

WEB APPENDIX FOR
“MINDFUL MATCHING: ORDINAL VERSUS NOMINAL ATTRIBUTES”

TABLE OF CONTENTS

Category	Description	Page Numbers
A: Marketing Manager Survey	<ul style="list-style-type: none"> Study S1: Marketing Manager Survey 	W2-W5
B: Tables	<ul style="list-style-type: none"> Tables delineating four literatures that our research contributes to: <ul style="list-style-type: none"> Table B1: Examples of Operationalizations from Literature on Ordinal versus Nominal Variables Table B2: Examples of Operationalizations from Literature on Vertically versus Horizontally-Differentiated Attributes Table B3: Examples of Marketing Findings on Matching in Social Consumption Contexts Table B4: Examples of Marketing Findings on Non-Matching in Social Consumption Contexts Table B5: Study 7 Anticipated Consequences of Flavor-Matching (Nominal-Matching) and Size-Matching (Ordinal-Matching) 	W6-W8
C: Pre-tests & Post-tests	<ul style="list-style-type: none"> Pre-test of consumers’ perceptions of ordinal and nominal attributes used in the main studies Post-test of preference strength for ordinal and nominal attribute levels used in the main studies 	W9-W10
D: Stimuli	<ul style="list-style-type: none"> Stimuli for studies: <ul style="list-style-type: none"> Study 1: Chat Partner Profile, Menu Study 2a: Pasta Options on Endcap Display Study 2b: Menu Study 3, 7, 8: Menu Study 5: Instructions for Participants, Store Photographs Showing Overall Store Set-up and Check-Out Table Set-up with Cash Register and Granola Bar Display, Condition Schedule and Employee Script 	W11-W14
E: Additional Analyses	<ul style="list-style-type: none"> Details for the Analysis of the No Information Control Conditions in Studies 2a, 2b, 3, 4 Analysis of Directionality in Studies 7 and 8 Gender Analysis 	W15-W19
F: Supplemental Study	<ul style="list-style-type: none"> Study S2: Attribute Mis(matching) and Social Consequences across a Range of Different Products and Attribute Operationalizations 	W20-W21

WEB APPENDIX A: MARKETING MANAGER SURVEY (SUPPLEMENTAL STUDY S1)

Study S1: Marketing Manager Survey

Method

Participants were professional marketing managers from a customized panel recruited for us by Qualtrics (N = 52; $M_{\text{age}} = 46.69$; 36 females, 16 males). The eligibility criteria for being in this customized panel were that participants had to work for a B2C organization and have at least 5 years of full-time experience in a marketing, sales, advertising, or PR-related role. Our final sample had on average 19 years of full-time experience (range 8 to 50 years), with an average of 11 years of managerial experience and 11 direct/indirect reports.

This survey had two main parts (the “knowledge” part and the “scenario” part), which were administered in counterbalanced order across participants. There were no significant effects of question order on responses.

In the “knowledge” part, participants responded to the following questions: 1) “How much do you feel like you currently know about how consumers' choices for themselves are affected by the choices that other consumers make?” (1 = *not much at all*, 7 = *a lot*), 2) “How much do you feel like you currently know about how consumers' choices for themselves are affected by employees' communication of their choices?”, and 3) “To what extent do you agree or disagree that there is still a lot to be learned about how consumers' choices for themselves are affected by others' choices?” (1 = *strongly disagree*, 7 = *strongly agree*). They then responded to an open-ended prompt asking them to provide their “thoughts on what you currently know or do not know about how consumers are affected by the shopping/consumption choices of their fellow customer companions and by the choices of employees.” For this open-ended prompt, they were provided with three bullet-point examples of topics they could write about: “How do you think two consumers shopping/choosing at the same time might influence one another?”; “How do you think a consumer might be influenced by an employee's communication about what the employee has previously chosen/consumed at that store or restaurant?”; and “Why is this important or unimportant for you (and/or the company you work for) to understand?”.

In the “scenario” part, participants responded to five scenarios in random order, with different product sets and ways of operationalizing ordinal and nominal attributes, mapping onto the product stimuli used in the main studies involving pasta (study 2a), wine (study 2b), ice cream (studies 3, 7-8), donations (study 4), and granola bars (study 5). As an example, for the wine scenario, participants read:

When people engage in consumption behaviors with another person, for example, eat or drink together, one person usually makes his/her choice first. For example, when ordering a glass of wine, a wine bar might offer types of wine at different prices and different flavors (e.g., fruity, earthy). Say the first consumer orders a certain price and a certain flavor. If you were to guess, what influence (if any) will this have on his/her companion's choice (i.e., the person choosing second)?

Please choose one of these three responses:

- The companion will be more likely to get the same flavor
- The companion will be more likely to get a different flavor
- The companion's flavor choice will not be influenced by the first consumer's choice

Please choose one of these three responses:

- The companion will be more likely to get the same price
- The companion will be more likely to get a different price
- The companion's price choice will not be influenced by the first consumer's choice

Within each scenario, the order of the above two questions was randomized, and the answer options for each question were also randomized. For the stimuli for the other four scenarios, please see the end of Web Appendix A.

All participants then reported on how useful and important a deeper understanding of social influence effects between consumers and between employees and consumers would be. Specifically, for consumer-consumer effects, participants were asked, "Would it be useful for you or your organization to have a deeper understanding of **how one consumer's choice would affect the choice(s) of his/her companions?**" (1 = *Yes*, 2 = *No*) and "Would it be important for you or your organization to have a deeper understanding of **how one consumer's choice would affect the choice(s) of his/her companions?**" (1 = *Not at all important*, 5 = *Extremely important*). For employee-consumer effects, participants were asked, "Would it be useful for you or your organization to have a deeper understanding of **how an employee's communication of their own choices would affect the choice(s) of customers?**" (1 = *Yes*, 2 = *No*) and "Would it be important for you or your organization to have a deeper understanding of **how an employee's communication of their own choices would affect the choice(s) of customers?**" (1 = *Not at all important*, 5 = *Extremely important*).

Finally, participants provided various demographic information and details about their employment, including their years of managerial experience and number of direct/indirect reports.

Results

Knowledge and importance of social effects on choice. Overall, the marketing managers felt like they currently a good deal about how consumers' choices for themselves are affected by the choices that other consumers make ($M = 5.42$, $SD = 1.42$) and by employees' communication of their choices ($M = 5.17$, $SD = 1.31$), and yet also felt there is still a lot to be learned about how consumers' choices for themselves are affected by others' choices ($M = 5.79$, $SD = 1.07$).

Further, marketing managers expressed that understanding consumer-consumer and employee-consumer social effects had a high degree of usefulness and importance for them and their organizations, with 46 and 48, respectively, of the 52 managers saying that it would be useful to have a deeper understanding of how one consumer's (employee's) choice would affect the choice(s) of the focal consumer. Similarly, on the 5-point scaled response, a deeper understanding was viewed as important (consumer-consumer: $M = 3.96$, $SD = .93$; employee-consumer: $M = 3.90$, $SD = 1.00$), both significantly above the scale midpoint of 3 (consumer-consumer: $t(51) = 7.47$, $p < .001$; employee-consumer: $t(51) = 6.55$, $p < .001$). In their open-ended responses, marketing managers generally expressed the importance of understanding social influence effects, but varied in their observations ranging from suggesting little or no influence to directly following the choices of others. None of the managers articulated a difference between different types of attributes in their responses (see example quotes in Table A1 below).

Scenarios. Table A2 below shows participants' predictions and also reports marginal homogeneity tests for categorical data to compare participants' predictions about the nominal attribute versus the ordinal attribute within each scenario. As the table shows, in general,

participants did intuit that one consumer's or salesperson's choice would affect another consumer's, but they did not correctly predict the ordinal/nominal distinction across the contexts we studied. Specifically, whereas they correctly predicted the ordinal effect (i.e., matching), they on average over-estimated the nominal effect (i.e., tending to predict matching and in some contexts, they expected just as much nominal matching as ordinal matching).

Table A1: Selected Quotes from Marketing Managers

Marketing Manager Description	Quote ^a
Male, Age 64, 15 years experience	One consumer, who is not sure what brand to select, sees another consumer speedily selecting a brand. This will influence the first consumer to select the same one. This is strictly peer pressure to be part of the group. It's important because it could generate sales and income.
Female, Age 56, 33 years experience	If two people are looking at the same item I believe if one states that they used the product before or has heard good things about the product it will influence the 2nd person to purchase said product. Positive feedback from one can definitely influence another
Female, Age 60, 33 years experience	I think if 2 people are shopping together, they may influence each other to buy the same things. But if you are picking something like a glass of wine, you would be more likely to pick what you like, not necessarily what the first person ordered.
Female, Age 36, 11 years experience	People tend to follow what the crowd is doing. They usually do what other people do. It is hard to discourage otherwise
Male, Age 29, 9 years experience	I thinks consumers pick what they want. Consumers who buy what they want are independent and pick what they believe is nice to them
Male, Age 48, 17 years experience	Consumer choices are partly determined by positive actions by both employees suggestions and watching other customers purchasing habits when in store shopping.

^a These quotes are full-length verbatim responses (i.e., any spelling or grammatical errors are not corrected).

Table A2: Marketing Managers' Predictions in Different Scenarios

Context	Attribute	Predictions (# of managers predicting each kind of effect)			Marginal Homogeneity Test (comparing predictions for the ordinal vs. nominal attribute)
		Matching effect	Mismatching effect	Null effect	
Wine	Ordinal	29	7	16	$p = .446$
	Nominal	27	6	19	
Pasta	Ordinal	32	4	16	$p = .004$
	Nominal	20	10	22	
Ice cream	Ordinal	30	6	16	$p = .010$
	Nominal	17	12	23	
Donation	Ordinal	29	8	15	$p = .841$
	Nominal	29	9	14	
Granola bar (employee)	Ordinal	37	8	7	$p = .128$
	Nominal	33	7	12	

Study S1: Stimuli for the Four Additional Scenarios

Pasta Scenario

When people engage in consumption behaviors with another person, for example, eat or drink together, one person usually makes his/her choice first.

For example, when buying a box of pasta at the grocery store, there are different brands (e.g., national brand, store brand) and different shapes.

Say the first consumer selects a certain brand and a certain shape.

If you were to guess, what influence (if any) will this have on his/her companion's choice (i.e., the person choosing second)?

Please choose one of these three responses:

- ☐ The companion will be more likely to get the same shape
- ☐ The companion will be more likely to get a different shape
- ☐ The companion's shape choice will not be influenced by the first consumer's choice

Please choose one of these three responses:

- ☐ The companion will be more likely to get the same brand
- ☐ The companion will be more likely to get a different brand
- ☐ The companion's brand choice will not be influenced by the first consumer's choice

Ice Cream Scenario

When people engage in consumption behaviors with another person, for example, eat or drink together, one person usually makes his or choice first before the other person.

For example, when ordering ice cream, there are different sizes and different flavors.

Say the first consumer orders a certain size and a certain flavor.

If you were to guess, what influence (if any) will this have on his/her companion's choice (i.e., the person choosing second)?

Please choose one of these three responses:

- ☐ The companion will be more likely to get the same flavor as the first consumer
- ☐ The companion will be more likely to get a different flavor as the first consumer
- ☐ The companion's flavor choice will not be influenced by the first consumer's choice

Please choose one of these three responses:

- ☐ The companion will be more likely to get the same size as the first consumer
- ☐ The companion will be more likely to get a different size as the first consumer
- ☐ The companion's size choice will not be influenced by the first consumer's choice

Donation Scenario

When people engage in social outings with another person, for example, going to the zoo, they can sometimes encounter donation opportunities while together.

For example, two people might go to the zoo together and encounter donation boxes for various animal causes while at the zoo.

Say the first consumer donates a certain amount to a certain animal cause.

If you were to guess, what influence (if any) will this have on his/her companion's choice (i.e., the person making their donation choice second)?

Please choose one of these three responses:

- ☐ The companion will be more likely to donate to the same animal cause as the first consumer
- ☐ The companion will be more likely to donate to a different animal cause as the first consumer
- ☐ The companion's animal cause will not be influenced by the first consumer's choice

Please choose one of these three responses:

- ☐ The companion will be more likely to donate the same amount as the first consumer
- ☐ The companion will be more likely to donate a different amount as the first consumer
- ☐ The companion's donation amount will not be influenced by the first consumer's choice

Granola Bar Scenario

When an employee interacts with a customer, the employee sometimes tells the customer what he or she has previously purchased or tried at the store.

For example, when buying a granola bar, a convenience store might offer different brands (e.g., national brand, store brand) and different flavors.

Say the convenience store employee tells the customer that the employee purchased a certain brand and a certain flavor that morning.

If you were to guess, what influence (if any) will this have on the customer's choice?

Please choose one of these three responses:

- ☐ The customer will be more likely to get the same flavor as the employee
- ☐ The customer will be more likely to get a different flavor than then employee
- ☐ The customer's flavor choice will not be influenced by the employee's choice

Please choose one of these three responses:

- ☐ The customer will be more likely to get the same brand as the employee
- ☐ The customer will be more likely to get a different brand as the employee
- ☐ The customer's brand choice will not be influenced by the employee's choice

WEB APPENDIX B: TABLES

Table B1: Examples of Operationalizations from Literature on Ordinal versus Nominal Variables

Authors	Ordinal Variables	Nominal Variables
	Attribute levels are ranked	Attribute levels are not ranked
Stevens (1946)	Scales of hardness of minerals, intelligence, personality traits, grade or quality of leather	Football player jersey numbers
Blau (1974)	Education, age, income, prestige, power	Sex, religion, racial identification, occupation, place of residence
Pekelman and Sen (1979)	Automobile miles per gallon, automobile top speed	Types of entrée, types of dessert
Bettman, John, and Scott (1986)	Quality rankings of brands, price rankings of brands	No specific examples
Kamakura, Ratchford, and Agrawal (1988)	Toaster performance	No specific examples
Velleman and Wilkinson (1993)	Severity of illness	Different syndromes
Ying, Feinberg, and Wedel (2006)	Movie ratings	Movie genre
Hagen, Krishna, and McFerran (2017)	Portion size of ice cream	Flavors of bread, flavors of cake

Table B2: Examples of Operationalizations from Literature on Vertically versus Horizontally-Differentiated Attributes

Authors	Vertically-Differentiated Attribute	Horizontally-Differentiated Attribute
	Attribute levels have an objective order	Attribute levels have no objective order
Gabszwick and Thisse (1986)	No specific examples (vertical product differentiation is talked about in terms of quality differences, with qualities linked with prices)	No specific examples (horizontal product differentiation is talked about in terms of taste differences)
Sutton (1986)	Computer operating speed	“Range of software offered with a computer”
Shaked and Sutton (1987)	Computer operating speed	Color “Aesthetic” design features
Randall, Ulrich, and Reibstein (1998)	Premium (high-quality, high-end) vs. economy (low-quality, low-end) products <i>Nikon</i> cameras within the 35mm SLR category: N50, N70, N90	Brand extensions into new categories without varying in the premium vs. economy dimension <i>Ivory</i> soap variants: e.g., bar soap, liquid hand soap, soap flakes, dish soap <i>Nikon</i> cameras: point-and-shoot, digital, 35mm SLR, underwater
Kim and Chhajed (2002)	No specific examples (vertical product differentiation is talked about in terms of quality differences, with qualities linked with prices)	No specific examples (horizontal product differentiation is talked about in terms of taste differences)
Liu, Putler, and Weinberg (2004)	TV program quality (production value)	TV program type
Balachander and Stock (2009)	High vs. low quality products, in terms of reliability/performance or brand equity/appeal Steinway vs. Yamaha piano brands Jaguar luxury cars vs. non-luxury brand cars	Brands competing on style/design (e.g., in the casual apparel jean market “where the quality difference between brands appears to be small”

Sun (2011)	Quality of HMO Quality of digital camera (learned via online reviews or asking friends) Magazine award-winning vs. not award-winning	Distribution of quality across different hospital services (e.g., higher quality in eye exams vs. higher quality in child care) Magazine text-graphics ratio
Tucker and Zhang (2011)	Quality of MBA teaching for choosing MBA classes	Topic of MBA class (strategy vs. stochastic models)
Celik (2014)	No specific examples (vertical product differentiation is talked about in terms of quality differences)	Geographic location of a hotel Expertise area of a researcher Sweetness of a wine

Table B3: Examples of Marketing Findings on Matching in Social Consumption Contexts

Authors	Focal Attribute Matched	Finding
Tanner et al. (2008)	Portion size	Consumers choose more of the snack that their co-consuming partner consumes, compared to the alternative snack.
McFerran et al. (2010)	Portion size	Consumers adjust their portion sizes to be more similar to others' portion size selections, especially if others are normal weight (vs. overweight).
Lowe and Haws (2014)	Portion size/Healthiness level/Indulgence level	Consumers feel closer to others who co-indulge or who co-abstain from temptation, and feeling closer to others who co-abstain is even higher when the severity of succumbing to temptation is higher.

Table B4: Examples of Marketing Findings on Non-Matching in Social Consumption Contexts

Authors	Focal Attribute Not Matched	Finding
Ariely and Levav (2000)	Flavors (of beer or wine)	Consumers avoid matching their co-consumers' flavor selections in group consumption contexts.
Ratner and Kahn (2002)	Candy types (e.g., choice set of Kit Kat, Snickers, Starburst, Nestle Crunch, and Sweet Tarts or choice set of Tootsie Roll, butterscotch hard candy, Smarties, Bazooka Bubble Gum, and Starlight Mint); Appetizer types (unspecified)	Public consumption and greater observability of one's behavior increases variety-seeking.
Quester and Steyer (2010)	Different candies (Mars, Bounty, Kit Kat, Snickers, Lion, Twix); Different pre-dinner drinks (unspecified)	The findings from Ariely and Levav (2000) are moderated by group unanimity, such that consumers sought to mismatch from a small minority or from an overwhelming majority.

Table B5: Study 7 Anticipated Consequences of Flavor-Matching (Nominal-Matching) and Size-Matching (Ordinal-Matching)

	Measure (1 = <i>not at all</i>, 7 = <i>very much so</i>)	Main effect of flavor-matching	Main effect of size-matching	Interaction
Negative social consequences	(i) My choice will make my friend think poorly of me.	$F = 2.09, p = .150$	$F = 7.32, p = .007$	$F = .04, p = .848$
	(ii) My choice will make my friend feel uncomfortable.	$F = .37, p = .545$	$F = 6.41, p = .012$	$F = .07, p = .797$
	(iii) My choice will offend my friend.	$F = .17, p = .676$	$F = 6.20, p = .014$	$F = .40, p = .528$
	(iv) My choice violates social norms.	$F = .61, p = .434$	$F = 4.24, p = .041$	$F = .02, p = .875$
	(v) My choice sends the wrong signal to my friend.	$F = 2.56, p = .111$	$F = 5.49, p = .020$	$F = 1.36, p = .245$
Positive social consequences	(vi) My choice projects a good image of me to my friend.	$F = .16, p = .694$	$F = 1.61, p = .206$	$F = 1.23, p = .269$
	(vii) My choice will make my friend think more highly of me.	$F = 3.28, p = .072$	$F = 10.06, p = .002$	$F = .14, p = .714$
	(viii) My choice will make my friend feel comfortable.	$F = 2.71, p = .102$	$F = 2.83, p = .094$	$F = 1.26, p = .262$

Note. All F -tests reported in this table have 1, 194 degrees-of-freedom.

WEB APPENDIX C: PRE-TESTS & POST-TESTS

Pre-test: Consumers' Perceptions of Ordinal and Nominal Attributes

Method

Participants ($N = 155$; $M_{\text{age}} = 37.26$; 87 females, 67 males, 1 other) from MTurk were provided with the following instructions: "Products have multiple attributes that consumers might consider when making purchase decisions. Some of these attributes have levels that can be objectively ordered, such that people would generally agree that different options could be put into an objective order. Other attributes cannot readily be objectively ordered in a manner that people would generally agree on, rather they are more a difference of subjective taste. For each of the following attributes on the next series of pages, please indicate whether you think this attribute has levels that can or cannot be put into a specific order." The instructions were specifically written to avoid using specific terminology that would not be familiar to participants or would require more explanation (such as ordinal versus nominal).

Participants then each rated a series of attributes in random order (healthiness, portion size, price, brand prestige, donation amount, flavor, pasta shape, and donation cause; 1 = *cannot be put in a specific order* to 7 = *can be put in a specific order*). Finally, participants completed demographic questions and, given the particular importance of carefully reading instructions for this pre-test, we also administered an Instructional Manipulation Check adapted from Oppenheimer, Meyvis, and Davidenko (2009) in which participants were told that we were instructed in whether people take the time to read questions and instructed to ignore a question about the year they were born and to instead type "I have read this question carefully." Participants who failed this reading check were excluded from analysis, leaving 142 participants ($M_{\text{age}} = 37.89$; 81 females, 60 males, 1 other) in the final analysis.

Results

Consistent with our operationalization, each of the ordinal attributes (i.e., healthiness, portion size, price, brand prestige, and donation amount) was perceived as significantly more able to be put in a specific order than each of the nominal attributes (i.e., flavor, pasta shape, and donation cause); all paired t -tests were significant at $p < .001$.

We also conducted one-sample t -tests comparing the means for each attribute with the midpoint of 4. All five ordinal attributes were rated as significantly greater than the midpoint: healthiness ($M = 5.11$, $p < .001$), portion size ($M = 6.00$, $p < .001$), price ($M = 6.37$, $p < .001$), brand prestige ($M = 5.23$, $p < .001$), and donation amount ($M = 5.82$, $p < .001$). Additionally, two of the three nominal attributes were rated as significantly less than the midpoint: flavor ($M = 3.48$, $p = .004$), pasta shape ($M = 3.82$, $p = .363$), and donation cause ($M = 3.23$, $p < .001$).

Post-test: Preference Strength for Ordinal and Nominal Attribute Levels

As mentioned in footnote 5, we selected the particular ordinal and nominal attribute levels based on what we deemed to be reasonable levels for single-occasion consumption (e.g., small vs. medium [not extra large] cake piece; 1 vs. 2 [not 12] ice cream scoops). However, a potential alternative explanation for why consumers may systematically match more on ordinal than on nominal attributes is that consumers may have systematically stronger preferences for the levels of the nominal attribute used in our studies (such that it is difficult to move them closer to others) than for the levels of the ordinal attribute. To test whether this alternative explanation

could account for all of the stimuli across studies, we conducted this post-test in which participants from MTurk were asked to indicate the strength of their preferences between various consumer options. Specifically, participants answered the questions in the following table, mapping onto the stimuli used in our main studies (1 = *Do not have a preference between them*, 2 = *Prefer one slightly over the other*, 3 = *Prefer one a moderate amount over the other*, 4 = *Prefer one a lot over the other*).

Post-test data collection for the stimuli for studies 1, 2a, 2b, 3, and 5 occurred on a single occasion in which 54 participants ($M_{\text{age}} = 34.48$; 25 females, 29 males) responded to all five stimuli in random order. Post-test data collection for the stimuli for study 4 occurred later with a separate group of 54 participants ($M_{\text{age}} = 34.54$; 21 females, 33 males). For all stimuli, we utilized paired t -tests to compare the preference strength for the ordinal levels with the preference strength for the nominal levels. As Table C below shows, there was not a systematically greater preference for the levels of the nominal attribute than for the levels of the ordinal across the studies, indicating that this alternative explanation is unlikely to explain the consistently greater tendency to match on ordinal than on nominal attributes that we predict across contexts.

Table C: Post-test of Preference Strength for the Ordinal Levels and Nominal Levels of the Attributes used in Studies 1-5, 7-8

Study	Ordinal Level Preference Strength		Nominal Level Preference Strength		Paired t -test
	Question	M (SD)	Question	M (SD)	
1	"In general, how strong is your preference, if you have a preference at all) between eating a small piece of cake versus a medium piece of cake?"	2.52 (.77)	"In general, how strong is your preference (if you have a preference at all) between eating a piece of chocolate cake versus a piece of vanilla cake?"	2.81 (.95)	$t(53) = -1.99$, $p = .051$
2a	"In general, how strong is your preference (if you have a preference at all) between buying a box of Barilla (national brand) pasta versus a box of Great Value (store brand) pasta?"	2.00 (.99)	"In general, how strong is your preference (if you have a preference at all) between buying a box of spaghetti versus a box of penne pasta?"	2.41 (.90)	$t(53) = -2.66$, $p = .010$
2b	"In general, how strong is your preference (if you have a preference at all) between buying a \$4 glass of wine (6 oz.) versus an \$8 glass of wine (6 oz.)?"	2.70 (.98)	"In general, how strong is your preference (if you have a preference at all) between buying a fruit-flavored glass of wine versus an earthy-flavored glass of wine?"	2.65 (1.01)	$t(53) = .32$, $p = .754$
3, 7-8	"In general, how strong is your preference (if you have a preference at all) between eating 1 scoop of ice cream (5 oz.) versus 2 scoops of ice cream (10 oz.)?"	2.76 (1.01)	"In general, how strong is your preference (if you have a preference at all) between eating chocolate ice cream versus vanilla ice cream?"	2.70 (1.04)	$t(53) = .33$, $p = .742$
4	"In general, how strong is your preference (if you have a preference at all) between donating 25 cents of your money versus 50 cents of your money to a charity?"	2.98 (1.09)	"In general, how strong is your preference (if you have a preference at all) between donating your money to a polar bear cause versus an elephant cause?"	1.89 (1.08)	$t(53) = 5.77$, $p < .001$
5	"In general, how strong is your preference (if you have a preference at all) between buying a Quaker brand (national brand) granola bar versus Great Value (store brand) granola bar?"	2.20 (1.05)	"In general, how strong is your preference (if you have a preference at all) between buying a chocolate chip granola bar versus a peanut butter granola bar?"	2.65 (1.03)	$t(53) = -2.30$, $p = .026$

WEB APPENDIX D: STIMULI

Study 1

Chat Partner Profile

Your chat partner's ID: A44

Age: 19

Student status: Current [university's name] business undergrad student

Gender: Male [if male participant], **Female** [if female participant], gender information omitted if participant indicated "other" for gender

Snack choice for session: small slice (2 oz.) of chocolate cake; or medium slice (4 oz.) of chocolate cake; or small slice (4 oz.) of vanilla cake; or medium slice (4 oz.) of vanilla cake [depending on random assignment]

Menu

Study 2a

Pasta Options on Endcap Display

Study 2b

Menu



Studies 3, 7, and 8

Menu



Study 5

Instructions for Participants

Consumer testing of our new store in the business research center

We are interested in consumers' experience using our new store in the business research center (e.g., how easy it is to use, its aesthetics).

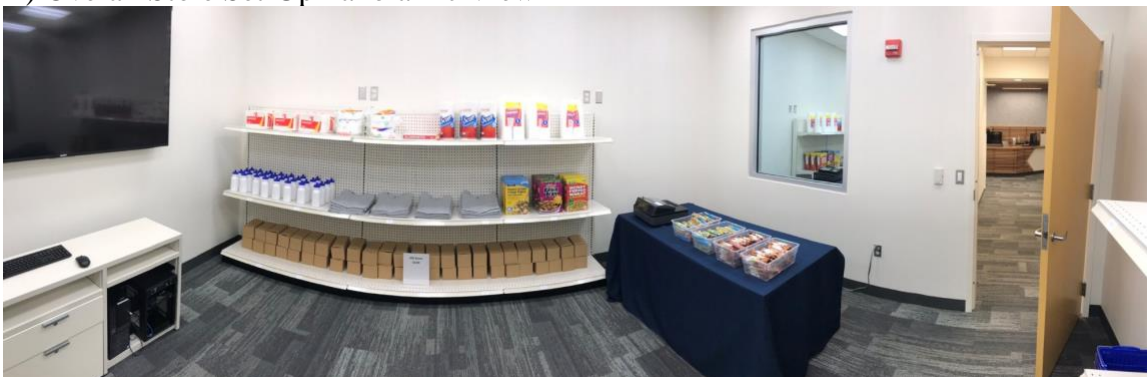
Therefore, during this session, we'll have you go one at a time to take a look at our new store next door to this room and buy ONE—and only one—granola bar for yourself from the new store.

There is an envelope next to your station with quarters for you; the quarters are now yours, and you can decide what granola bar to buy. Whatever money you do not spend on your granola bar selection is yours to keep. However, you must purchase one granola bar. The store employee will help you check out with your purchase.

After you purchase one granola bar, the store employee will put it in a brown paper bag for you. You can then bring it with you back to your computer station. We ask that you keep the granola bar in the bag to keep the computer station clean and neat.

Store Photographs Showing Overall Store Set-up (A, B) and Check-Out Table Set-up with Cash Register and Granola Bar Display (C)

A) Overall Store Set-Up Panoramic View



B) Overall Store Set-Up View from Store Entrance



C) Check-Out Table Set-up with Cash Register and Granola Bar Display



Condition Schedule and Employee Script

	Monday	Tuesday	Wednesday	Thursday	Friday
10:00 AM	One	Four	Three	Two	One
11:00 AM	Two	One	Four	Three	Two
12:00 PM	Three	Two	One	Four	Three
1:00 PM	Four	Three	Two	One	Four
2:00 PM	One	Four	Three	Two	One
3:00 PM	Two	One	Four	Three	Two
4:00 PM	Three	Two	One	Four	Three

Based on condition, store employee says:

Hi, we'd like to test out the store today to get your impressions, so we're letting you purchase a granola bar. Here are the four granola bar options we have. I tried testing the store out too earlier today, and I bought the _____. Go ahead and choose which bar to purchase, and I'll put it in a bag for you.

- One = "Great Value peanut butter granola bar"
- Two = "Great Value chocolate chip granola bar"
- Three = "Quaker peanut butter granola bar"
- Four = "Quaker chocolate chip granola bar"

Study 6

Pasta Options for all Participants



Sign shown to Participants in the Instrumental (Ordinal) Condition

Pasta

Did you know?

Pasta designers purposely design pasta shapes which hold the sauce better and keep the pasta firmer even if it was cooked for too long. Some pasta shapes are thus better than others!

Sign shown to Participants in the Non-Instrumental (Nominal) Condition

Pasta

Did you know?

Pasta designers purposely design pasta shapes to have different appearances. Some pastas thus have a different shape than others, but not necessarily any better or worse!

WEB APPENDIX E: ADDITIONAL ANALYSES

Details for the Analysis of the No Information Control Conditions in Studies 2a, 2b, 3, 4

Table 4 in the main text summarizes the control conditions across studies and uses superscript letters (^{a,b}) to indicate whether treatment conditions are significantly different from each other, and from the control condition, on the ordinal attribute. Below are the full details on the statistical analyses that produced these ordinal attribute results, as well as additional analyses examining the nominal attribute.

Study 2a: Details for the Analysis of the No Information Control Condition

In terms of the ordinal attribute of brand prestige, choice in the no information control condition (58.1% chose the national brand) was significantly different from choice in the friend chooses store brand condition (39.3% chose the national brand), Wald $\chi^2(1) = 8.02, p = .005$, and not significantly different from choice in the friend chooses national brand condition (51.2% chose the national brand), Wald $\chi^2(1) = 1.10, p = .294$. Thus, matching on the ordinal attribute (brand prestige) in study 2a appears to be driven primarily by more participants selecting the lower-end store brand when aware that their friend has done so. In terms of the nominal shape attribute, choice in the no information control condition (52.3% chose the penne shape) was not significantly different from choice in either the friend chooses penne shape condition (48.2% chose the penne shape), Wald $\chi^2(1) = .39, p = .534$, or from choice in the friend chooses spaghetti condition (48.2% chose the penne shape), Wald $\chi^2(1) = .38, p = .537$.

Study 2b: Details for the Analysis of the No Information Control Condition

In terms of the ordinal attribute of price, choice in the no information control condition (34.9% chose the higher-priced wine) was not significantly different from choice in either the friend chooses lower-priced wine conditions (24.8% chose the higher-priced wine), Wald $\chi^2(1) = 2.10, p = .147$, or from choice in the friend chooses higher-priced wine conditions (40.9% chose the higher-priced wine), Wald $\chi^2(1) = .64, p = .423$. Thus, matching on the ordinal attribute (price) in study 2b does not appear to be driven primarily by either direction. In terms of the nominal flavor attribute, choice in the no information control condition (77.8% chose the fruity wine) was significantly different than choice in the friend chooses fruity condition (60.0% chose the fruity wine), Wald $\chi^2(1) = 5.74, p = .017$, and non-significantly different from choice in the friend chooses earthy condition (71.7% chose the fruity wine), Wald $\chi^2(1) = .81, p = .368$. Thus, study 2b's marginally significant mismatching on the nominal attribute (flavor) appears to be driven by fewer participants selecting the fruity wine when aware that their friend had chosen fruity wine.

Study 3: Details for the Analysis of the No Information Control Condition

In terms of the ordinal attribute of portion size, choice in the no information control condition (41.3% chose large) was not significantly different from choice in the friend chooses small condition (42.1% chose large), Wald $\chi^2(1) = .01, p = .923$, but was significantly different from choice in the friend chooses large condition (61.8% chose large), Wald $\chi^2(1) = 6.27, p = .012$. Thus, matching on the ordinal attribute (portion size)

appears to be driven primarily by more participants selecting the larger option when aware that their friend chose a large portion. In terms of the nominal flavor attribute, choice in the no information control condition (56.0% chose the chocolate flavor) was not significantly different from choice in either the friend chooses chocolate condition (49.3% chose chocolate), Wald $\chi^2(1) = .67, p = .414$, or from choice in the friend chooses vanilla condition (57.9% chose chocolate), Wald $\chi^2(1) = .06, p = .814$.

Study 4: Details for the Analysis of the No Information Control Condition

Any participants who chose not to donate were first excluded, just as they were for the main analyses (to have a binary outcome consistent with the other studies). In terms of the ordinal attribute of donation amount, choice in the no information control condition (40.6% chose to donate \$0.50; 59.4% chose to donate \$0.25) was not significantly different from choice in the partner donates \$0.50 condition (52.5% chose to donate \$0.50; 47.5% chose to donate \$0.25), Wald $\chi^2(1) = 2.35, p = .126$, but was significantly different from choice in the partner donates \$0.25 condition (22.3% chose to donate \$0.50; 77.7% chose to donate \$0.25), Wald $\chi^2(1) = 6.47, p = .011$. Thus, matching on the ordinal attribute (donation amount) appears to be driven primarily by participants donating less if their partner donated less. In terms of the nominal donation cause attribute, choice in the no information control condition (56.3% chose the polar bear cause, 43.7% chose the elephant cause) was not significantly different from choice in the partner donates to polar bear cause conditions (47.3% chose the polar bear cause, 52.7% chose the elephant cause), Wald $\chi^2(1) = 1.29, p = .255$, but was significantly different from choice in the partner donates to elephant cause conditions (71.2% chose the polar bear cause, 28.8% chose the elephant cause), Wald $\chi^2(1) = 4.07, p = .044$. Thus, study 4's mismatching on the nominal attribute (donation cause) appears driven by more participants selecting the polar bear cause when aware that their partner had donated to the elephant cause.

Combined: Details for the Analysis of the No Information Control Condition Across Studies (Focusing on Ordinal Matching)

Utilizing the data from the four studies with a no information control condition (studies 2a, 2b, 3, 4), choice in the no information control condition (44.8% chose the "higher" level) was significantly different from choice in the other chooses "lower" condition (32.0% chose the "higher" size), Wald $\chi^2(1) = 12.54, p < .001$, and directionally though nonsignificantly different from choice in the friend chooses "higher" condition (50.5% chose the large size), Wald $\chi^2(1) = 2.37, p = .124$. Combined across these studies conducted across different contexts and operationalizations, we consistently observe matching on the ordinal attribute; however, the exact nature of the direction driving these effects differs by context.

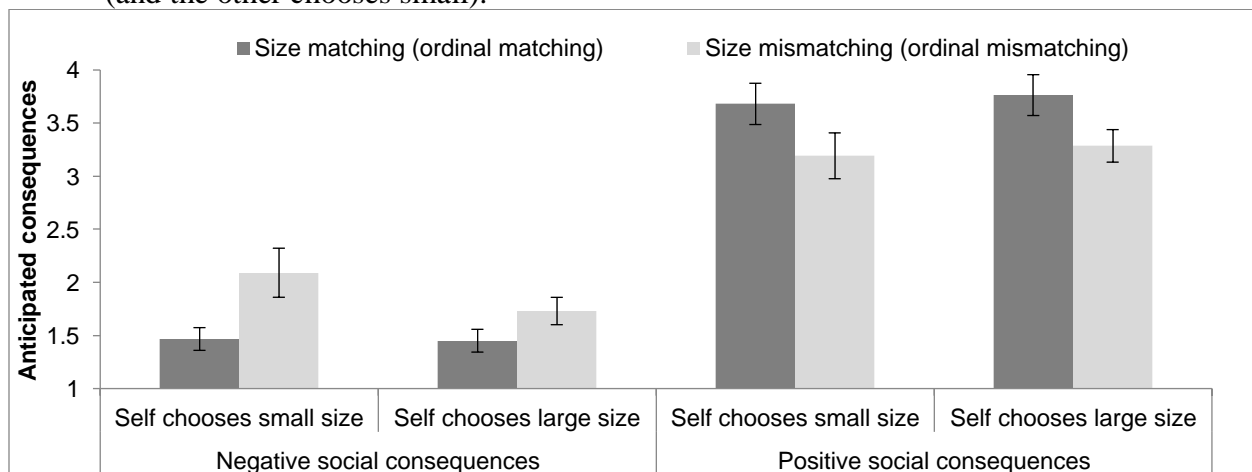
Analysis of Directionality in Studies 7 and 8

Study 7: Analysis of Directionality

To explore the role of directionality in social discomfort for ordinal matching versus mismatching, we conducted a 2 (size-matching: yes, no) \times 2 (participant's size choice: small, large) ANOVA on each index measure.

First, for the negative consequences index, there was a significant main effect of size-matching such that participants anticipated that their choice would have more negative consequences if they mismatched versus matched on size ($M_{\text{mismatch}} = 1.85$ vs. $M_{\text{match}} = 1.46$; $F(1, 194) = 10.24, p = .002$), but no significant main effect of the participant's size choice ($M_{\text{small}} = 1.73$ vs. $M_{\text{large}} = 1.60$; $F(1, 194) = 1.80, p = .182$), and no significant interaction ($F(1, 194) = 1.49, p = .224$). See the figure below. We also conducted several comparisons (t -tests, equal variances not assumed when Levene's test for equality of variances was significant) for exploratory purposes, despite the lack of a significant interaction. These analyses suggested that the magnitude of anticipated social discomfort may be larger if the self chooses small (and the other chooses large) than if the self chooses large (and the other chooses small). Specifically, among participants who said that they would choose small ($n = 80$), they believed that size mismatching would lead to significantly more negative social consequences than size matching ($M_{\text{mismatching}} = 2.09$ vs. $M_{\text{matching}} = 1.47$; $t(45.72) = 2.45, p = .018$). Among participants who said they would choose large ($n = 118$), they believed that size mismatching would lead to marginally significantly more negative social consequences than size matching ($M_{\text{mismatching}} = 1.73$ vs. $M_{\text{matching}} = 1.44$; $t(114.53) = 1.67, p = .098$). Note though, these planned comparisons should be viewed as exploratory and interpreted with caution as the overall interaction was not significant.

Second, for the positive consequences index, there was a significant main effect of size-matching such that participants anticipated that their choice would have less positive social consequences if they mismatched versus matched on size ($M_{\text{mismatch}} = 3.25$ vs. $M_{\text{match}} = 3.73$; $F(1, 194) = 6.38, p = .012$), but no significant main effect of the participant's size choice ($M_{\text{small}} = 3.48$ vs. $M_{\text{large}} = 3.51$; $F(1, 194) = .21, p = .645$), and no significant interaction ($F(1, 194) = .001, p = .977$). See the figure below, which indicates that the magnitude of anticipated positive social consequences was similar regardless of whether the self chooses small (and the other chooses large) or if the self chooses large (and the other chooses small).

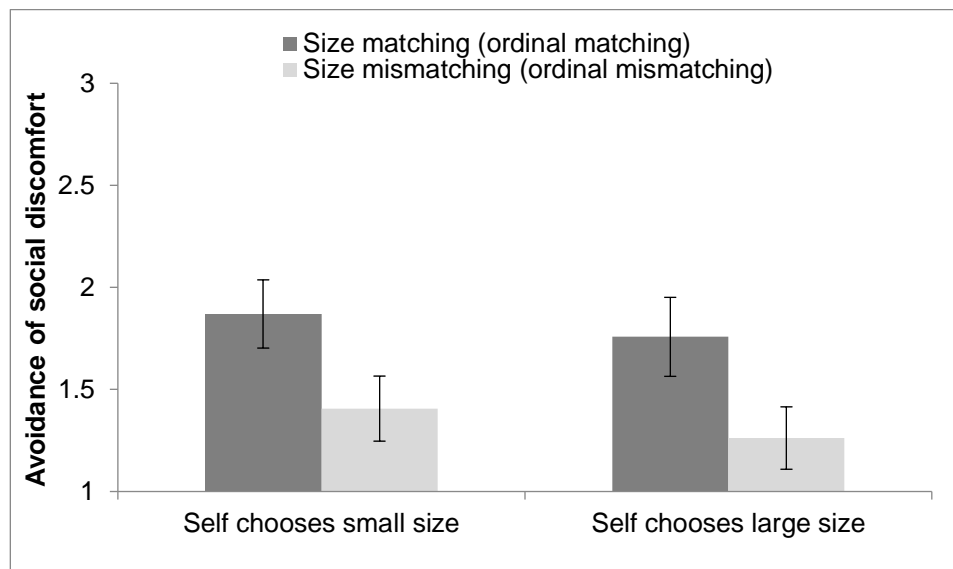


Study 8: Analysis of Directionality

Mapping onto the design used for our main analysis, we explored the role of directionality for the ordinal matching effect in this study by conducting a 2 (size-matching: yes, no) \times 2 (participant's size choice: small, large) ANOVA on the avoidance of social discomfort index. Note that the size-matching variable was created by

combining the IV with the DV to code each participant as having matched or not matched on size.

This analysis revealed a significant main effect of size-matching such that participants indicated choosing with greater avoidance of social discomfort when they matched versus mismatched on size ($M_{\text{match}} = 1.82$ vs. $M_{\text{mismatch}} = 1.35$; $F(1, 186) = 4.76$, $p = .030$), but no significant main effect of the participant's size choice ($M_{\text{small}} = 1.73$ vs. $M_{\text{large}} = 1.64$; $F(1, 186) = .34$, $p = .561$), and no significant interaction ($F(1, 186) = .01$, $p = .942$). See the figure below, which indicates that the avoidance of social discomfort index was higher among participants who matched versus mismatched, regardless of whether the self chooses small (and the other chooses large) or if the self chooses large (and the other chooses small).



Gender Analysis (referenced in the General Discussion)

We conducted a pooled analysis across the two studies with the same main design of a 2 (friend's portion size: small, large) \times 2 (friend's flavor: chocolate, vanilla) between-subjects design (studies 1, 8). Both studies utilized undergraduates (in line with Silberstein et al. (1988), and there were 374 participants in the non-control conditions who identified as female ($n = 178$) or male ($n = 196$). The pooled analysis was conducted on these participants.

First, for ordinal matching, we tested whether the effect of the friend's portion size on the participant's portion size differed by participant gender. We conducted a 2 (friend's portion size: small, large) \times 2 (participant's gender: male, female) logistic regression on the binary outcome of the participant's portion size (small, large). There was a significant interaction (Wald $\chi^2(1) = 4.16$, $p = .041$). There was a larger degree of ordinal matching among female participants (the percentage of females choosing the large [vs. small] portion size went from 29.9% when the friend chose small to 79.1% when the friend chose large; $\chi^2(1) = 43.57$, $p < .001$, $\phi = .49$) than among male participants (the percentage of males choosing the large [vs. small] portion size went from 39.2% when the friend chose small to 69.1% when the friend chose large; $\chi^2(1) = 17.62$, $p < .001$, $\phi = .30$). The ordinal-matching effect size was approximately 50% larger for female participants than for male participants.

Second, for nominal matching, we tested whether the effect of the friend's flavor on the participant's flavor differed by participant gender. We conducted a 2 (friend's flavor: chocolate, vanilla) \times 2 (participant's gender: male, female) logistic regression on the binary outcome of the participant's flavor (chocolate, vanilla). There was no interaction (Wald $\chi^2(1) = .04, p = .843$), and neither female nor male participants exhibited a nominal-matching effect (females: $\chi^2(1) = .02, p = .886, \phi = .01$; males: $\chi^2(1) = .19, p = .662, \phi = .03$).

WEB APPENDIX F: SUPPLEMENTAL STUDY S2

Study S2: Attribute Mis(matching) and Social Consequences across a Range of Different Products and Attribute Operationalizations

Method

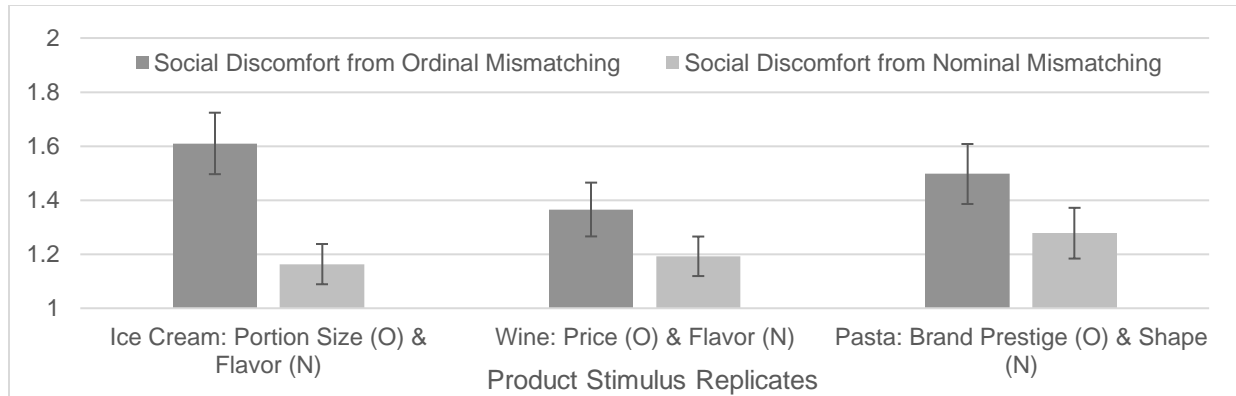
Participants (N = 156; $M_{\text{age}} = 34.93$ [1 did not report age]; 81 females, 75 males) recruited from MTurk completed this study, which had a 2 (ordinal, nominal) within-subjects design. This design was utilized across three different product sets with various ways of operationalizing ordinal and nominal attributes, described next, to test for convergent support for our theorizing.

Participants each were assigned to one product (≈ 50 participants per product): ice cream, wine, or pasta. All participants began by listing the first name of a same-gender friend. They then imagined arriving at a location (either a restaurant or a store, depending on the product) and seeing a menu of four options. These four options consisted of the four combinations of crossing two levels of an ordinal attribute with two levels of a nominal attribute. Table 1 summarizes the levels examined. Web Appendix D contains the three product menus, as these were the same or similar as the ones used in main studies 2a, 2b, and 8 involving dried pasta, wine, and ice cream. The sole difference is that for the wine menu (study 2b), study S2 additionally specified (6 oz.) after “Wine By the Glass” to make it even clearer to participants that portion size is held constant in the wine by the glass case.

All participants then responded to 12 statements in total, three statements each gauging their beliefs about: the social discomfort arising for themselves if they mismatched their friend on the ordinal attribute, the social discomfort arising for themselves if they mismatched their friend on the nominal attribute, the social discomfort arising for their friend if they mismatched their friend on the ordinal attribute, and the social discomfort arising for their friend if they mismatched their friend on the nominal attribute. Each statement began with “To what extent would choosing a different [varying depending on ordinal attribute or nominal attribute] than your friend make [varying: you or your friend] feel...” and ended with “uncomfortable,” “awkward,” or “self-conscious” (1 = *not at all*, 2 = *slightly*, 3 = *somewhat*, 4 = *moderately*, 5 = *extremely*). These 12 statements were factor analyzed and loaded onto two factors with six items each: the social discomfort for self and other of mismatching on the ordinal attribute ($\alpha = .93$) and the social discomfort for self and other of mismatching on the nominal attribute ($\alpha = .95$).

Results and Discussion

Data collection for two stimuli (ice cream, wine) occurred on a single occasion via random stimuli assignment. Pasta data were collected later (same participant pool). However, we utilize an overall mixed ANOVA for reporting ease. A 2 (within: ordinal, nominal) \times 3 (between: ice cream, wine, pasta) mixed ANOVA revealed the focal predicted main effect of ordinal versus nominal product attribute ($M = 1.49$ vs. $M = 1.21$; $F(1, 153) = 40.87$, $p < .001$), no main effect of product stimulus replicate ($F(2, 153) = .50$, $p = .606$), and a significant interaction ($F(2, 153) = 3.66$, $p = .028$). Given the interaction (note though that effect-size differences across stimuli are non-central to our theorizing), we conducted three paired t -tests, which showed that for each product stimulus replicate, consumers anticipated mismatching on the ordinal attribute to lead to greater social discomfort than matching on the nominal attribute: ice cream ($t(49) = 4.52$, $p < .001$), wine ($t(51) = 2.77$, $p = .008$), and pasta ($t(53) = 3.48$, $p = .001$). See figure below.



Note. The figure depicts means and standard errors of the mean.

This supplemental study thus shows across a range of products examined (with various ways of operationalizing ordinal and nominal attributes), consumers perceive the social discomfort arising from ordinal mismatching to be higher than that arising from nominal mismatching. Of course, the levels of social discomfort were generally low (and then elevated a small but statistically significant degree for ordinal mismatching). This is not unexpected as we are not studying highly socially discomforting product categories for which these kinds of self-report measures were designed (cf. products studied in terms of social discomfort by other consumer researchers, such as condoms; Blair and Roese 2013; Dahl, Manchanda, and Argo 2001). Of note, we are still able to capture differences in self-reported social discomfort even though our manipulations are fairly subtle and we examine everyday product categories. However, we note that some social discomfort might also occur non-consciously such that self-report measures do not fully capture it (indeed, a higher threshold for detecting differences may be needed for self-report measures).

Overall, this supplemental study shows the generalizability of the social discomfort results found in study 7 but does so across a range of stimuli and operationalizations. Having established strongest process effects for portion size as an ordinal attribute, study 8 focuses on this particular case.

REFERENCES

- Ariely, Dan and Jonathan Levav (2000), "Sequential Choice in Group Settings: Taking the Road Less Traveled and Less Enjoyed," *Journal of Consumer Research*, 27 (3), 279-90.
- Balachander, Subramanian and Axel Stock (2009), "Limited Edition Products: When and When Not to Offer Them," *Marketing Science*, 28 (2), 336-55.
- Bettman, James R., Deborah Roedder John, and Carol A. Scott (1986), "Covariation Assessment by Consumers," *Journal of Consumer Research*, 13 (3), 316-26.
- Blair, Sean and Neal J. Roese (2013), "Balancing the Basket: The Role of Shopping Basket Composition in Embarrassment," *Journal of Consumer Research*, 40 (4), 676-91.
- Blau, Peter M. (1974), "Presidential Address: Parameters of Social Structure," *American Sociological Review*, 39 (5), 615-35.
- Celik, Levent (2014), "Information Unraveling Revisited: Disclosure of Horizontal Attributes," *Journal of Industrial Economics*, 62 (1), 113-36.
- Dahl, Darren W., Rajesh V. Manchanda, and Jennifer J. Argo (2001), "Embarrassment in Consumer Purchase: The Roles of Social Presence and Purchase Familiarity," *Journal of Consumer Research*, 28 (3), 473-81.
- Gabszowicz, J. Jaskold and J.-F. Thisse (1986), "On the Nature of Competition with Differentiated Products," *Economic Journal*, 96 (381), 160-72.
- Hagen, Linda, Aradhna Krishna, and Brent McFerran (2017), "Rejecting Responsibility: Low Physical Involvement in Obtaining Food Promotes Unhealthy Eating," *Journal of Marketing Research*, 54 (4), 589-604.
- Kamakura, Wagner A., Brian T. Ratchford, and Jagdish Agrawal (1988), "Measuring Market Efficiency and Welfare Loss," *Journal of Consumer Research*, 15 (3), 289-302.
- Kim, Kilsun and Dilip Chhajed (2002), "Product Design with Multiple Quality-Type Attributes," *Management Science*, 48 (11), 1502-11.
- Liu, Yong, Daniel S. Putler, and Charles B. Weinberg (2004), "Is Having More Channels Really Better? A Model of Competition among Commercial Television Broadcasters," *Marketing Science*, 23 (1), 120-33.
- Lowe, Michael L. and Kelly L. Haws (2014), "(Im) Moral Support: The Social Outcomes of Parallel Self-Control Decisions," *Journal of Consumer Research*, 41 (2), 489-505.

McFerran, Brent, Darren W. Dahl, Gavan J. Fitzsimons, and Andrea C. Morales (2010), "I'll Have What She's Having: Effects of Social Influence and Body Type on the Food Choices of Others," *Journal of Consumer Research*, 36 (6), 915-29.

Oppenheimer, Daniel M., Tom Meyvis, and Nicolas Davidenko (2009), "Instructional Manipulation Checks: Detecting Satisficing to Increase Statistical Power," *Journal of Experimental Social Psychology*, 45 (4), 867-72.

Pekelman, Dov and Subrata K. Sen (1979), "Measurement and Estimation of Conjoint Utility Functions," *Journal of Consumer Research*, 5 (4), 263-71.

Quester, Pascale and Alexandre Steyer (2010), "Revisiting Individual Choices in Group Settings: The Long and Winding (Less Traveled) Road?," *Journal of Consumer Research*, 36 (6), 1050-57.

Randall, Taylor, Karl Ulrich, and David Reibstein (1998), "Brand Equity and Vertical Product Line Extent," *Marketing Science*, 17 (4), 356-79.

Ratner, Rebecca K. and Barbara E. Kahn (2002), "The Impact of Private Versus Public Consumption on Variety-Seeking Behavior," *Journal of Consumer Research*, 29 (2), 246-57.

Shaked, Avner and John Sutton (1987), "Product Differentiation and Industrial Structure," *Journal of Industrial Economics*, 131-46.

Stevens, Stanley Smith (1946), "On the Theory of Scales of Measurement," *Science*, 103 (2684), 677-80.

Sun, Monic (2011), "Disclosing Multiple Product Attributes," *Journal of Economics & Management Strategy*, 20 (1), 195-224.

Sutton, John (1986), "Vertical Product Differentiation: Some Basic Themes," *American Economic Review*, 76 (2), 393-98.

Tanner, Robin J., Rosellina Ferraro, Tanya L. Chartrand, James R. Bettman, and Rick Van Baaren (2008), "Of Chameleons and Consumption: The Impact of Mimicry on Choice and Preferences," *Journal of Consumer Research*, 34 (6), 754-66.

Tucker, Catherine and Juanjuan Zhang (2011), "How Does Popularity Information Affect Choices? A Field Experiment," *Management Science*, 57 (5), 828-42.

Velleman, Paul F. and Leland Wilkinson (1993), "Nominal, Ordinal, Interval, and Ratio Typologies Are Misleading," *American Statistician*, 47 (1), 65-72.

Ying, Yuanping, Fred Feinberg, and Michel Wedel (2006), "Leveraging Missing Ratings to Improve Online Recommendation Systems," *Journal of Marketing Research*, 43 (3), 355-65.