; "Avg Indirect Effect" represents the average direct effect pooled across conditions. All models include trial fixed effects and participant clustered standard errors. For each regression we perform 10,000 simulations of model parameters from their sampling distribution based on the quasi-Bayesian Monte Carlo normal approximation (King et al., 2000).

Figure S1: Sensitivity of Average Mediation Effect (Study 3)



Notes: Sensitivity analysis based on the potential outcomes mediation approach in Study 3. The solid line represents the estimated average mediation effect at different values of ρ, and error bands represent 95% confidence intervals. The dashed line represents the average mediation effect assuming no confounding exists ($\rho = 0$).

4 Study 4: Additional Mediation Analysis

In Study 4, we examine if the data are compatible with the hypothesis that beliefs about item popularity (i.e., descriptive social norms concerning consumption decisions) causally mediate menu partition effects, but only when participants are first exposed to menu partitions before establishing their beliefs about item popularity. In the main text of the manuscript, we conduct Sobel-Goodman tests using the same procedure outlined in Study 3. Table S8 presents the decomposition both in the partition-first and estimate-first conditions. As shown in the table, this procedure returns only a reliable indirect effect in the partition-first condition.

We also report results using the potential outcomes approach to causal mediation (Imai et al., 2010). We use a similar procedure to that outlined in Study 3, but conduct mediation tests separately for the partition-first and estimation-first conditions. Table S9 provides the average total effect, indirect effect, and direct effect from these simulations, along with a decomposition of the indirect and direct effects for each condition. As shown in the table, this procedure also returns a reliable average indirect effect only in the partition-first condition.

We also conduct a sensitivity test of our observed mediation effect in the partition-first conditions, since this is where we observe a significant indirect effect of menu partitioning. Figure S2 plots the estimated average mediation effect as a function of the degree of potential confounding (extreme ρ values represent stronger violations of sequential ignorability). We find that the average mediation effect in the partition-first conditions will be significant and in the expected direction so long as the degree of confounding (i.e., the correlation between the error terms of the mediator and dependent variables) is no greater than approximately 0.20.

Table S8: KHB Decomposition (Study 4)

	Coefficient	Bootstrap S.E.	95% Confidence Interval
Partition-first (Choose, then Estimate)			
Total Effect	1.938	0.215	[1.513, 2.355]
Direct Effect	1.837	0.211	[1.461, 2.288]
Indirect Effect	0.100	0.050	[0.020, 0.216]
Estimate-first (Estimate, then Choose)			
Total Effect	1.427	0.247	[0.946, 1.916]
Direct Effect	1.444	0.236	[0.984, 1.910]
Indirect Effect	−0.013	0.079	[−0.172, 0.139]

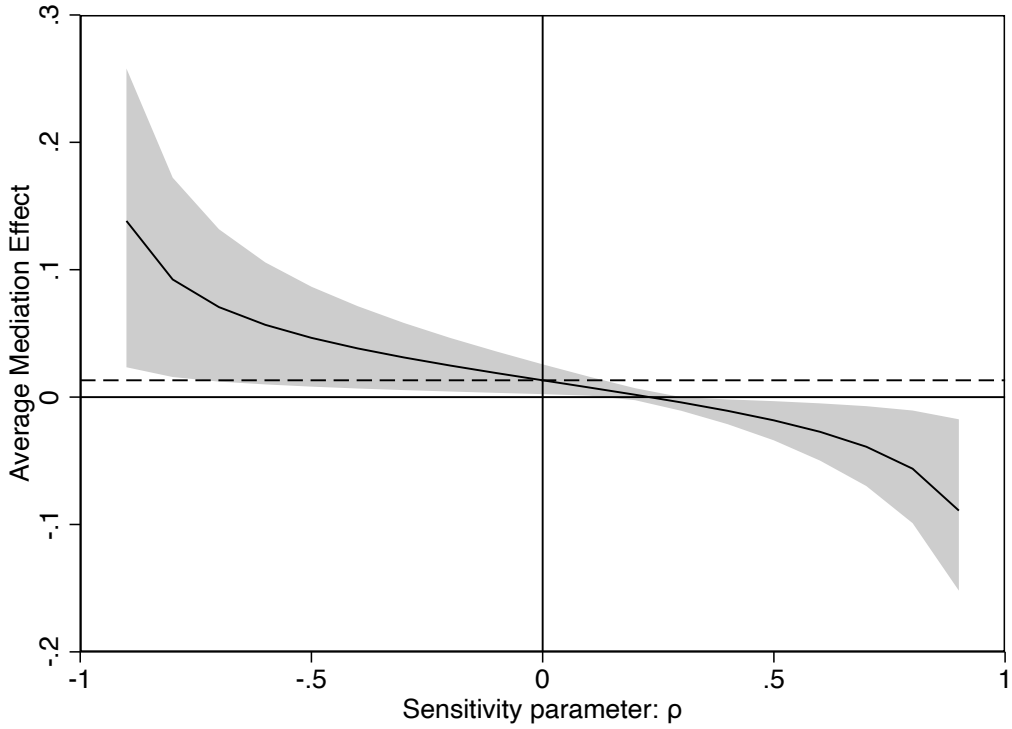
Notes: The total effect represents the coefficient for menu partition (1 = group A unpacked, 0 = group A packed) on menu choice (1 = item from group A selected, 0 = item from group A not selected) when judgments of item popularity are not included in the model. The direct effect represents the coefficient for menu partition when judgments of item popularity are included in the model, and the indirect effect represents the difference between the total and direct effect. All models use logit regression and include trial fixed effects, and make adjustments to the test procedure to account for potential scaling artifacts that can arise when comparing different models using binary choice data. Bootstrapped standard errors and bias-corrected confidence intervals are calculated based on 10,000 resamples clustered at the participant level.

Table S9: Potential Outcomes Decomposition (Study 4)

	Mean	95% Confidence Interval
Partition-first (Choose, then Estimate)		
Total Effect	0.406	[0.326, 0.481]
Avg Direct Effect	0.387	[0.307, 0.464]
Avg Indirect Effect	0.019	[0.004, 0.038]
Direct Effect$_{packed}$	0.389	[0.309, 0.466]
Direct Effect$_{unpacked}$	0.384	[0.305, 0.461]
Indirect Effect$_{packed}$	0.021	[0.004, 0.042]
Indirect Effect$_{unpacked}$	0.017	[0.003, 0.033]
Estimate-first (Estimate, then Choose)		
Total Effect	0.279	[0.202, 0.354]
Avg Direct Effect	0.281	[0.210, 0.351]
Avg Indirect Effect	−0.003	[−0.031, 0.026]
Direct Effect$_{packed}$	0.281	[0.210, 0.351]
Direct Effect$_{unpacked}$	0.282	[0.210, 0.351]
Indirect Effect$_{packed}$	−0.003	[−0.033, 0.027]
Indirect Effect$_{unpacked}$	−0.002	[−0.029, 0.024]

Notes: All estimates are expressed as the increase in probability that the participant selected an item from group A (1 = item from group A selected, 0 = item from group A not selected). "Total Effect" represents the effect of menu partition (1 = group A unpacked, 0 = group A packed) on choice when judgments of item popularity are not included in the model. "Direct Effect$_{packed}$" and "Direct Effect$_{unpacked}$" represent the direct effect when category A is packed or unpacked, respectively; "Avg Direct Effect" represents the average direct effect pooled across conditions. "Indirect Effect$_{packed}$" and "Indirect Effect$_{unpacked}$" represent the indirect effect when category A is packed or unpacked, respectively; "Avg Indirect Effect" represents the average direct effect pooled across conditions. All models include trial fixed effects and participant clustered standard errors. For each regression we perform 10,000 simulations of model parameters from their sampling distribution based on the quasi-Bayesian Monte Carlo normal approximation (King et al., 2000).

Figure S2: Sensitivity of Average Mediation Effect (Study 4)



Notes: Sensitivity analysis based on the potential outcomes mediation approach in the partition-first conditions of Study 4. The solid line represents the estimated average mediation effect at different values of ρ, and error bands represent 95% confidence intervals. The dashed line represents the average mediation effect assuming no confounding exists ($\rho = 0$).

5 Study 5: Additional Results

We find a robust partitioning effect on choice. Across trials we observe a 25 percentage point increase in choosing unpacked items compared to packed items ($p < 0.001$). In all four trials, choices reliably varied as a function of the menu partition (p-values < 0.001).

Consistent with an information-based account, menu partition also influenced inferences about descriptive social norms. On average, there was a 26 percentage point increase in judged popularity for unpacked items compared to packed items ($p < 0.001$). In all four trials, judgments reliably varied as a function of the menu partition (p-values < 0.001).

We fail to find a significant interaction between menu partition and grouped-item position on choices, but find a significant interaction on judgments of item popularity (p-values were 0.267 and 0.001 for the interaction terms on choices and judgments, respectively). Even though we only find a reliable interaction effect for judgments, the pattern is the same in both cases. For choices, the partitioning effect was larger when the packed category was placed at the bottom of the menu (27% marginal effect; $p < 0.001$) compared to when it was placed at the top of the menu (22% marginal effect; $p < 0.001$). For inferences, menu partitions had a larger effect on judgments on item popularity when the packed category was placed at the bottom of the menu (29% marginal effect; $p < 0.001$) than when it was placed at the top of the menu (23% marginal effect; $p < 0.001$).

Menu partitions strongly influenced both choices and beliefs about item popularity, and we next examine the relationship between the two. Consistent with an information-based account, the correlation between choice and judged popularity was positive and significant ($r = 0.44$, $p < 0.001$ across participants and trials). The average correlation across trials and within participants was $r = 0.42$; the average correlation across participants and within trials was $r = 0.45$. Since a consumer's choices can affect their beliefs about how others choose (e.g., Ross, Greene, & House, 1977), we also examined if block order (i.e., choosing first and then estimating item popularity, or vice versa) influenced our results. Neither choices nor judgments of item popularity were reliably affected by the order of the task blocks (for the interaction between menu partition and block order, p-values were 0.430 for choices and 0.395 for judgments).

Lastly, we examined whether beliefs about descriptive social norms statistically mediate participant choice. In other words, does the menu partitioning effect reduce in size when we statistically adjust for participants' beliefs about how frequently items are chosen by others? To examine this, we performed Sobel-Goodman mediation tests using bootstrapped standard errors based on 10,000 resamples clustered at the participant level, along with trial fixed effects and adjustments to the test procedure to account for potential scaling artifacts that can arise when comparing different models using binary choice data (Karlson et al., 2012; Shrout & Bolger, 2002). Using this procedure we find a reliable mediation effect, with judgments of item popularity entirely mediated the menu

partitioning effect on choice, $b_{indirect} = 1.26$, SE = 0.09, 95% CI [1.09, 1.45]. Furthermore, we find a reliable indirect effect both when restricting the analysis to participants that provided choices first, $b_{indirect} = 1.08$, SE = 0.12, 95% CI [0.86, 1.34], and to participants that provided inferences of item popularity first, $b_{indirect} = 1.43$, SE = 0.14, 95% CI [1.19, 1.71].

6 Study 5: Restricting Analysis to First Block

Here we report results for Study 5 when restricting the analysis to only the first block that participants completed (choices from menus, or judgments of item popularity). We do this in order to eliminate concerns that judgments about item popularity in the first block may have influenced choices in the second block, or vice versa.

Table S10 provides a summary of the results. First looking at choices, across trials we observe a 26 percentage point increase in choosing unpacked items compared to packed items ($p < 0.001$). In all four trials, choices reliably varied as a function of the menu partition (p-values < 0.001). Similar to the results reported in the main text, when restricting our analysis to only the first block we do not observe a reliable interaction between menu partition and grouped-item position ($p = 0.120$ for the interaction term).

Menu partition also influenced inferences about descriptive social norms. On average, there was a 25 percentage point increase in judged popularity for unpacked items compared to packed items ($p < 0.001$). In all four trials, judgments reliably varied as a function of the menu partition (p-values < 0.001). Unlike the results reported in the main text, we fail to find a reliable interaction between menu partition and grouped-item position ($p = 0.144$ for the interaction term).

Table S10: Study 5 Results (Restricted to First Block Only)

			Choices (%)			Judgments (mean estimate)		
Domain	Group A	Group B	Group A Unpacked	Group A Packed	Diff.	Group A Unpacked	Group A Packed	Diff.
Vacations	Europe	Asia	74.7	48.9	25.8***	77.9	56.8	21.1***
Entertainment	Sports	Cultural	60.9	36.2	24.7***	81.4	50.7	30.7***
Weekend trip	West Coast	East Coast	72.5	50.7	21.8***	62.2	41.0	21.2***
Desert	Cookies	Ice cream	69.3	37.1	32.2***	63.0	33.8	29.2***

Notes: "Difference" represents the difference in choice share (or for judgment blocks, the difference in average estimated percentages) for choosing an item from Group A when that category is unpacked versus packed. ** $p \leq 0.01$, *** $p \leq 0.001$.

7 Study 5: Additional Mediation Analysis

In the main text of the manuscript, we conduct Sobel-Goodman tests using bootstrapped standard errors based on 10,000 resamples clustered at the participant level, along with trial fixed effects and adjustments to the test procedure to account for potential scaling artifacts that can arise when comparing different models using binary choice data (Karlson et al., 2012; Shrout & Bolger, 2002). Table S11 presents the decomposition of the total effect, indirect effect, and direct effect. As shown in the Table, this procedure returns a reliable indirect effect, with judgments of item popularity fully mediating the menu partitioning effect.

We also report results using the potential outcomes approach to causal mediation (Imai et al., 2010). We use a similar procedure to that outlined in Study 3, but conduct mediation tests separately for the partition-first and estimation-first conditions. Table S12 provides the average total effect, indirect effect, and direct effect from these simulations, along with a decomposition of the indirect and direct effects for each condition. As shown in the table, and similar to the results we report in the main text, we find a reliable indirect effect (and also a nonsignificant direct effect).

We also conduct a sensitivity test of our observed mediation effect in the partition-first conditions, since this is where we observe a significant indirect effect of menu partitioning. Figure S3 plots the estimated average mediation effect as a function of the degree of potential confounding (extreme ρ values represent stronger violations of sequential ignorability). We find that the average mediation effect in the partition-first conditions will be significant and in the expected direction so long as the degree of confounding (i.e., the correlation between the error terms of the mediator and dependent variables) is no greater than approximately 0.40.

Table S11: Karlson-Holm-Breen Decomposition (Study 5)

	Coefficient	Bootstrap S.E.	95% Confidence Interval
Total Effect	1.173	0.112	[0.954, 1.393]
Direct Effect	−0.088	0.126	[−0.334, 0.159]
Indirect Effect	1.261	0.089	[1.086, 1.436]

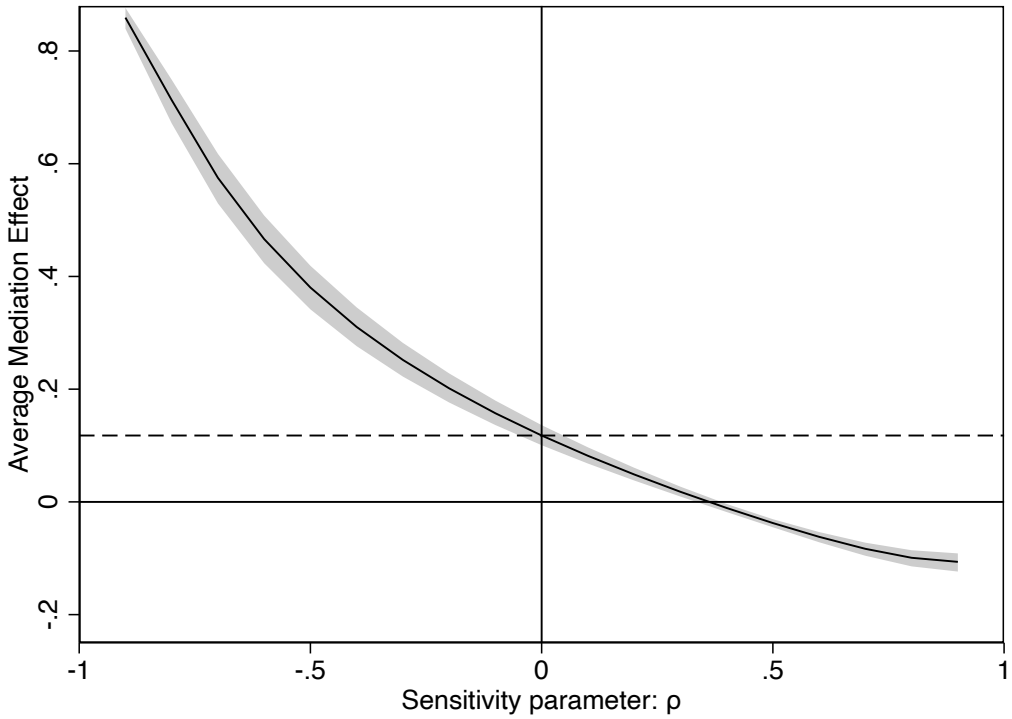
Notes: The total effect represents the coefficient for menu partition (1 = group A unpacked, 0 = group A packed) on menu choice (1 = item from group A selected, 0 = item from group A not selected) when judgments of item popularity are not included in the model. The direct effect represents the coefficient for menu partition when judgments of item popularity are included in the model, and the indirect effect represents the difference between the total and direct effect. All models use logit regression and include trial fixed effects, and make adjustments to the test procedure to account for potential scaling artifacts that can arise when comparing different models using binary choice data. Bootstrapped standard errors and bias-corrected confidence intervals are calculated based on 10,000 resamples clustered at the participant level.

Table S12: Potential Outcomes Decomposition (Study 5)

	Mean	95% Confidence Interval
Total Effect	0.238	[0.195, 0.280]
Avg Direct Effect	−0.017	[−0.063, 0.031]
Avg Indirect Effect	0.254	[0.228, 0.281]
Direct Effect$_{packed}$	−0.017	[−0.066, 0.033]
Direct Effect$_{unpacked}$	−0.016	[−0.059, 0.030]
Indirect Effect$_{packed}$	0.254	[0.228, 0.280]
Indirect Effect$_{unpacked}$	0.255	[0.228, 0.283]

Notes: All estimates are expressed as the increase in probability that the participant selected an item from group A (1 = item from group A selected, 0 = item from group A not selected). "Total Effect" represents the effect of menu partition (1 = group A unpacked, 0 = group A packed) on choice when judgments of item popularity are not included in the model. "Direct Effect$_{packed}$" and "Direct Effect$_{unpacked}$" represent the direct effect when category A is packed or unpacked, respectively; "Avg Direct Effect" represents the average direct effect pooled across conditions. "Indirect Effect$_{packed}$" and "Indirect Effect$_{unpacked}$" represent the indirect effect when category A is packed or unpacked, respectively; "Avg Indirect Effect" represents the average direct effect pooled across conditions. All models include trial fixed effects and participant clustered standard errors. For each regression we perform 10,000 simulations of model parameters from their sampling distribution based on the quasi-Bayesian Monte Carlo normal approximation (King et al., 2000).

Figure S3: Sensitivity of Average Mediation Effect (Study 5)



Notes: Sensitivity analysis based on the potential outcomes mediation approach in Study 5. The solid line represents the estimated average mediation effect at different values of ρ, and error bands represent 95% confidence intervals. The dashed line represents the average mediation effect assuming no confounding exists ($\rho = 0$).

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