

On Consumer Beliefs about Quality and Taste

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Marketers and researchers alike typically regard products as differentiated by quality (modeled via vertical differentiation) or taste (modeled via horizontal differentiation). This research examines consumer beliefs about product differentiation. For a wide variety of product pairs, different consumers hold divergent beliefs about whether each pair is a matter of quality (such that one product is objectively better) or taste (such that one product is a better match with their own personal preferences). These beliefs have meaningful consequences. When consumers believe their chosen products are objectively better rather than better matches with their preferences: (1) they are willing to pay more for the chosen product over the alternative; (2) they self-reference less when explaining their choices; and (3) they are more likely to make transitive inferences from choices across other consumers. Observing others' contradictory choices increases the likelihood of believing those products differ by taste rather than quality. Understanding consumer beliefs about product differentiation has implications for understanding consumer decision delegation and decisions that are made in group contexts and for strategic decisions including customer segmentation, product positioning, and pricing policies.

Keywords: product differentiation, perceived quality, preferences, beliefs, reasoning, inference

Some products are better than others. A water filter that removes 99.9% of contaminants is better than one that removes 99%. Other products are matters of individual

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Darren Dahl served as editor and Rebecca Hamilton served as associate editor for this article.

Advance Access publication October 27, 2016

taste. A lemon popsicle is neither better nor worse than a lime popsicle, yet many consumers prefer one to the other. These two examples anchor the ends of a product differentiation continuum. The water filters differ in *quality*: the product itself is the source of value, and the superiority of one over the other is a matter of fact. The popsicles differ in *taste*: the match between the product and the consumer's preferences is the source of value, and the superiority of one over the other cannot be established as a matter of fact.

The present research characterizes consumer beliefs about product differentiation—that is, whether the differences between products are matters of quality or taste. Different consumers hold divergent beliefs: across a wide variety of brand pairs, the minority belief regarding whether the differences are matters of quality or taste is held by more than a third of consumers on average. Such discrepancies across consumers are important: we find these beliefs affect willingness to pay and consumers' reasoning about their own choices and those of others.

We report five key findings, each one holding constant the set of products. First, for a variety of sets of products, consumers hold divergent beliefs about whether the

differences between products in a given set are matters of quality or taste. Second, quality beliefs (vs. taste beliefs) lead to larger differences in willingness to pay between products. This is in part because consumers believe large price differences between products are fairer for matters of quality than matters of taste. Third, quality beliefs (vs. taste beliefs) lead to a reduced focus on one's self when explaining one's choices. Fourth, consumers are more willing to integrate across others' choices to draw inferences about unknown consumers' choices when they believe the sets are matters of quality rather than taste. Fifth, making sense of a set of contradictory choices increases the likelihood of believing the set is a matter of taste (vs. quality), suggesting such beliefs are somewhat malleable. The last three findings each result from the bidirectional relationship between beliefs about product differentiation and consumers' reasoning about their own choices and those of others.

We adopt Zeithaml's (1988, 3) definition of perceived quality as "the consumer's judgment about a product's overall excellence or superiority" and use "perceived objectivity" to mean a consumer's beliefs about whether a set of products can be ranked by quality. Our use of the terms perceived objectivity, matter of quality, and matter of taste reflects consumers' beliefs about states of the world. We are agnostic regarding whether the products truly differ in superiority or excellence. Our focus is on consumers' beliefs and how they differ across consumers for different sets of products.

We next review research suggesting perceived objectivity may vary across consumers and develop hypotheses about the implications of these beliefs. Ten studies provide evidence for these hypotheses. We primarily, though not exclusively, focus on beliefs regarding individual pairs of products, and suggest an analysis of attributes and benefits in the General Discussion.

THEORETICAL BACKGROUND

The distinction between matters of quality and taste roughly parallels the one between beliefs about objectivity and subjectivity in other domains. People's beliefs about which judgments are objective and subjective develop over time (Carpendale and Chandler 1996; Kuhn, Cheney, and Weinstock 2000). Between-domain differences in these beliefs affect how people search for information, how people interpret information, people's preferences for advisors, and people's preference for conformity (Goethals and Nelson 1973; Gorenflo and Crano 1989; Olson, Ellis, and Zanna 1983; Solomon, Pruitt, and Insko 1984; Spears, Ellemers, and Doosje 2009). Researchers often implicitly assume these beliefs vary across domains rather than within a single domain (but see Olson et al. 1983; Spears et al. 2009).

The marketing literature has not directly addressed this question of differences in perceived objectivity across individuals for a given set of products. Yet research on physical attractiveness (Ellis, Olson and Zanna 1983; Olson et al. 1983), wine (Charters and Pettigrew 2003), and morality (Goodwin and Darley 2008, 2012) suggests such differences exist in related domains. We propose these differences in perceived objectivity are prevalent and important. Even the presence of such beliefs is an open question. In standard economic models, consumers choose the utility-maximizing alternative without ascribing that utility to quality or taste. In these models, why consumers believe they prefer one option to another is immaterial. If consumers do hold such beliefs, whether perceived objectivity varies across consumers for a given set of products is also an open question. Perceived objectivity might accurately reflect the marketplace, implying it would not vary across consumers for a given set of products. These discrepancies are not mere noise, as we propose they lead to consequential outcomes.

Perceived objectivity is related to, but not defined by, two related concepts. First, consumers differ in how much they prefer one option to another. In stochastic choice, a large difference in utility leads to more consistent choices than a small difference in utility (Luce 1959). Just as an attitude toward an option may be more or less extreme (Krosnick et al. 1993), so may preferences between options. We distinguish preference strength (indicative of the magnitude of the difference in evaluations) from perceived objectivity (indicative of the source of the difference in evaluations).

Second, perceived objectivity may be defined independently of perceived consensus, although empirically they may often covary. Standard economic models often define away any distinction between quality and preference homogeneity. Quality differences are modeled via vertical differentiation (markets in which "all consumers agree over the most preferred mix of characteristics and, more generally, over the preference ordering," Tirole 1988, 96), and taste differences are modeled via horizontal differentiation (markets in which "the optimal choice [at equal prices] depends on the particular consumer," Tirole 1988, 97). In that research tradition, quality is sometimes taken as an *example of* vertical differentiation ("A typical example is quality," Tirole 1988, 96) and is other times *defined by* vertical differentiation ("More preferred goods are often described as having higher 'quality,'" Anderson 2008, 3; "such a [vertically differentiated] dimension is typically interpreted as product quality in the literature," Chen 2009, 217). In such models the difference between quality and perceived consensus is immaterial, as the models are about preference homogeneity and are silent on perceived objectivity.

Shifting the focus to consumer beliefs raises the possibility that quality and preference homogeneity (or beliefs

about preference homogeneity) need not perfectly covary. Consumers may simultaneously believe that one option is superior and also that other consumers who are not sufficiently knowledgeable or refined may prefer an inferior option. Conversely, consumers may believe that a choice is a matter of taste and also that most consumers prefer the same option.

IMPLICATIONS OF PERCEIVED OBJECTIVITY

Other consumers are incidental when one is reasoning based on matters of quality, as the superiority of one option over another is a matter of fact. In contrast, other consumers are integral when one is reasoning based on matters of taste. We consider three implications of this difference. First, because of their centrality to consumer behavior and firm profits, we examine differences in willingness to pay. Second, because of the importance of the self to cognitive processing, we examine differences in self-referencing. Third, we address how reasoning about others' choices informs and is informed by one's own perceived objectivity.

Willingness to Pay

Willingness to pay is a key concern of marketers with direct implications for consumer behavior and firm profits. The normative driver of willingness to pay for a product is the value of that product to that consumer in dollars. The normative driver of difference in willingness to pay between two products is thus the difference in value. Consider a consumer who is choosing between buying a red tie and a green tie. He prefers the red tie, but it costs \$5 more than the green tie. For a strong enough preference (i.e., a large enough difference in value), the consumer will pay \$5 more and buy the red tie. For a weak enough preference, the consumer will save \$5 and buy the green tie. His choice between the more-preferred tie and saving \$5 depends only on his strength of preference and not on whether the difference is a matter of quality or taste.

Empirically, however, some factors matter more for willingness to pay and others matter more for expected utility or predicted enjoyment (Amir and Ariely 2007; Amir, Ariely, and Carmon 2008; Lichtenstein and Slovic 1971; Thaler 1985). In particular, willingness to pay depends on transaction-relevant factors, like fair prices or reference prices, that are irrelevant to enjoyment of the product itself (Amir et al. 2008; Thaler 1985). Fair prices are one form of reference prices (Monroe 1973; Thaler 1985) and are often used as measures of reference prices (Grewal et al. 1998a; Grewal, Monroe, and Krishnan 1998b; Lichtenstein and Bearden 1989). Though fairness perceptions and good-deal perceptions may each result from the same reference price, perceived fairness decreases with absolute deviation from the reference price, whereas

perceived deal decreases with signed deviation (Xia and Monroe 2010).

We propose perceived objectivity may affect willingness to pay via fair prices for two reasons. First, perceived quality has a positive effect on fair prices and reference prices (Bolton, Warlop, and Alba 2003; Grewal et al. 1998a; Grewal et al. 1998b; Ordonez 1998). For a given preference strength, matters of quality entail larger quality differences than matters of taste do, so matters of quality support larger fair price differences than matters of taste do. Whereas it may be seen as fair for a landlord to charge a higher rent for a recently renovated apartment, it is seen as unfair for a landlord to charge a higher rent because the tenant took a nearby job that increased the match value of the apartment (Kahneman, Knetsch, and Thaler 1986).

Second, because matters of taste evoke consideration of other consumers, matters of taste may be more likely than matters of quality to evoke meaningful comparisons to prices paid by others. For similar transactions, prices that are similar to the prices others pay are considered fairer, and charging different prices to different customers for similar purchases is considered unfair or less fair (Bolton et al. 2003; Feinberg, Krishna, and Zhang 2002; Gourville and Moon 2004; Haws and Bearden 2006; Xia and Monroe 2010; Xia, Monroe, and Cox 2004). Much of this research has focused on comparisons where different consumers are offered the same product, but dissimilar prices for similar horizontally differentiated products are believed to be unfair as well (Feinberg et al. 2002; Gourville and Moon 2004). This implies price differences for matters of taste are believed to be less fair than price differences for matters of quality. This is especially likely if the most relevant comparison purchase by another consumer is that other consumer's own preferred product (Orhun and Urminsky 2013).

The reasoning above suggests that quality differences support larger differences in fair prices than taste differences do. As reference prices or fair prices increase, willingness to buy at a given price increases accordingly (Anderson and Simester 2008; Campbell 1999; Martins and Monroe 1994; Thaler 1985; Winer 1986; Xia and Monroe 2010). Thus, we hypothesize:

H1: The difference in willingness to pay between products increases with perceived objectivity.

Self-Referencing

The connection between product choices and the self affects information processing, persuasion, and memory (Burnkrant and Unnava 1995; Celsi and Olson 1988; Escalas 2007; Rogers, Kuiper, and Kirker 1977; Sujjan, Bettman, and Baumgartner 1993; Symons and Johnson 1997; West, Huber, and Min 2004). Whether consumers believe a set of products is a matter of quality or taste

affects how they reason about their choices. In particular, it influences the role of the self in their reasoning processes. The consumer is superfluous to reasoning about matters of quality: products may be ranked by excellence without concern for the consumer. In contrast, the consumer and her preferences are integral to reasoning about matters of taste. Thus, reasoning about matters of taste increases consumers' focus on themselves. We argue this leads to fundamental differences in consumers' explanations of their choices. Consumers self-reference more when explaining choices among matters of taste than when explaining choices among matters of quality.

Attribution theory (Folkes 1988; Kelley 1973) posits that people use the cues available to them to make causal judgments, and they use different cues for matters of objectivity and subjectivity. Kelley proposed that people rely on the situation for objective truths and the person/situation interaction for matters of taste. People use more first-person singular pronouns when they focus attention on themselves (Davis and Brock 1975; Tausczik and Pennebaker 2010) and expect expert advisors to avoid such self-references when providing impartial advice independent of the self (Toma and D'Angelo 2014). Because language use reflects relative focus in reasoning, explanations of choices among matters of quality will include fewer self-references than explanations of choices among matters of taste.

H2: The use of self-references in choice explanations decreases with perceived objectivity.

Reasoning about Others' Choices

The identity of other consumers is not relevant for matters of quality but is for matters of taste. Above we described the implications of that principle for the language people use when explaining their choices. This same principle implies a bidirectional relationship between perceived objectivity and the reasoning process itself.

When reasoning about why another consumer apparently chose an inferior option, a consumer may come to one of three conclusions. First, the consumer may conclude he was wrong and reevaluate the option he had believed was better as inferior instead, akin to changing his mind in light of a factual correction (Lewandowsky et al. 2012). Second, the consumer may conclude the other individual is uninformed, mistaken, or biased (Goodwin and Darley 2008; Pronin, Ross, and Gilovich 2004; Ross and Ward 1996). We propose a third resolution is possible. The consumer may conclude neither he nor the other consumer was mistaken and reevaluate the set as a matter of taste. This is distinct from an effect of perceived consensus: even when consumers recognize that others make different choices, making sense of why is the active ingredient.

Observing inconsistent choices across sets of other consumers may similarly affect consumer beliefs. Whereas ranking matters of taste depends on each consumer's preferences, ranking matters of quality may be accomplished without consideration for individuals. As a result, a set of choices that is transitive across well-informed consumers is compatible with the single ranking called for by matters of quality, whereas a set of choices that is intransitive across well-informed consumers is not. If Consumer A chose Brand 1 over 2, B chose 2 over 3, and C chose 1 over 3, it is possible that each consumer chose the highest-quality option from the given choice set. In contrast, if C had chosen 3 over 1, it would not have been possible that each consumer chose the highest-quality option from the given choice set. Reflecting on the latter set of choices will likely reduce perceived objectivity.

H3: Observing other consumers' contradictory choices can decrease perceived objectivity.

The relationship between perceived objectivity and others' choices is not deterministic. Consumers may choose worse options due to insufficient knowledge or faulty reasoning. If consumers believe another's choice of a worse option was a mistake, they may continue to believe that one option is superior.

It is also possible to invert this process and reason from perceived objectivity to choices. Consumers familiar with a product category may be unfamiliar with a particular set of products. What can they learn about those unfamiliar products by observing others' choices? Consumers' beliefs about related products affect the inferences they draw. Given the same choice data, researchers may choose to model quality or taste differentiation. That modeling choice could lead researchers to draw different conclusions. Similar logic applies to consumer reasoning: the same data can lead to different conclusions given different levels of perceived objectivity.

Lay theories play an important role in consumer inferences. They can outweigh empirical relationships when inferring missing attribute values (Broniarczyk and Alba 1994); they can moderate the extent to which consumers make inferences based on limited data (Faro, McGill, and Hastie 2010); they can alter the perception of value (Sela, Simonson, and Kivetz 2013); and they can lead to opposing inferences from the same data (Cho and Schwarz 2008). Consumers' beliefs about how markets operate affect how they integrate new information. For example, price promotions can be a signal of good value or low quality. When the good value theory is accessible, consumers' evaluations of discounted products increase. When the low quality theory is accessible, the trend reverses (Deval et al. 2013).

This analysis suggests that perceived objectivity affects what inferences consumers draw from others' choices. When choosing from matters of quality, informed

consumers facing common choice sets should make the same choices. Thus, observers can combine choices across consumers to rank the full set of products. When choosing from matters of taste, consumers need not make the same choices. Thus, observers cannot combine such choices to rank the full set of products without making more assumptions. If Consumer A chose Brand 1 over 2 and B chose 2 over 3, the likelihood that C will choose 1 over 3 will be a function of perceived objectivity.

H4: Perceived objectivity increases the likelihood that consumers draw rank-order inferences from others' choices.

In the first five studies we examine the perceived objectivity of pairs of brands across various product categories. Studies 1A through 1C assess the relationships between perceived objectivity and willingness to pay and self-references. Studies 2A and 2B manipulate perceived objectivity.

Study 3 extends our analysis of self-references to secondary data from product reviews. As use of self-references decreases, consistency with quality ratings increases.

The last four studies extend our findings on consumer reasoning beyond self-referencing to test the relationship between perceived objectivity and reasoning about others' choices. In studies 4 and 5, we find resolving contradictory choices decreases perceived objectivity. In studies 6A and 6B, we find perceived objectivity shapes the inferences consumers draw from others' choices. Throughout, we report all data exclusions, manipulations, and measures in each study. We determined all sample size targets in advance, with the exception noted in study 6A.

STUDIES 1A, 1B, 1C

In studies 1A through 1C, we examine differences in perceived objectivity across consumers for a variety of product pairs. We also examine how perceived objectivity relates to willingness to pay and self-references. We selected two leading brands in each of 16 product categories, ranging from beer to parcel delivery services to cars. This allows us to test whether these differences and associations hold across a broad set of stimuli (Lynch 1982; Wells 2001). The focus is on within-pair comparisons. The three studies were near-exact replicates of one another; we detail the few differences below.

Method

Participants. We recruited participants from Amazon's Mechanical Turk for studies 1A ($N = 200$; 64 women, median age of 27), 1B ($N = 200$; 85 women, median age of 27), and 1C ($N = 200$; 76 women, median age of 27).

Stimuli. We selected one pair of leading brands from each of 16 assorted product categories (beer, clothing store,

sedan, soda, smartphone, gas station, credit card, moisturizer, hotel, search engine, digital camera, television, fast food, shoes, laptop, and package delivery service). Complete study 1C materials for one example product pair appear in appendix A.

Design and Procedure. We begin by describing study 1A; we then detail the differences in studies 1B and 1C. First, each participant chose one brand from each of four product pairs, drawn at random from the full set of 16 (*Choice*). Participants chose the brand they would rather use if the products had equal prices. After choosing four brands (one from each pair), participants reported the strength of their preference for each favored option over the alternative on a scale from 1 ("Very weak") to 7 ("Very strong") (*Preference Strength*). Next, participants explained why they chose each option (*Explanation*).

Participants next classified the difference as a matter of quality or taste (*Perceived Objectivity*) using a measure akin to that of Goodwin and Darley (2008, 2012). There were four response options: (1) "[Brand X] is objectively better than [Brand Y]"; (2) "[Brand Y] is objectively better than [Brand X]"; (3) "Neither one is objectively better, it is a matter of opinion"; and (4) "I do not know enough about [Brand X] and [Brand Y] to judge." We code the first two responses as matters of quality and the third as a matter of taste. This task followed all four explanations, so it could not have affected participants' explanations.

For each choice, participants reported how many people out of 100 would make the same choice (*Perceived Consensus*). Participants then imagined a specific context in which they received their less preferred option for free. They reported how much they would be willing to pay to trade it for their more preferred option (*WTP*). Finally, participants completed the Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, and Swann 2003) and reported household income, sex, age, and ethnicity. The TIPI provides a brief measure of the Big Five personality constructs. Including it allowed us to examine correlations between perceived objectivity and major personality differences, especially openness to new experiences. The TIPI was not predictive of our measures and will not be discussed further.

Study 1B was the same as study 1A with two changes. Rather than "matter of opinion," the third Perceived Objectivity response option read "matter of taste" for half of the sample and "matter of personal preference" for the rest. Wording did not significantly interact with beliefs, so we collapse results across the two wordings. We did not measure the TIPI in study 1B.

Study 1C was the same as study 1A with a few exceptions. First, we reworded Perceived Objectivity to be about factual superiority. The first two response options were: "It is a fact that [Brand X] is better than [Brand Y]" and the third was "It is not a fact that either one is better, it is a

matter of personal preference.” Second, after reporting WTP, participants reported a fair price for the merchant to charge for the trade (*Fair Price*). Third, we assessed Perceived Consensus after Fair Price. Finally, we asked participants to state in their own words what “It is a fact that Brand A is better than Brand B” means. We also asked participants to consider whether someone who said that it is a fact that A is better than B and someone else who said it is a fact that B is better than A could both be right. We did not measure the TIPI in study 1C.

Results

Results were consistent across studies 1A through 1C, so we collapse across and analyze them together for ease of exposition. The web appendix presents separate results for each study.

Perceived Objectivity. Of 2,400 product pairs (three studies \times 200 participants \times four product pairs each), participants believed 1,207 (50%) were matters of taste and 869 (36%) were matters of quality. We exclude from analysis 324 pairs (14%) where participants selected “do not know.” Only 22 responses (<1%) indicated the unchosen option was better than the chosen option.

These differences in perceived objectivity were not solely due to shared beliefs that varied across product pairs. Some participants believed a product pair was a matter of quality, and other participants believed that same pair was a matter of taste. Of informed responses, the average minority response (the lesser of quality or taste responses) was substantial at 36%. As this value must lie between 0 and 50%, 36% signifies a meaningful level of disagreement. This varied somewhat across question wordings, from a low of 25% (study 1C) to a high of 40% (study 1B, personal preference wording). Figure 1 shows all study 1 results.

We used logistic regression to examine evidence of individual differences in perceived objectivity. We regressed perceived objectivity on wording fixed effects, allowing for product pair random effects. Adding subject random effects significantly improved fit of the model ($\chi^2(1) = 69.32, p < .001$), suggesting that individuals differ in their probability of believing product differences are matters of quality vs. taste (interquartile range of .24 to .56). To put this in context, the standard deviation of participant effects was 35% larger than the standard deviation of product pair effects, the typical basis for conceptualizing quality and taste. These product pairs are not particularly unusual, but sampling a different population could lead to different results.

Analysis Plan. Each analysis takes a response to one product pair by one participant as the unit of observation. We regressed preference strength, perceived consensus, willingness to pay, fair price (in study 1C only), and self-referencing on perceived objectivity (0 = taste, 1 = quality).

We control for preference strength (for measures other than preference strength) and perceived consensus (for measures other than preference strength and perceived consensus) to test for the unique contribution of perceived objectivity. To ensure we do not merely capture effects of product pair or chosen option, we include product pair and chosen option fixed effects. Because each participant has multiple observations, we allow for random participant intercepts via the lme4 and lmerTest packages in R (Bates et al. 2015; Kuznetsova, Brockhoff, and Christensen 2016). Results and inference are robust to alternative specifications. In the web appendix, we present results of analyses allowing for varying effects across categories.

Because the models include product pair and chosen option fixed effects, perceived objectivity coefficients represent average within-pair effects; that is, these coefficients do not merely contrast product pairs that tend to be classified as matters of quality against those that tend to be classified as matters of taste. Degrees of freedom use Satterthwaite approximations.

Preference Strength. Preference strength increased with perceived objectivity ($b = 1.12, SE = 0.07, t(2034) = 15.92, p < .001$). Participants’ preferences were about one point stronger on a seven-point scale for matters of quality than for matters of taste.

Perceived Consensus. We analyzed consensus estimates on a 0–100 scale. Controlling for preference strength, perceived consensus increased with perceived objectivity ($b = 7.66, SE = 0.76, t(1993) = 10.04, p < .001$). Perceived consensus nearly equaled true consensus for matters of taste (raw $M = -0.66$) but exceeded it for matters of quality (raw $M = 5.83$). This reduced bias led to smaller absolute deviations for matters of taste (raw $M_{\text{Taste}} = 15.25$; raw $M_{\text{Quality}} = 17.34$).

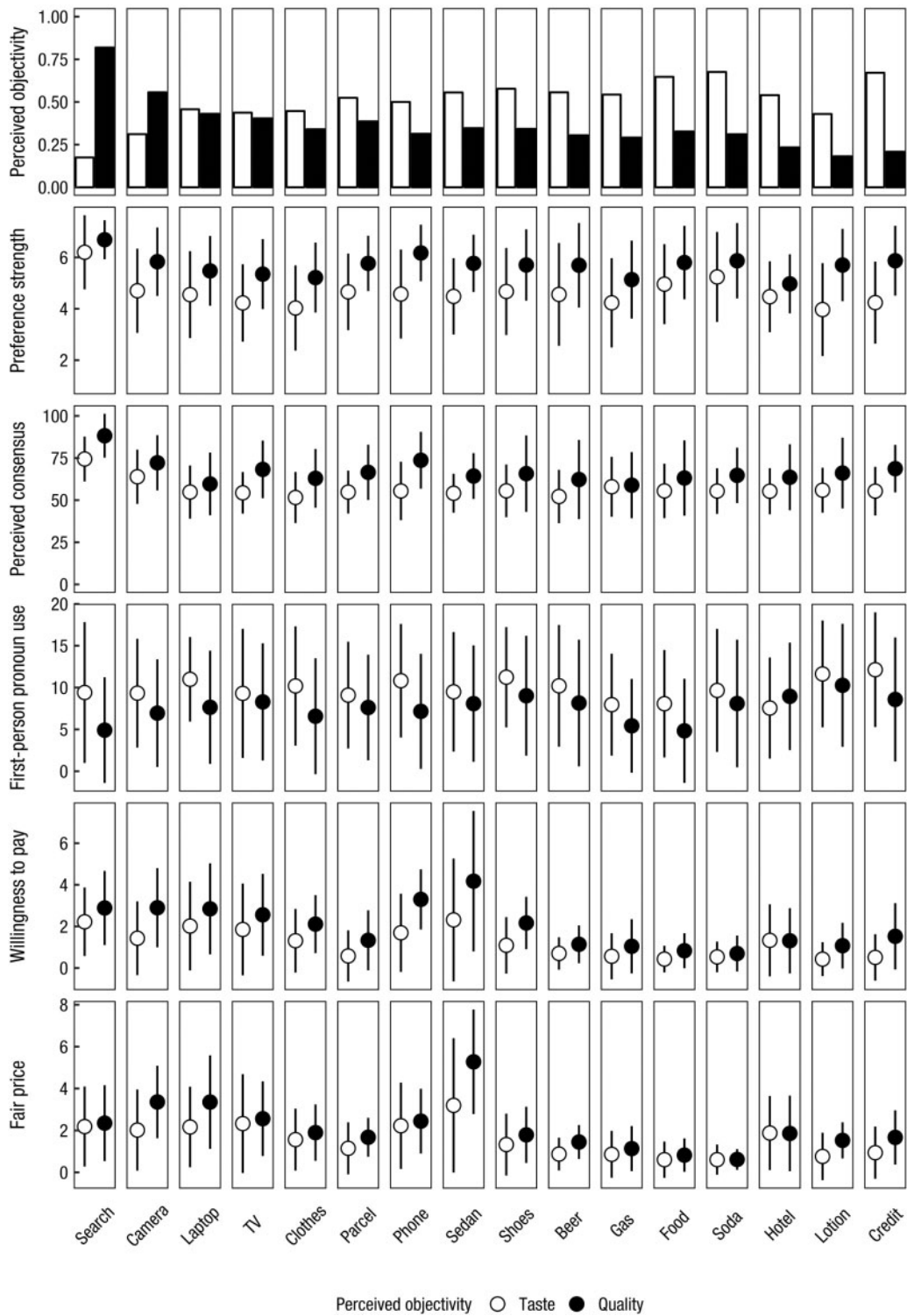
These differences in preference strength and perceived consensus are important in and of themselves. Because we propose perceived objectivity is distinct from preference strength and perceived consensus, we include them as controls in analyses below.

Willingness to Pay. Willingness to pay (WTP) had a positive skew, so we analyze the natural log of (WTP + 1). Controlling for preference strength and perceived consensus, willingness to pay increased with perceived objectivity ($b = 0.45, SE = 0.08, t(2030) = 5.59, p < .001$). By converting the estimated values of WTP for matters of quality and matters of taste into raw dollars, we estimate participants were willing to pay 56% more to trade the unchosen option for the chosen option when it was a matter of quality rather than a matter of taste. This provides support for hypothesis 1.

Fair Price. In study 1C (though neither 1A nor 1B), participants reported fair prices. Like willingness to pay, fair price had a positive skew, so we analyze the natural

FIGURE 1

STUDY 1 RESULTS BY PERCEIVED OBJECTIVITY FOR EACH PRODUCT PAIR



NOTE.—Means are not adjusted for covariates. Bars in top panel show proportion of responses corresponding to the indicated belief. They do not sum to 1 due to excluded “do not know” responses. Error bars represent one standard deviation. Willingness to pay and fair price are in log-dollars after we added 1 to account for zeros. Fair prices were only measured in study 1C.

log of (Fair Price + 1). Controlling for preference strength and perceived consensus, fair price increased with perceived objectivity ($b = 0.41$, $SE = 0.14$, $t(622) = 2.86$, $p = .004$). By again converting the estimated values of WTP for matters of quality and matters of taste into raw dollars, we estimate participants reported fair prices for the trade that were 50% higher when the set of products was a matter of quality rather than taste. We conducted a mediation analysis using Monte Carlo simulated confidence intervals (Selig and Preacher 2008). Fair price differences accounted for willingness-to-pay differences. The indirect effect of perceived objectivity on willingness to pay via fair prices was 0.20 (a 23% increase) with a 95% CI of [0.06, 0.35], leaving a direct effect of 0.16 ($SE = 0.14$, $t(655) = 1.18$, $p = .237$).¹

Self-References. We operationalized self-references via use of first-person singular pronouns in explanations. We measured explanation length (in words) and percentage of words that were first-person singular pronouns using LIWC2007 (Pennebaker, Booth, and Francis 2007). Controlling for preference strength and perceived consensus, explanation length did not vary by perceived objectivity ($b = 0.16$, $SE = 0.39$, $t(1804) = 0.41$, $p = .685$). Controlling for preference strength and perceived consensus, self-references as a percentage of total words decreased by nearly two percentage points with perceived objectivity ($b = -1.88$, $SE = 0.34$, $t(2035) = -5.52$, $p < .001$), providing support for hypothesis 2.

Discussion

Traditional marketing and economic models assume product differentiation is a property of the marketplace. These results suggest that characterization misses important differences across consumers in perceived objectivity. In our first three studies, we find consumers hold different beliefs about the same sets of products. These beliefs correlate with important consumer behaviors. Consumers choosing from sets they believe are matters of quality (vs. taste) are willing to pay more for their preferred option (hypothesis 1). Moreover, consumers incorporate these beliefs into their reasoning processes. Consumers self-reference more when explaining choices that are matters of taste than when explaining choices that are matters of quality (hypothesis 2). Each of these findings holds when we control for product pair, choice, preference strength, and perceived consensus. These differences imply differences in self-product connectedness and reactions to different pricing policies.

In the web appendix, we describe two studies with additional measures of perceived objectivity. In study W1,

participants placed points on a two-dimensional map to show differences in quality and fit between cars. In study W2, participants gave continuous ratings of each pairwise combination of three different hotels. These hotels' attributes were structured such that two of them dominated a third, but each on a different attribute. Thus by traditional definitions, two hotels were differentiated by taste from each other and differentiated by quality from the third. Both studies offered extensive descriptions of how perceived objectivity differs from preference strength and used continuous measures of perceived objectivity. The results of both studies support those of studies 1A through 1C.

STUDIES 2A, 2B

In studies 1A through 1C, perceived objectivity correlated with willingness to pay and self-referencing. Studies 2A and 2B manipulated perceived objectivity, holding product attributes and perceived consensus constant. We hypothesized that perceived objectivity affects fair prices. Because cost structure can also influence fair prices (Bolton et al. 2003; Kahneman et al. 1986), we hold costs constant while varying perceived objectivity. If perceived objectivity's effect on fair prices were just due to inferred costs, holding costs constant would eliminate the effect. In study 2A, consumers did not explain their choices, reducing the likelihood that justifying choices to a third party drives the effect. Studies 2A and 2B use very similar methods, so we present them together.

Method

We recruited participants from Amazon Mechanical Turk for studies 2A ($N = 124$; no demographics recorded) and 2B ($N = 203$; 99 women; median age = 32). They were randomly assigned to one of two differentiation conditions (quality, taste). We first describe details for study 2A and then the differences in study 2B.

All participants read a scenario about an olive oil producer, Olivia's Olive Oil, that produces two olive oils: Full Olivia (FO) and Subtle Olivia (SO). Everything other than perceived objectivity was held constant across conditions. This included product names, attributes (FO: low acidity, intense flavor; SO: higher acidity, subtle flavor), popularity (65 of 100 tasters chose FO over SO), and cost inputs (half of each harvest went to FO, the other half went to SO, and all olives were processed in the same way). The only difference was whether the scenario described the products as a matter of quality or taste throughout (e.g., "After each harvest, the olives are divided into two different groups depending on the [quality / taste] of the olive oil that they are expected to produce"). Appendix B presents the full scenarios.

Next, participants indicated which olive oil they would choose if offered one for free. They were then given the range of olive oil prices at relevant retailers (\$5 to \$20 for

¹ The direct and indirect effects do not sum to the total effect reported earlier because the mediation analysis is based on study 1C data only.

a 16.9 fl oz bottle) and reported willingness to pay and a fair price for each olive oil on sliders ranging from \$0 to \$20. We counterbalanced order of willingness to pay and fair price. On a new screen, participants completed a manipulation check. They indicated whether it was a fact that one olive oil was better than the other or the difference was a matter of personal preference.

There were six changes in study 2B: (1) we elicited open-ended explanations to examine self-references; (2) we tested whether the manipulation affected preference strength; (3) we crossed the differentiation factor with a second factor including or excluding an explicit note that costs for the two olive oils were equal (see appendix B); (4) all participants reported willingness to pay before fair prices; (5) before participants classified the products as a matter of quality or taste, they reported agreement with each perceived objectivity statements on a six-point scale (1 = Strongly Disagree; 6 = Strongly Agree); and (6) we measured sex and age.

Results

Neither order (study 2A) nor cost information (study 2B) significantly moderated any effect, so we exclude them from analyses for clarity. Including them does not meaningfully change any inference. Results were substantively and significantly consistent across studies 2A and 2B, so we collapse the results for exposition. A small number of missing values reduced some degrees of freedom. Analyses of self-references, preference strength, and continuous perceived objectivity measures use study 2B data only.

The manipulation was effective. Compared to participants in the taste condition, those in the quality condition were more likely to report that FO was better (36% vs. 13%; $\chi^2(1) = 22.96, p < .001$). Both conditions were equally unlikely to report that SO was better (2% vs. 3%; $\chi^2(1) = 0.12, p > .7$). The continuous measures in study 2B were consistent. Most participants in both conditions chose FO, consistent with its description as the most popular choice (87% vs. 13%). Choice proportion did not depend on differentiation ($\chi^2(1) = 0.92, p = .337$).

The differentiation manipulation did not affect preference strength ($t(201) = 1.12, p = .262$). The manipulation neither substantively nor significantly strengthened preferences, but rather caused participants to attribute their preference to a different source.

For each participant, we computed the difference between the fair price for FO and the fair price for SO. We also computed the corresponding difference between willingness to pay for FO and willingness to pay for SO. Positive numbers represent higher values for FO than SO. Participants reported values on bounded sliders, so

differences did not exhibit strong skews. All analyses use raw dollars.²

Compared to the taste condition, the quality condition induced a greater difference in willingness to pay (\$2.80 vs. \$1.33; $t(320) = 5.15, p < .001$) and in fair price (\$2.69 vs. \$1.21; $t(321) = 6.12, p < .001$). This provides support for hypothesis 1. The effect of the manipulation on difference in fair price mediated the effect on difference in willingness to pay with an indirect path of \$1.06 (95% bootstrapped confidence interval: [\$0.64, \$1.53]; Hayes 2013). The residual direct effect of the manipulation on difference in willingness to pay was \$0.39 ($p = .102$).

In study 2B, participants provided open-ended explanations of their choices. We assessed self-references as in studies 1A through 1C; that is, we analyzed the percentage of words that were first-person singular pronouns. Length of explanation did not differ between the two conditions ($t(201) = -0.22, p = .827$), but self-references did. Explanations contained fewer self-references when participants faced the quality description than when they faced the taste description (5.95% vs. 9.35%; $t(201) = -3.84, p < .001$). This provides support for hypothesis 2.

Across the two studies, 43 participants chose SO. This allows us to examine differences in willingness to pay among participants who choose a less popular option that is described as being either inferior or different.³ Of the 25 participants who chose SO in the taste condition, 12 were willing to pay more for SO and six were willing to pay more for FO. On average, those 25 participants were willing to pay \$9.14 for SO and \$8.97 for FO ($t(318) = -0.34, p = .735$). Of the 18 participants who chose SO in the quality condition, only one was willing to pay more for SO, but 14 were willing to pay more for FO (the unchosen option). On average, those 18 participants were willing to pay \$7.46 for SO and \$9.20 for FO ($t(318) = 2.95, p = .003$). Among participants who chose SO, both the difference in WTP ($t(318) = 2.47, p = .014$) and the likelihood of being willing to pay more for FO than SO ($\chi^2(1) = 10.10, p = .001$) significantly varied between conditions. Participants facing the quality description were more likely to exhibit a choice versus willingness-to-pay preference reversal than those facing the taste description.

Discussion

In studies 1A through 1C, we find correlates of perceived objectivity for brands with rich representations. In studies 2A and 2B, we find causal effects of perceived objectivity for products in a controlled context. Product attributes, perceived consensus, and cost structure were each held constant. The study 2B manipulation affected perceived

2 Details on skewness across studies are reported in the web appendix.

3 Because of the relatively small number of participants who chose SO, the analyses in this paragraph require pooling across studies.

objectivity but did not affect preference strength. Perceived objectivity may correlate with preference strength, but its effect on willingness to pay and self-references is independent. These results were not the result of participants artificially justifying their choices, as study 2A elicited no explanation.

These findings align with Hsee's (1999) and Hsee et al.'s (2003) findings. Hsee (1999) found that people choose alternatives that provide greater value even if those alternatives lead to less expected enjoyment. People predicted enjoying a small heart-shaped chocolate more than a large cockroach-shaped chocolate, yet they chose the cockroach-shaped chocolate because it was larger. Hsee et al. (2003) found consumers choose options that perform better on objective dimensions even if they predict enjoying them less. In each case, they find a dissociation between choice and predicted enjoyment. We find a dissociation between willingness to pay and choice (see Amir et al. 2008 for related findings), but only for matters of quality. Participants who chose the lower-quality option were willing to pay more for the higher-quality one.

In our first five studies, we find consumers self-reference more when explaining choices between matters of taste. Such self-referencing may provide a metric to assess perceived objectivity in the wild. We test this possibility in study 3.

STUDY 3

In study 3, we examine the relationships among self-referencing, individual expert and consumer evaluations, and average expert and consumer evaluations. We use lack of self-references as a proxy for perceived objectivity. We use average expert evaluations as a measure of "true" quality. (In this study, unlike the others, we compare perceived quality with quality as determined by a panel of experts.) Our theoretical analysis of perceived objectivity implies two relationships. First, if experts assess quality, they each report on the same underlying construct, whereas if they assess taste they do not. As a result, their ratings should be consistent with one another when they are assessing quality but not necessarily when they are assessing taste. Second, if consumers assess quality, their ratings should be consistent with expert judgments. If they assess taste, their ratings need not be. We test these implications using a secondary dataset of movie reviews.

Method

We collected ratings and reviews of movies from an online aggregator. We collected one set of critic reviews and one set of consumer reviews. The full list of variables is listed in the web appendix. For critics, the key fields included the text of each review snippet, the review score on a scale from 0 to 100, the critic name, and the movie title. These data included 120,352 movie review snippets by 1,852 critics of 5,045 movies. Snippets are not full reviews, but rather brief quotes with

a median length of 24 words pulled from reviews. Some critics appeared under multiple names (e.g., with minor typos); we equate these names to reach the number above. For consumers, the key fields included the full text of each review, the review score on a scale from 0 to 10, a user identifier, and the movie title. These data included 75,692 movie reviews by 21,306 consumers of 3,821 movies. For each critic review snippet and each consumer review, we measured the percentage of words that were first-person singular pronouns. This serves as our measure of self-referencing and a proxy for (low) perceived objectivity.

Results

Critic Analysis. Snippets were much more likely to include first-person singular pronouns if the movie title included them (23% if in title vs. 5% if not). This suggests many of those cases were likely references to the title rather than the self. We excluded all reviews of movies with a first-person singular pronoun in the title. This results in a final sample of 116,703 reviews covering 4,884 movies by 1,832 critics. This exclusion did not meaningfully affect the results.

For each review, we calculated the absolute deviation of that critic's rating from the average rating of other critics for that movie. If movies differ in quality and a critic assesses quality, that critic will show small deviations from other critics. But if a critic assesses taste (as indicated by self-referencing), that critic will show large deviations from other critics.

We regressed absolute deviation of each rating from the other critics' average score on self-referencing. We allowed for correlated random intercepts and slopes by movie and critic (via the lme4 and lmerTest packages in R; Bates et al. 2015; Kuznetsova et al. 2016). Degrees of freedom use Satterthwaite adjustments.

The estimated average absolute deviation increases with critics' self-references ($b = 0.30$, $SE = 0.03$, $t(105) = 8.65$, $p < .001$). This corresponds to an average absolute deviation of 13.15 when there are no self-references and 14.66 when 5% of the words are self-references (the approximate average among snippets that contained self-references), or an increase of 11%. This is robust to a variety of alternative analysis approaches. The variance of the random slope suggests the sign of the effect is positive for 70% of movies and 95% of critics. The more critics self-referenced, the less their reviews matched the average assessment of movie quality.

Consumer Analysis. As with critics, consumer reviews were more likely to include first-person singular pronouns if the movie title included them (75% vs. 65%), so we exclude such movies. We also excluded movies that had only a single consumer review, as there was no average user rating by other users for comparison. This results in a final sample of 73,229

reviews covering 3,007 movies by 20,897 consumers. Results are robust to these and other analytic decisions.

Replicating the critic analysis, we find that absolute consumer deviation from the average consumer increased with self-references ($b = .047$, $SE = .003$, $t(975) = 15.55$, $p < .001$). This corresponds to an average absolute deviation of 2.53 when there are no self-references and 2.70 when 3.5% of the words are self-references (approximately the average among reviews with self-references), or an increase of 6.5% (note consumer ratings range from 0 to 10). As with critics, the random slopes indicated this held broadly across movies (85%) and consumers (80%).

There are at least two reasons this pattern might hold among consumers. First, consumers may self-reference when explaining their deviation from the consumer consensus. Second, consumers may self-reference when explaining preferences rather than quality. We expect the latter; that is, controlling for average scores of other consumers, we expect consumers will be less consistent with average critic scores when they use more self-references. To test this, we regress consumer scores on average scores of other consumers, average critic scores, self-references, the interaction between self-references and average scores of other consumers, and the interaction between self-references and average critic scores. We rescaled average critic scores by dividing by 10 so that critic and consumer scores both range from 0 to 10. We allow for correlated random intercepts and slopes on average critic scores and average scores of other consumers by consumer. Results are robust to this and a variety of other analytic decisions.

When there were no self-references, the estimated coefficient on average consumer score was 0.75 ($SE = 0.02$, $t(5407) = 49.68$, $p < .001$), and the estimated coefficient on average critic score was 0.13 ($SE = 0.02$, $t(9193) = 8.84$, $p < .001$). The key finding is that as self-referencing increased, the coefficient on average critic score decreased ($b = -0.041$, $SE = 0.003$, $t(47998) = -13.62$, $p < .001$), and the coefficient on average consumer score increased ($b = 0.025$, $SE = .003$, $t(39569) = 8.09$, $p < .001$).⁴ For example, when 3.5% of words were self-references, the estimated coefficient on average consumer score was 0.84 ($SE = 0.01$, $t(4205) = 64.17$, $p < .001$), and the estimated coefficient on average critic score was -0.01 ($SE = 0.01$, $t(6795) = -0.79$, $p = .429$).⁵

These results indicate that consumers and critics are more consistent with average critic evaluations when they

explain their evaluations without self-referencing. When self-referencing, consumers do not merely express deviance from the consumer consensus, but rather express a personal preference that deviates from quality.

Discussion

These data are correlational, but we also tested four alternative interpretations of the movie critic analysis, none of which can explain these results. These results are not fully explained by: (1) the aggregator assigning scores based on self-references; (2) the aggregator selecting snippets from reviews based on the deviation; (3) less reliable critics using more self-referential language; or (4) critics justifying deviant scores via self-references. We address these accounts in the web appendix.

This analysis of movie reviews integrates with research by Holbrook and Addis (2007) on good taste. Holbrook and Addis examined the relationships among expert judgment (expert assessments of quality), ordinary evaluation (consumer assessments of quality), and popular appeal (consumer liking). For movies, they find a strong correspondence between expert judgment and ordinary evaluation and a weaker one between ordinary evaluation and popular appeal. Placing their findings in the current framework, the appeal to an individual consumer could be due to perceived quality or idiosyncratic fit.

In our first six studies, we find evidence of the presence, correlates, and consequences of discrepant beliefs. In studies 1A through 1C, the perceived objectivity of pairs of well-known brands varied across consumers. Perceived objectivity correlated with self-references and willingness to pay. In studies 2A and 2B, depicting a product pair as a matter of quality (vs. taste) increased differential willingness to pay for the more popular option and decreased self-referencing. It did so holding perceived consensus constant and without affecting preference strength. In study 3, we found that self-referencing, here a proxy for low perceived objectivity, helped account for deviant evaluations in a natural language dataset.

These studies rule out two alternative interpretations of what our perceived objectivity measure may have meant to participants. First, perceived objectivity was not just interpreted as a strong preference. Goodwin and Darley (2008, 2012) found strength of agreement predicted perceived objectivity of moral beliefs. In our data, perceived objectivity correlated with preference strength, but all results in studies 1A through 1C held controlling for preference strength, and preference strength did not predict self-referencing, whereas perceived objectivity explained unique variance. Moreover, the manipulation in study 2B did not affect preference strength.

In study 1C, participants completed two measures of how they interpret factual measures of quality. Open-ended

4 This positive coefficient on the self-reference \times average consumer score interaction seems at odds with the analysis reported earlier regarding absolute deviation. This latter analysis controls for average critic score; when average critic score is excluded as a control, the self-reference \times average consumer score coefficient is negative.

5 The coefficient on average critic score is negative even at moderate levels of self-referencing. This is largely due to consumers who left a single review. Among consumers with at least two reviews, the coefficient on critics is substantially larger; the key interaction with self-references is consistent across both groups.

responses reflected a factual understanding of claiming it is a fact that one brand is better than another. Of 200 participants, however, only 93 indicated that one of the statements “It is a fact that A is better than B” or “It is a fact that B is better than A” must be wrong. This measure did not interact with perceived objectivity for any of the dependent variables (p 's $> .4$). All results substantively replicated using the subset of participants who said one claim must be wrong.⁶ This indicates the main findings were not due to a misinterpretation of our perceived objectivity measure. The finding that some consumers do not believe conflicting facts are mutually exclusive is of interest for future research.

Second, perceived objectivity did not just mean that other consumers would choose the same option. Perceived objectivity correlated with perceived consensus, but all results in studies 1A through 1C held when we controlled for perceived consensus. We held perceived consensus constant in studies 2A and 2B. Although these findings are not accounted for by perceived consensus, perceptions of preference dispersion can be important as well because they affect the interpretation of other consumers' ratings (He and Bond 2015).

Three key findings are worth emphasizing. First, for each of a wide variety of product pairs, perceived objectivity varies across consumers. Discrepant beliefs are not held by a negligible minority or about a single ambiguous product pair, but instead by more than a third of the sample on average. For any given set of products, not only do consumers disagree about which option is best, but they also disagree about whether it is possible for one to be best. While these discrepancies are widespread, we did not sample extreme cases like chocolate versus vanilla ice cream or sterile versus nonsterile bandages. In these cases there may be near-universal agreement that they are matters of taste (ice cream) or quality (bandages), respectively.

Second, this distinction is not just an artificial classification imposed by the researchers. It relates to underlying differences in the way consumers reason about their choices (further explored in subsequent studies). Language use is an unobtrusive measure, and it varies with perceived objectivity. Consumers' classifications are not just incidental labels; instead, they represent fundamental differences in consumers' mental representations.

Third, perceived objectivity varied by product pair (as shown in the top panel of figure 1). Pricier utilitarian categories were somewhat more likely to be believed to be matters of quality and cheaper hedonic categories to be matters of taste. Though not the focus of our investigation, perceived objectivity for a given product pair is important for marketers. Differences across sets may

correspond to differences in willingness to pay and self-referencing.

PERCEIVED OBJECTIVITY AND REASONING ABOUT OTHERS' CHOICES

When a consumer is reasoning about matters of quality, there is a single product ranking; other consumers are largely incidental. When a consumer is reasoning about matters of taste, other consumers are integral. Thus far, that difference has manifested in consumers' use of self-references. Our last four studies test the bidirectional relationship between perceived objectivity and reasoning about others' choices. Studies 4 and 5 test whether reasoning through others' choices of incompatible options affects perceived objectivity (hypothesis 3). This process suggests one avenue by which consumers may learn about matters of quality and taste. Studies 6A and 6B test how inferences depend on perceived objectivity (hypothesis 4). Thus far, we have assessed perceived objectivity for individual product pairs; in studies 5, 6A, and 6B we assess it for sets of products.

STUDY 4

Method

Study 4 ($N = 200$ recruited from Amazon Mechanical Turk; 92 women, median age of 30) was nearly identical to study 1A; that is, participants made four choices, one from each of four brand pairs selected at random from a set of 16 pairs. For each one, they provided an explanation and reported perceived objectivity (in addition to reporting willingness to pay, preference strength, and perceived consensus). The difference was that participants did not explain their own choices in the explanation task. Instead, participants were randomly assigned to one of two conditions. In the *consistent* condition, participants explained the choice of a participant who made the same choice as they did. In the *inconsistent* condition, participants explained the choice of a participant who made a different choice. Participants saw no information about the other participant other than choice and matched gender. Participants reported gender at the beginning of the study to allow use of matched gender pronouns to enhance similarity.

Results

We analyzed perceived objectivity of the four product pairs as a function of the explanation manipulation. The manipulation was between participants, so we analyzed beliefs at the participant level. Our dependent variable was the difference between the number of matters of quality and the number of matters of taste. This value ranged from -4 (0

⁶ The effect on WTP became only marginally significant because of the larger standard error due to reduced sample size.

matters of quality, 4 matters of taste) to +4 (4 matters of quality, 0 matters of taste). The number of quality and taste beliefs did not have to sum to 4, due to the presence of “do not know” responses. We regressed the perceived objectivity score on condition (0 = consistent, 1 = inconsistent) and product pair fixed effects; allowing random effects of condition across product pairs does not change any inference. Perceived objectivity was lower in the inconsistent condition than in the consistent condition ($b = -0.96$, $SE = 0.37$, $t(183) = -2.62$, $p = .010$). This provides support for hypothesis 3. Participants in the consistent condition reported 1.81 ($SD = 1.35$) matters of quality and 1.80 ($SD = 1.27$) matters of taste. Participants in the inconsistent condition reported 1.44 ($SD = 1.26$) matters of quality and 2.19 ($SD = 1.21$) matters of taste. The web appendix presents analyses of willingness to pay and language use.

Perceived objectivity is sensitive to consumers' reasoning processes. Participants in previous studies knew their chosen options were not unanimous choices: less than 2% of estimates across studies 1A through 1C indicated unanimity. Nonetheless, participants did not view all product pairs as matters of taste. Consumers must not merely be aware of such differences, but also consider them in such a way that they reflect on others' preferences.

STUDY 5

In study 5 we again test the effects of reconciling inconsistent choices. Participants faced choices made by multiple other consumers. One can readily make sense of an intransitive set of choices across well-informed consumers by believing the set of products is a matter of taste, but not as readily by believing the set of products is a matter of quality. We manipulated interpersonal transitivity, holding constant consensus information about the target products.

Method

Participants from Amazon Mechanical Turk ($N = 100$; 64 women, median age of 33) were randomly assigned to one of two transitivity conditions (transitive, intransitive). Participants read four search engine choices, each by a different consumer facing a different two-option choice set. The search engines were each labeled by a number, and no additional information about them was provided. As represented schematically in table 1, participants read that Alexis chose search engine 1 from {1, 2}, Benjamin chose 2 from {2, 3}, Christine chose 3 from {3, 4}, and Dennis chose either 1 from {1, 4} (in the transitive condition) or 4 from {1, 4} (in the intransitive condition). In the transitive condition, Dennis's choice permitted a single ranking of all alternatives. In the intransitive condition, it prevented a single ranking of all alternatives. Participants read each choice but did not see the schematic representation.

On the same screen, participants chose from the set {2, 3} and indicated whether 2 was better than 3, 3 was better than 2, or the difference was a matter of personal preference. No information about search engine 2 or 3 varied between conditions: in each condition, 2 and 3 were each chosen once and rejected once. Only Dennis's choice between 1 and 4 varied between conditions, and the key belief was about the relationship between 2 and 3.

Results

We analyzed perceived objectivity as a function of transitivity using multinomial logistic regression with personal preference as the reference category. Transitive choice sets were more likely to induce the belief that 2 was better than 3 ($z = 2.24$, $p = .025$); see table 2. There was no effect on the belief that 3 was better than 2 ($z = 1.10$, $p = .273$). Together, these results support hypothesis 3. Processing sets of inconsistent choices across consumers decreases perceived objectivity.

STUDIES 6A, 6B

In studies 4 and 5, making sense of inconsistent choices decreased perceived objectivity. Studies 6A and 6B built on study 5 to examine the converse relationship between inconsistent choices and perceived objectivity. How do predictions based on others' choices vary depending on perceived objectivity? If others' choices are among matters of quality, their choices should be transitive across consumers. If others' choices are among matters of taste, they need not be. Within an individual, choices should remain transitive whether they are among matters of quality or taste (Regenwetter, Dana, and Davis-Stober 2011). Testing this implication ensures that perceived objectivity is not just a proxy for the ability to make transitive inferences.

In these studies we assessed perceived objectivity at the category level rather than the product pair level. Just as individual pairs may be matters of quality or taste, so may product categories. Unlike previous studies, participants made these assessments without choosing from among the presented options, ruling out the possibility that choice justification drives our results.

Method

We recruited participants from Amazon Mechanical Turk for these studies (study 6A: $N = 400$; 144 women, median age of 27; study 6B: $N = 200$; 92 women, median age of 29). The two studies were similar; we first describe study 6A and then the changes in study 6B. In study 6A, we collected data in two rounds of 200 participants each. We made the decision to collect the second 200 after analyzing the first 200. These rounds were identical with one exception. In the first round, participants made predictions before reporting perceived

TABLE 1
REPRESENTATION OF CHOICES DESCRIBED TO PARTICIPANTS IN STUDY 5

	Search engine 1	Search engine 2	Search engine 3	Search engine 4
Alexis	Selected	Rejected	—	—
Benjamin	—	Selected	Rejected	—
Christine	—	—	Selected	Rejected
(Transitive) Dennis	Selected	—	—	Rejected
(Intransitive) Dennis	Rejected	—	—	Selected

NOTE.—Alternatives labeled “—” were not included in the choice set (e.g., Alexis chose search engine 1 from the set {1, 2}).

objectivity. In the second round, participants reported perceived objectivity before making predictions.

Participants were randomly assigned to one of two set conditions (interpersonal, intrapersonal). They read about two choices between search engines and made a prediction. In the interpersonal condition, Alexis chose search engine D from the set {D, E} and Benjamin chose E from {E, F}. These choices are analogous to the first two rows of table 1. Participants predicted what Christine would choose from {D, F}: D (a transitive prediction), F (an intransitive prediction), or equally likely to pick either (no prediction). In the intrapersonal condition, Christine chose D from {D, E} and E from {E, F}. Participants then predicted what Christine would choose from {D, F}; the text mentioned neither Alexis nor Benjamin. Participants also reported whether they believed a choice among search engines was a matter of objective quality or personal preference. In this study, we assessed belief at the category level rather than the product pair level. Participants reported sex, age, and ethnicity at the end.

There were four changes in study 6B. (1) We excluded the intrapersonal choices condition to focus on the interpersonal comparison. (2) The order of the perceived objectivity measure and prediction task was counterbalanced. (3) The perceived objectivity measure paralleled the measure in study 1C (e.g., “It is a fact that Google’s search engine is better than Yahoo!’s search engine”). Rather than assessing the focal products or the full category, we assessed beliefs about two other products in the category. If the category is a matter of quality or taste, both the brands used to assess perceived objectivity as well as those that others choose among should reflect it. (4) Participants reported whether two mutually exclusive factual claims could both be right, as in study 1C.

Results

We analyzed the data in each study via multinomial logistic regression, with no prediction as the reference category. In neither study did task order qualify any finding, so we exclude it for ease of exposition. In study 6A, the analysis included set (1 = interpersonal, -1 = intrapersonal), perceived objectivity (1 = quality, -1 = taste), and their interaction. For transitive predictions, there was no main effect of perceived objectivity ($z = 1.11, p = .267$), but there was a main effect of set ($z =$

TABLE 2

STUDY 5 BELIEFS AS A FUNCTION OF CHOICE SET

	2 is better than 3	3 is better than 2	Personal preference
Transitive (Dennis chose 1)	10 (19.6%)	3 (5.9%)	38 (74.5%)
Intransitive (Dennis chose 4)	2 (4.1%)	1 (2.0%)	46 (93.9%)

NOTE.—Cells present *ns* (row %).

$-5.82, p < .001$) that was qualified by a significant set \times perceived objectivity interaction ($z = 2.32, p = .020$); see table 3. When the set was intrapersonal, transitive predictions did not vary with perceived objectivity ($z = -0.77, p = .440$). When the set was interpersonal, participants were more likely to make transitive predictions when they believed the domain was a matter of quality rather than a matter of taste ($z = 2.76, p = .006$). There were no effects on intransitive predictions (p 's $> .1$).

Study 6B excluded the intrapersonal set. The simple effect for the interpersonal set replicated. Transitive predictions were more likely when participants believed the domain was a matter of quality rather than a matter of taste ($z = 2.13, p = .033$). There was no difference for intransitive predictions ($z = 1.18, p = .238$). As in study 1C, less than half of the sample (38%) believed that contradictory facts were not mutually exclusive, but those beliefs did not moderate the relationship between perceived objectivity and predictions. Table 3 shows cell counts.

In support of hypothesis 4, the likelihood of making transitive inferences based on multiple consumers’ choices increases with perceived objectivity. The likelihood of making transitive inferences based on a single consumer’s choices does not. In this case, the context allowed participants to assume others’ choices were well informed. We expect this pattern may not extend to cases in which others’ choices run a high risk of being mistaken.

GENERAL DISCUSSION

Multiple paradigms across multiple sets of products suggest consumers hold discrepant beliefs about matters of quality and taste. These beliefs are meaningful: they affect

TABLE 3
STUDY 6A AND 6B RESULTS

Study 6A			
Intrapersonal choices	Transitive inference	No inference	Intransitive inference
Taste	103 (83.7%)	15 (12.2%)	5 (4.1%)
Quality	65 (82.3%)	13 (16.5%)	1 (1.3%)
Interpersonal choices	Transitive inference	No inference	Intransitive inference
Taste	48 (37.8%)	59 (46.5%)	20 (15.7%)
Quality	44 (62.0%)	22 (31.0%)	5 (7.0%)
Study 6B			
Interpersonal choices	Transitive inference	No inference	Intransitive inference
Taste	36 (30.8%)	70 (59.8%)	11 (9.4%)
Quality	36 (43.9%)	36 (43.9%)	10 (12.2%)

NOTE.—Cells report *ns* (row %).

consumer willingness to pay and consumer reasoning. We next discuss extensions and limitations and conclude with implications for future research.

Extensions and Limitations

Related Constructs. As noted in our theoretical development and supported empirically throughout, perceived objectivity is distinct from preference strength and perceived consensus. Perceived objectivity also relates to, but is distinct from, attitude correctness and belief superiority. Attitude correctness refers to the extent to which one believes one's attitude about an issue is the correct one (Petrocelli, Tormala, and Rucker 2007); belief superiority is the belief that one's own belief is better than alternatives (Toner et al. 2013). Whereas perceived objectivity refers to the structure of a set of options, attitude correctness and belief superiority refer to attitudes and beliefs about particular targets. To take one example, in studies 6A and 6B, consumers believed the differences between products were matters of quality or taste, despite having essentially no information about the individual products. We conjecture that perceived objectivity may set the groundwork for attitude correctness and belief superiority. For example, some students may believe that the differences among domestic colleges are matters of quality. They may then hold that same belief about the differences among foreign colleges, even though they may not have an attitude, believed to be correct or not, toward any specific foreign college. As students develop attitudes toward those previously unknown options, those attitudes may be more likely to be seen as correct or superior if the domain is believed to be a matter of quality.

Limitations. As an initial examination of consumer beliefs about quality and taste, this research provides insight into the potential impact of these beliefs, but it is also

important to note its limitations. Given that we find differences across product pairs, our results regarding the degree of divergence depend on the sample of product comparisons examined. Had we examined industrial products or flavors of ice cream, we might have observed less divergence. Similarly, our findings regarding the role of self-referencing in movie reviews are suggestive, but reflect correlational evidence of one set of reviews in one product category. Much as those results may depend on the sample of products chosen, the transitive inferences in studies 6A and 6B may depend on the perceived expertise of the consumers who participants read about. Posing choices by naïve consumers against choices by acknowledged experts may allow testing of quality-driven transitive inferences even in the presence of consumer preference heterogeneity.

Our measures of perceived objectivity, self-referencing, and willingness to pay are useful, but there may be better alternatives. Throughout, we primarily relied on explicit classification of perceived objectivity, with the exceptions of the mapping exercise in study W1 and use of self-referencing as a proxy in study 3. While these explicit self-reports are evidently useful, they may not always effectively capture situations beyond the simplified cases we examined. For example, they may have greater difficulty capturing individual benefits (rather than alternatives) or sets of more than two alternatives. Further study of measures of perceived objectivity may yield approaches with broader applicability. Similarly, we use self-referencing as a proxy for perceived objectivity in study 3. It is evident that this is a major distinguishing mark of explanations of taste and quality, but it is likely not the only major distinguishing mark. Lastly, our measures of willingness to pay and choice were hypothetical. While we know of no reason to expect hypotheticality to interact with perceived objectivity to affect differences in willingness to pay, testing

TABLE 4
EXAMPLE OF OBJECTIVITY IN VALUES AND WEIGHTS

Consumer 1 allows for little variance in values or weights			
	Weight	Value of car A	Value of car B
Control	1 (range from 0 to 2)	1 (range from 0 to 2)	9 (range from 8 to 10)
Convenience	9 (range from 8 to 10)	9 (range from 8 to 10)	1 (range from 0 to 2)
Overall		82 (range from 64 to 104)	18 (range from 0 to 40)
Consumer 2 allows for little variance in values, but greater variance in weights			
	Weight	Value of car A	Value of car B
Control	1 (range from 0 to 6)	1 (range from 0 to 2)	9 (range from 8 to 10)
Convenience	9 (range from 4 to 10)	9 (range from 8 to 10)	1 (range from 0 to 2)
Overall		82 (range from 32 to 112)	18 (range from 0 to 80)
Consumer 3 allows for little variance in weights, but greater variance in values			
	Weight	Value of car A	Value of car B
Control	1 (range from 0 to 2)	1 (range from 0 to 6)	9 (range from 4 to 10)
Convenience	9 (range from 8 to 10)	9 (range from 4 to 10)	1 (range from 0 to 2)
Overall		82 (range from 32 to 112)	18 (range from 0 to 80)

these effects with real choices and payment may extend the applicability.

Multiple Levels of Analysis. Throughout, we have compared perceived objectivity at the level of product pairs (as in studies 1A–1C, 2A, 2B, and 4) or categories (as in studies 6A and 6B). We posit that the assessment of a category is likely a function of its constituent pairs. Whether a set of products is a matter of quality likely depends on the set of consumption contexts and the perceived superiority of one option over another in each context. Such differences may originate in the perceived objectivity of individual attributes or benefits. If consumers believe all attributes are matters of quality and one alternative is better on all attributes, they will likely believe the dominating alternative is objectively better (see study W2 in the web appendix). Even in the presence of tradeoffs, we posit that consumers may believe one option is objectively better than another. Consider the stylized example below.

Three consumers are choosing between two cars, A and B. These cars are identical except A has automatic transmission and B has manual transmission. Automatic transmission grants less control but greater convenience than manual. Each consumer prefers control to lack of control and convenience to lack of convenience and puts much more weight on convenience than control, so each prefers A to B. Table 4 lists their beliefs about the benefits of each car (on a scale from 0 to 10) and the weights on each benefit (on a scale from 0 to 10). It also lists the ranges of each value that each consumer believes may be used by a reasonable consumer.

Consumer 1’s ranges of reasonable weights and values are each sufficiently narrow that Consumer 1 believes A is better than B: the lowest reasonable evaluation of A is greater than the highest reasonable evaluation of B. In contrast, Consumers 2 and 3 each have overlapping reasonable evaluations of A and B for different reasons: Consumer 2 allows more variation in reasonable weights and Consumer 3 allows more variation in reasonable values. This illustrates how perceived objectivity may be multiply determined and that discrepant beliefs may persist for a single attribute, particularly when that attribute conveys multiple benefits.

We found in studies 1A through 1C that individuals show at least as much, if not more, dispersion in perceived objectivity than do the product pairs we tested. Given that the same strength of preference is associated with greater willingness to pay when product differences are believed to be matters of quality rather than taste, this suggests individual differences in perceived objectivity may serve as a useful basis for customer segmentation. This set of conjectures is ripe for future research.

Implications for Future Research

Self-Referencing. As study 3 suggested, self-references in product reviews, social media, and customer interactions may provide insight into perceived objectivity in cases where perceived objectivity cannot be measured directly. Future research may examine the extent to which consumers react to these signals of perceived objectivity. People believe online medical advisors are more expert

when they use fewer self-references, even though self-referencing was not a diagnostic cue in that context (Toma and D'Angelo 2014). Beyond our within-pair analyses, cross-pair analyses of self-referencing may reveal differences in perceived objectivity.

Throughout, we have focused on self-referencing in matters of taste resulting from the fit between preferences and alternatives. Given that self-referencing occurs more for matters of taste than quality, there may be additional behavioral and cognitive consequences. West et al. (2004) find that self-referencing about artwork leads to greater choice-share. Self-referencing can enhance persuasion by elaboration of product information (Burnkrant and Unnava 1995; Escalas 2007) or by positive affect and narrative transportation (Escalas 2007; Sujan et al. 1993). This suggests that focusing on matters of taste may enhance persuasion, but its effect will depend on whether it takes a narrative or analytical structure. Consumers tend to remember self-referenced information better due to both elaboration and organization (Rogers et al. 1977; Symons and Johnson 1997), which suggests that information about matters of taste may be better remembered than information about matters of quality because of its connection to the self.

Naïve Realism. People believe that they see the world as it is and that other reasonable people see the world the same way (Pronin et al. 2004; Ross and Ward 1996). There are two ways these principles could extend to product evaluations. First, people may believe their own evaluations reflect the way the world is, so they project those evaluations onto others, no matter the source. Second, people may believe their own assessments of objectivity reflect the way the world is. In this case, they project their evaluations onto others if the domain is a matter of quality but not if it is a matter of taste. Our data support the second extension. The results from studies 1A through 1C suggest consumers perceive greater consensus when they face matters of quality rather than matters of taste. Consumers are less likely to project their evaluations onto others when they believe those evaluations are due to taste (Orhun and Urminsky 2013).

Uniform Pricing. A persistent question in product-line pricing is why different product versions facing different demand sell at the same price (Chen and Cui 2013; Orbach and Einav 2007). Two candidate explanations are costs in setting menus of prices (Levy et al. 1997) and perceived fairness (Chen and Cui 2013). Chen and Cui (2013) find that uniform pricing across variants can be the optimal strategy when firms face consumers who care about fairness. The current findings help to explain when deviations from uniform prices are palatable to consumers. If consumers believe product composition differences are quality differences, they are more likely to believe nonuniform pricing is fair (as in studies 2A and 2B). In contrast, if

consumers believe those same differences are taste differences, they are more likely to believe nonuniform pricing is unfair. If such beliefs vary across segments, some segments may support deviations from uniform pricing more than others.

Perceived objectivity may be a strategic tool for product positioning. Quality beliefs may benefit leading brands offered at premium prices, whereas taste beliefs may benefit value brands offered at cheaper prices. Moreover, there are implications for a single firm's product mix. Draganska and Jain (2006) find consumers are willing to pay more for preferred product variants in a different product line than for preferred flavors in the same product line. They conjecture: "When it is better to have a different price for certain flavors, firms introduce them as a new product line (e.g., exotic flavors)" (172). Our findings add support to that conjecture. Moreover, whereas nonuniform pricing can lead consumers to fixate on price, uniform pricing encourages them to choose the best match for taste goods, increasing consumption (Bertini and Wathieu 2010), and dense pricing continua can increase the weight consumers place on quality, increasing the willingness-to-pay gradient (Bertini, Wathieu, and Iyengar 2012).

We proposed two complementary paths by which perceived objectivity can lead to greater differences in fair prices and thereby differences in willingness to pay. First, higher quality supports higher fair prices, so if a given difference is attributed to quality, it supports a greater difference in fair price than if it is attributed to taste. Second, matters of taste are more likely to evoke comparisons to other consumers. We find evidence consistent with an effect of perceived objectivity on willingness to pay via fair prices, but we do not disentangle these two paths. Future research on these processes may find distinct implications for uniform pricing, comparisons to other consumers, and additional moderators.

Belief Updating. We have argued that other consumers are largely incidental when one is reasoning about matters of quality but integral when one is reasoning about matters of taste. Research on social comparison theory (Festinger 1954) suggests a boundary condition to this claim. People seeking information about domains of objectivity versus subjectivity seek advice from dissimilar others (Gorenflo and Crano 1989), update evaluations based on assessments by dissimilar others (Goethals and Nelson 1973), and examine consensus information (Olson et al. 1983). This suggests that in cases where perceived objectivity is established but the relative standing of different options is unknown or uncertain, others can inform these beliefs. Whereas that research has largely focused on relative standing given perceived objectivity, our research indicates that reasoning about others'

choices can also inform perceived objectivity itself (studies 4 and 5).

For unambiguously factual domains, confrontation with incompatible facts may lead to acceptance, no change, or even a backfire effect such that the original belief is reinforced (Lewandowsky et al. 2012; Nyhan and Reifler 2010). Such updating may similarly occur for consumers facing inconsistent choices. In study 4, explaining incompatible choices increased the share of individuals who reported the choice was a matter of taste, but it may also have polarized beliefs among those who believed it was a matter of quality. Consumers who hold the belief as a foundational part of their worldview may dig their heels in and exhibit a backfire effect rather than come to believe the choice is a matter of taste.

Delegated Decisions. Consumers not only make choices for themselves, but also rely on others to make choices for them. They defer medical decisions to doctors' recommendations, rely on real estate agents when purchasing property, and leave financial management to advisors. The willingness to delegate decisions to others likely depends on perceived objectivity. For matters of quality, domain expertise should matter and be beneficial. For matters of taste, insight into the consumer's preferences may be more important.

Decisions in a Group Context. In many situations, consumer outcomes result from their own decisions as well as those of others. In first-price auctions, beliefs about others' values affect bidders' bids. If they believe they value an option because it is high quality rather than because it matches their tastes, they may increase their bids accordingly.

Others' behavior is informative, but not always equally so. When consumers have noisy signals about the correct choice, they can rely on others' behaviors, leading to rational herding (Banerjee 1992; Bikhchandani, Hirshleifer, and Welch 1992). Consumers facing matters of quality may believe others' choices are more diagnostic and thus be more likely to follow the herd (Tucker and Zhang 2011), even if identity motives are not at stake (Berger and Heath 2007). When experts' and consumers' choices diverge, consumers may be more likely to follow experts for matters of quality, but other consumers for matters of taste (study 3).

Conclusion. The distinction between quality and taste is a fundamental part of consumer life. Yet it is usually assumed to be observable as part of the world rather than embedded within an individual consumer's beliefs. In this work, we find different consumers hold divergent beliefs about whether the same sets of products are matters of quality or taste. These beliefs correlate with and cause differences in willingness to pay and self-referencing. Reasoning about others' choices shape these beliefs, and

consumers who hold different beliefs about a set of products reason differently about others' choices. This research opens the door for future research on antecedents of these beliefs and a diverse set of potential consequences, including bidding, delegated decisions, herding, and uniform pricing.

DATA COLLECTION INFORMATION

Data for all studies, with the exception of the secondary data in study 3, were collected online via Qualtrics survey software, drawing participants from Amazon Mechanical Turk between March 2013 and February 2016. Both authors jointly designed and analyzed studies 1A, 1B, 4, W1, and W2. The first author designed and analyzed studies 1C, 2A, 2B, 3, 5, 6A, and 6B.

Appendix A: Sample Materials for Study 1C

CHOICE

For each of the products below, please specify which brand you would rather use. In making these choices, please assume that there is no price difference between the two options, even though in the marketplace you might pay different prices for the different brands.

All else equal, I would rather drink a bottle of _____.

Coca-Cola

Pepsi

PREFERENCE STRENGTH

You said that you would rather drink a bottle of [chosen option] instead of a bottle of [unchosen option]. How strong is your preference?

Very weak (1) to Very strong (7)

EXPLANATION

You said that you would rather drink a bottle of [chosen option] instead of a bottle of [unchosen option]. Please use the space below to give 1 to 2 reasons why you made the choice that you did.

[Open-ended text box]

PERCEIVED OBJECTIVITY

You said that you would rather drink a bottle of [chosen option] instead of a bottle of [unchosen option]. Which of the following statements best describes the comparison between Coca-Cola and Pepsi?

It is a fact that Coca-Cola is better than Pepsi.

It is a fact that Pepsi is better than Coca-Cola.

It is not a fact that either one is better, it is a matter of personal preference.

I do not know enough about Coca-Cola and Pepsi to judge.

[The wording of these response options varied across studies as described in the text.]

WTP

Now suppose that you were purchasing soda at the grocery store. The store was giving away two 12-packs, one of Coca-Cola and one of Pepsi. You were selected to receive the 12-pack of [unchosen option]. How much, if anything, would you be willing to pay to trade and get the [chosen option] instead?

\$ _____

FAIR PRICE [Study 1C only]

Earlier you imagined that you were purchasing soda at the grocery store. The store was giving away two 12-packs, one of Coca-Cola and one of Pepsi. You were selected to receive the 12-pack of [unchosen option]. What, if anything, would be a fair price for the grocery store to charge you to trade and get the [chosen option] instead?

\$ _____

PERCEIVED CONSENSUS [In studies 1A and 1B, this item appeared before WTP]

You said that you would rather drink a bottle of [chosen option] instead of a bottle of [unchosen option]. If 100 people took this same survey, how many do you think would choose the same option as you?

[Slider labeled "People making the same choice" from 0 to 100.]

FACT DEFINITION [Study 1C Only]

Earlier you responded to statements like the one below:

"It is a fact that Brand A is better than Brand B."

In your own words, what does that statement mean?

[Open-ended text box]

Abby and Brad made choices between Brand A and Brand B. Abby chose Brand A. Brad chose Brand B. They each indicated which statement best describes the comparison between Brand A and Brand B.

Abby indicated that "It is a fact that Brand A is better than Brand B."

Brad indicated that "It is a fact that Brand B is better than Brand A."

Which of the following statements best describes the comparison between Abby's and Brad's responses?

Abby and Brad could both be right.

At least one of them must be wrong.

Appendix B: Materials for Studies 2A and 2B

[**Bold terms in brackets were presented to participants in the quality condition.** *Italicized terms in brackets were presented to participants in the taste condition.* These terms were not emphasized for participants. In the text participants saw, the terms Olivia's Olive Oil, Full Olivia, and Subtle Olivia were each bolded to ensure the target product was salient, but we unbold those terms for clarity below].

Olivia's Olive Oil grows olives and produces local olive oil in California.

After each harvest, the olives are divided into two different groups depending on the [**quality/taste**] of the olive oil that they are expected to produce. Every harvest provides a range of [**qualities/tastes**], but from each harvest half of the olives are used to produce Full Olivia and half of the olives are used to produce Subtle Olivia. The olives for both oils are processed in the same way. The [**quality / taste**] differences between the resulting oils are due to the olives themselves.

One half of each harvest's olives goes towards [**the higher quality/one**] olive oil, Full Olivia. Full Olivia has a very low acidity rate (under 1%) and an intense flavor revealing some fruitiness.

The other half of each harvest's olives goes towards the [**lower quality/other**] olive oil, Subtle Olivia. Subtle Olivia has a slightly higher acidity level (1 to 2%) and a more subtle flavor.

[The paragraph below was presented only in the study 2B Cost Information condition.]

Because every harvest is divided in half and the olives are processed in the same way, it costs Olivia's Olive Oil the same amount to produce a bottle of Full Olivia as it does to produce a bottle of Subtle Olivia.

In a taste test by 100 grocery shoppers, 65 [**correctly**] indicated that Full Olivia was [**the better/their preferred**] olive oil and selected a bottle of Full Olivia as their free gift. 35 [**incorrectly**] indicated that Subtle Olivia was [**the better/their preferred**] olive oil and selected a bottle of Subtle Olivia as their free gift.

CHOICE

If you were given the choice of a free 16.9 fl oz bottle of **Full Olivia** or a free 16.9 fl oz bottle of **Subtle Olivia**, which one would you choose?

Full Olivia

Subtle Olivia

PREFERENCE STRENGTH [Study 2B only]

How strong is your preference for the olive oil you chose?

Very weak (1) to Very strong (7)

EXPLANATION [Study 2B only]

Please use the space below to give 1 or 2 reasons why you chose the olive oil that you did.

[Open-ended text box]

WILLINGNESS TO PAY

In upscale grocery stores in which **Olivia's Olive Oil** sells its olive oil, prices in the olive oil aisle for a 16.9 fl oz bottle range from a little more than \$5.00 for the store brand to just under \$20.00 for trendy high-end imports.

What is the **most that you would be willing to pay** for a 16.9 fl oz bottle of **Full Olivia** at an upscale grocery store?

Slider from \$0 to \$20

[Repeated for **Subtle Olivia**]

FAIR PRICE [In study 2A, order of Willingness to Pay and Fair Price were counterbalanced]

What would be a **fair price** for a 16.9 fl oz bottle of **Full Olivia** at an upscale grocery store?

Slider from \$0 to \$20

[Repeated for **Subtle Olivia**]

PERCEIVED OBJECTIVITY

[Study 2B only] To what extent do you agree or disagree with each statement below regarding the comparison between **Full Olivia** and **Subtle Olivia**?

6-point scale from *Strongly Disagree* to *Strongly Agree*
for each of the three items listed below

Now suppose you could only choose one statement to describe the comparison between **Full Olivia** and **Subtle Olivia**.

[Studies 2A and 2B] Which of the following statements best describes the comparison between **Full Olivia** and **Subtle Olivia**?

*It is a fact that **Full Olivia** is better than **Subtle Olivia**.*

*It is a fact that **Subtle Olivia** is better than **Full Olivia**.*

It is not a fact that either one is better, it is a matter of personal preference.

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