

Does Company Size Shape Product Quality Inferences? Larger Companies Make Better High-Tech Products, but Smaller Companies Make Better Low-Tech Products

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Abstract

Companies vary on oft-publicized size metrics (number of employees, revenue). Do consumers prefer otherwise identical products made by larger or smaller companies? The answer hinges on whether consumers perceive the products as low-tech or high-tech. This prediction stems from a novel framework charting two lay theories regarding key resources companies utilize to provide value to consumers: employees and finances. In the intrinsic motivation lay theory, consumers believe that employees of larger (vs. smaller) companies are less intrinsically motivated. In the financial resources lay theory, consumers believe that larger (vs. smaller) companies have greater capacity to fund research and development. Critically, product type (low-tech vs. high-tech) differentially affects the accessibility of these two lay theories: For low-tech (vs. high-tech) products, the intrinsic motivation lay theory is more accessible, driving quality evaluations and choice in favor of smaller companies. For high-tech (vs. low-tech) products, the financial resources lay theory is more accessible, driving quality evaluations and choice in favor of larger companies. This research advances theory by reconciling conflicting findings regarding product quality inferences from company size metrics, with guidance for marketers to improve quality evaluations and choice shares by strategically supporting or challenging lay theories and shifting perceptions of company size or product type.

Keywords

company size, quality evaluations, intrinsic motivation, financial resources, lay theories, low-tech products, high-tech products, inferences

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Product quality evaluations are a primary determinant of consumers' purchase decisions (Spiller and Belogolova 2017; Zeithaml 1988). Yet, consumers often struggle to evaluate product quality and instead rely on salient but imperfect cues in the marketplace (Aaker 1991; Gneezy, Gneezy, and Lauga 2014; Hoch and Deighton 1989; Janiszewski and Van Osselaer 2000). One salient cue involves company size metrics (i.e., number of employees and revenue; Ardito and Dangelico 2018; DelVecchio, Deeter-Schmelz, and Anselmi 2013; Hung et al. 2005; Lennon and Harris 2002; Paharia et al. 2011; Sung, Lim, and Lee 2022; Thompson and Arsel 2004; Yang and Aggarwal 2019). Indeed, we scraped website data from a set of randomly selected *Fortune* 500 companies, and 95% mentioned the company's size (number of employees and/or revenue; Web Appendix A, Pilot Data A). Companies highlight their size in marketing communications as well as on their websites (Web Appendix B). Unsurprisingly, most consumers are at least sometimes aware of company sizes when

making purchase decisions (81%; Web Appendix A, Pilot Data B).

What product quality inferences do consumers draw from company size metrics? To date, there is no clear consensus in the literature (Table 1). A larger size positively predicts quality evaluations in some cases (e.g., Morgan 1993; Trinca, Duizer, and Keller 2022), but at other times, the relationship reverses (e.g., Boscarino 1988; Chaudhuri et al. 2018; Paharia, Avery, and Keinan 2014). We investigated the practical relevance of this question by surveying marketing

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Table I. Examples of Findings from the Literature Examining the Relationship Between Company Size and Quality Evaluations.

Authors	Perceived Product Type	Findings			Main Effect and Mechanism Underlying Quality Evaluations
		Smaller Company Size Predicts Higher Quality Evaluations	Larger Company Size Predicts Higher Quality Evaluations	No Relationship Between Company Size and Quality Evaluations	
This article	Low-tech versus high-tech (manipulated, see Web Appendix C Table WC1)	✓	✓	—	Perceived product type (low-tech vs. high-tech) differentially affects the accessibility of two lay theories regarding employees' intrinsic motivation (predicts a negative relationship between company size and product quality) and financial resources for funding R&D (predicts a positive relationship).
Boscarino (1988)	High-tech (see Web Appendix C Table WC2)	—	✓	—	In a correlational design, larger hospitals are perceived as providing higher-quality care. Does not focus on company size mechanism.
Chaudhuri et al. (2018)		—	✓	—	In a correlational design, larger automotive companies are perceived as producing higher-quality cars. Does not focus on company size mechanism.
Diamantopoulos and Siguaw (2015)		—	✓	—	In a correlational design, larger marketing research companies are perceived as producing higher-quality research. Does not focus on company size mechanism.
Kaufmann and Körte (2010)		—	✓	—	In a correlational design, larger companies in the manufacturing industry that produce products such as chemicals, rubber and plastics, industrial machinery, electronics, furniture, and motor vehicles and parts are perceived as producing higher-quality products. Does not focus on company size mechanism.
Paharia, Avery, and Keinan (2014)		—	✓	✓	In a pretest, larger (vs. smaller) brands are perceived as producing superior hospitals, security, airlines, infant formula, and medical devices. The authors find no effect of company size on the perceived quality of an automotive company. Does not focus on company size mechanism.
Viadiu, Fa, and Saizarbitoria (2002)		—	✓	—	In a correlational design, larger management consultancies are perceived as offering higher-quality services. Does not focus on company size mechanism.
Morgan (1993)	Low-tech (see Web Appendix C Table WC2)	✓	—	—	In a correlational design, larger restaurant chains are perceived as serving lower-quality food. Does not focus on company size mechanism.

(continued)

Table 1. (continued)

Authors	Perceived Product Type	Findings			Main Effect and Mechanism Underlying Quality Evaluations
		Smaller Company Size Predicts Higher Quality Evaluations	Larger Company Size Predicts Higher Quality Evaluations	No Relationship Between Company Size and Quality Evaluations	
Skinner (2007)		✓	—	—	In a correlational design, larger retailers (many of which were in unspecified industries) perceived themselves as producing lower-quality service outcomes. (This investigation examined retailers' perceptions of their output rather than consumers' perceptions of retailers' output.) Does not focus on company size mechanism.
Trinca, Duizer, and Keller (2022)		✓	—	—	In a correlational design, larger hospitals are perceived as providing lower-quality meal services. Does not focus on company size mechanism.

Notes: The investigations that found a positive relationship between company size and quality evaluations examined domains perceived as high-tech, whereas investigations that found the opposite examined domains perceived as low-tech (see Web Appendix C Table WC2). We do not include studies that only find no relationship between company size and quality evaluations (e.g., Yang and Aggarwal 2019). This table and the literature review tables in Web Appendices G and H report only the literature that measured respondents' evaluations of product quality or service quality, specifically. The current research focuses on quality evaluations, which are theoretically and empirically distinct from other constructs such as satisfaction (e.g., Cronin and Taylor 1992; Rust and Oliver 1994; Spreng and Mackoy 1996).

managers. We found that 80% believed it was important to understand how company size influences quality perceptions (Web Appendix A, Pilot Data C), yet 77% failed to intuit the interaction effect that we document between company size and product type (low-tech vs. high-tech) on perceived quality. As one manager put it, "I work in a small IT firm, so knowing how our perceived size influences our customers decision's [*sic*] would massively impact our marketing strategies, pricing, and approach to new/potential customers." Another manager speculated about the direction of the relationship but did not correctly intuit it: "I think [size] has a positive effect. ... If this happens to be an incorrect assumption, it would be useful to know so that we could assess our competitive position better." Few considered that product type (low-tech or high-tech) might determine the direction of the relationship between company size and perceived quality. Instead, most expected a strictly linear relationship (positive or negative).

Given this theoretical and practical impetus, we present a framework to explain why consumers believe that company size is positively related to product quality in some cases and negatively related in others. We propose that the direction of the relationship is influenced by the perceived product type: whether the product seems relatively low-tech or high-tech. Specifically, we propose that product type differentially affects the accessibility of two previously undocumented lay

theories regarding two key resources that companies utilize to provide value to consumers: employee resources and financial resources. Increased accessibility of the employee intrinsic motivation lay theory leads to a negative association between company size and product quality, whereas increased accessibility of the financial resources lay theory leads to a positive association.

Our primary theoretical contribution lies in building a novel framework that (1) reconciles conflicting findings (Table 1) regarding product quality inferences from company size metrics and (2) predicts when a larger size will (vs. will not) lead to more favorable evaluations from consumers. Previous research has examined the relationship between market share and quality evaluations (Hellofs and Jacobson 1999) and between company size and warmth versus competence perceptions (Yang and Aggarwal 2019). However, we are the first to triangulate the central role of perceived product type (low-tech vs. high-tech) in quality evaluations on the basis of company size. Our secondary theoretical contribution lies in documenting two novel lay theories that guide how consumers infer product quality from company size metrics.

This research answers calls for insight into how company size relates to consumers' product decisions (Web Appendix A, Pilot Data C) and offers guidance for how managers can strategically portray company size and product type to improve the perceived quality of their products and increase their choice

share. We first present our theoretical framework, predictions, and empirics before discussing contributions to the research on company size, product quality, and lay theories, as well as key recommendations for marketers.

Theoretical Framework

Lay theories are beliefs about causal relationships that consumers use to understand the world (Kramer et al. 2012; Labroo and Mukhopadhyay 2009). Lay theories can arise from numerous sources, including biased sampling of past experiences and media exposure (Haws, Reczek, and Sample 2017). At times, consumers may even hold opposing lay theories about the same construct (Deval et al. 2013). Consumers rely on a particular lay theory to make inferences only if the lay theory is activated and accessible (Higgins 1996) and if it seems appropriate and diagnostic (Billeter, Kalra, and Loewenstein 2011; Sackett et al. 2010; Zane, Smith, and Reczek 2020).

We propose two focal lay theories that consumers hold about company size. These two lay theories are particularly paramount in the face of company size metrics because they are directly embedded in the sources of value that consumers attune to when they consider a company's size: employee resources and financial resources (e.g., Paharia et al. 2011; Yang and Aggarwal 2019; see also Chi and Gursoy 2009; Dutta, Narasimhan, and Rajiv 1999; Fleming, Coffman, and Harter 2005; Gatignon and Xuereb 1997; Harrison 2020; Iansiti and West 1997; Loveman 1998). For this reason, we propose that when consumers encounter company size metrics, these lay theories readily come to mind relative to other potential lay theories. Indeed, a pilot with MBA students revealed that (1) most hold both lay theories and (2) most have either used both lay theories when judging product quality or believe others use these lay theories (Web Appendix A Pilot Data D). We detail these lay theories next.

Lay Theory Regarding Company Size and Employee Resources

The number of employees is a salient metric of company size (Paharia et al. 2011; Yang and Aggarwal 2019). When consumers think about employees, they spontaneously consider the employees' intrinsic motivation (Heath 1999; Ryan and Deci 2000), defined as the interest, enjoyment, and meaning employees derive from their work (McAuley, Duncan, and Tammen 1989). Notably, the evaluation of a person's intrinsic motivation relates to their perceived competence rather than warmth (Deci and Ryan 1985), such that consumers associate employees' intrinsic motivation with the creation of customer value (Fleming, Coffman, and Harter 2005; Harrison 2020; Loveman 1998). Employees who enjoy their work and feel that their work is inherently rewarding (i.e., intrinsically motivated employees) produce products that seem higher quality (Chi and Gursoy 2009). We thus propose that perceptions of employees' intrinsic motivation

underpin a central lay theory driving product quality evaluations and choice.

An intrinsic motivation lay theory could plausibly go in either direction: do consumers believe that employees at larger or smaller companies are more intrinsically motivated? One might expect employees at larger companies to seem more intrinsically motivated since larger companies may invest more to attract and retain competent employees who enjoy and are interested in their work. Larger companies may also have programs to cultivate employees' interest in and enjoyment of their work (as well as resources to publicize such programs to consumers). Indeed, many companies on *Fortune's* "100 Best Companies to Work For" list are larger companies (the top company in 2021 was Cisco, with 77,500 employees). Larger companies may also be more innovative (Hurst and Pugsley 2011), and employees may be intrinsically motivated by opportunities for innovation.

However, we propose that consumers believe the opposite: that employees at larger companies are *less* intrinsically motivated than employees at smaller companies. (Note that we are predicting a lay theory, not the objective state of employees' intrinsic motivation.) This lay theory may arise in part from observed covariation (Fisher 2003), wherein people infer that events that covary are causally related. Larger companies historically have offered higher pay and financial stability (Brown and Medoff 1989; Freeman 1981), which often negatively correlate with perceived intrinsic motivation (Deci, Benware, and Landy 1974). People may infer that employees would relinquish higher pay at a larger company to work at a smaller company only if doing so enabled the employees to pursue their intrinsic interests (e.g., as epitomized by stereotypes of the starving artist; Amabile et al. 1994; Sheldon and Corcoran 2019). Indeed, media reports regularly spotlight people who leave high-paying jobs at larger companies in pursuit of their interests (Baxter-Wright 2018; Johnson 2016; Matar 2013). Potentially as a result, employees at larger companies may be perceived as putting less "love" into their work, particularly for handmade products (Fuchs, Schreier, and Van Osselaer 2015).

Drawing on these literatures, we propose that consumers hold a lay theory that employees at larger companies are less intrinsically motivated than employees at smaller companies. We confirmed this intrinsic motivation lay theory in a preregistered pretest (Web Appendix C1; higher values indicate greater perceived intrinsic motivation; $M_{\text{larger}} = 4.05$, $SD = 1.26$; $M_{\text{smaller}} = 4.98$, $SD = 1.05$; $t(197) = 5.66$, $p < .001$, $d = .80$). Note that as with many lay theories, this lay theory might not actually be true objectively in some contexts. Indeed, in Supplemental Studies 1a and 1b, we provided participants with company size metrics and asked them to predict employees' intrinsic motivation. Participants held the lay theory in the direction we proposed, inferring a negative relationship between company size and intrinsic motivation, but an analysis of secondary data on objective intrinsic motivation (scraped from Indeed.com) revealed that employees at larger (vs. smaller) companies were no less intrinsically motivated (Web Appendix D). Thus, although the question of whether a lay theory is objectively true is not the focus

of our research, we find some evidence that the employee intrinsic motivation lay theory is not objectively true in at least two contexts (Supplemental Study 1a: 40 *Fortune* 500 companies from Bhattacharjee, Dana, and Baron [2017]; Supplemental Study 1b: 136 restaurant chains).

Finally, we expect perceptions of intrinsic motivation to affect perceptions of product quality because less intrinsically motivated people invest less effort in their work (Ryan and Deci 2000; Woolley and Fishbach 2017), and consumers believe that effort predicts quality (Kruger et al. 2004). Thus, we predict that increased accessibility of the intrinsic motivation lay theory leads consumers to infer that goods produced by larger (vs. smaller) companies are lower quality and decreases choice of products from larger companies.

Lay Theory Regarding Company Size and Financial Resources

We propose that consumers also hold a lay theory regarding financial resources, the other salient resource that consumers consider when presented with company size metrics (Paharia et al. 2011; Yang and Aggarwal 2019). Financial resources are critical for creating value for customers, particularly when such resources are devoted to funding research and development (R&D; Dutta, Narasimhan, and Rajiv 1999; Iansiti and West 1997). Indeed, the quality of many products is positively predicted by the amount invested in R&D (Cooper 1984; Gatignon and Xuereb 1997). We propose that consumers hold a lay theory that larger (vs. smaller) companies have increased capacity to fund R&D.

As with many lay theories (Haws, Reczek, and Sample 2017), this lay theory may be partly grounded in reality (there is often a positive relationship between company size and R&D expenditure, especially among top R&D spenders; Skillicorn 2018). The media often highlights massive R&D investments from larger companies (Cardenal 2016; Stadler, Helfat, and Verona 2021), and consumers may also personally encounter instances (e.g., on websites like Kickstarter) in which smaller companies are desperate for funds for R&D. We confirmed this financial resources lay theory in a preregistered pretest (Web Appendix C1; higher values indicate greater perceived capacity to fund costly R&D; $M_{\text{larger}} = 5.64$, $SD = 1.12$; $M_{\text{smaller}} = 2.88$, $SD = 1.40$; $t(197) = 15.37$, $p < .001$, $d = 2.18$). As detailed in the “General Discussion” section, this lay theory may reflect reality sometimes, but not always.

Finally, we expect perceptions of R&D spending capacity to affect perceptions of product quality because one main goal of R&D spending is to develop quality goods (Francis 1992; Murray 1987). Of course, the success of R&D performance is determined by more than financial resources, but consumers may still believe that large expenditures are an essential and primary determinant of R&D performance. Thus, we predict that increased accessibility of the financial resources lay theory leads consumers to infer that goods produced by larger (vs. smaller) companies are higher quality and increases choice of products from larger companies.

Product Type (Low-Tech vs. High-Tech) Drives Accessibility of the Two Lay Theories

We propose that consumers hold two lay theories regarding company size metrics, which drive opposite relationships between size and quality. When consumers hold multiple lay theories about the same construct, a cue that increases the accessibility of one lay theory increases that lay theory’s influence on preference and choice (Zane, Smith, and Reczek 2020). Consumers regularly consider whether products they encounter are low-tech or high-tech (Wood and Hoeffler 2013).¹ We propose that it is the perception of a product as relatively low-tech or high-tech that differentially affects accessibility of the two lay theories and thus determines the direction of the relationship between company size metrics and product quality evaluations. Specifically, when consumers encounter products that they perceive as low-tech (vs. high-tech), the accessibility of the intrinsic motivation lay theory decreases and the accessibility of the financial resources lay theory increases. This rationale is twofold.

First, high-tech products require technological sophistication, scientific know-how, and rapid innovation fueled by technological advances (Chang and Taylor 2016; Henard and Szymanski 2001; Tellis, Yin, and Niraj 2009), whereas low-tech products depend less on science and technology and undergo a slower rate of innovation (Lynn, Schnaars, and Skov 1999; Rubera and Kirca 2012). The quality of high-tech (vs. low-tech) products depends more on cutting-edge technology and advanced features (Francis 1992; Murray 1987). Thus, a company’s capacity to fund expensive R&D may be a more salient consideration for high-tech products than for low-tech products, increasing accessibility of the financial resources lay theory.

Second, for low-tech products, the relative absence of technological inputs may increase the salience of employee inputs. Many low-tech products are produced by one employee (Fuchs, Schreier, and Van Osselaer 2015), whereas high-tech products involve more specialization and compartmentalization (Lin 1992; Tippayawong et al. 2010). Thus, employee-related factors may be a more salient consideration for low-tech products than for high-tech products, increasing accessibility of the intrinsic motivation lay theory.

Overall, we suggest that when consumers evaluate products that seem low-tech (vs. high-tech), the intrinsic motivation lay theory is more accessible, leading consumers to infer that products created by larger companies are lower quality than similar products from smaller companies and decreasing choice share of low-tech products from larger companies. By contrast, when consumers evaluate products that seem high-tech (vs. low-tech), the financial resources lay theory is more accessible, leading consumers to infer that products created by larger companies are higher quality than similar products from smaller

¹ We focus on *perceptions* of product type (low-tech vs. high-tech) rather than objective classifications because, regardless of accuracy, consumers’ perceptions drive behavior (Glaser and Denhardt 2010; Hoffmann, Post, and Pennings 2015).

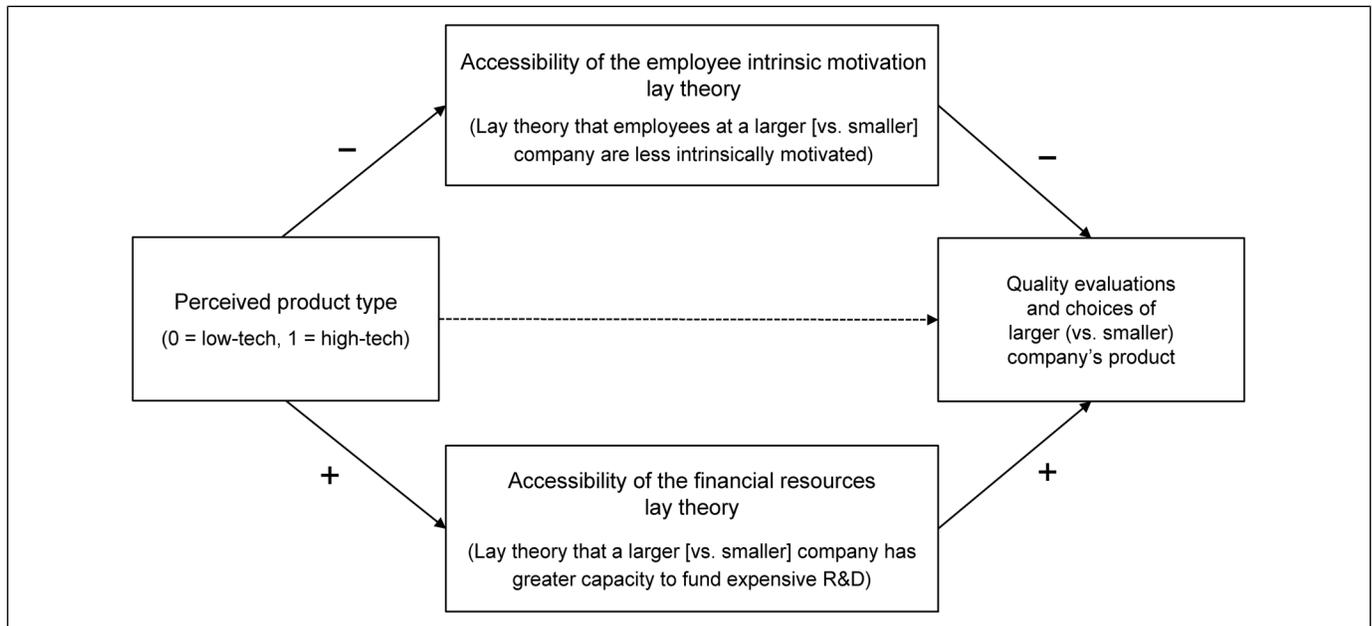


Figure 1. Conceptual Model of Proposed Lay Theories.

Notes: We propose that consumers hold two lay theories regarding how a company's size relates to its core resources: its employees (specifically, their intrinsic motivation) and its financial resources (specifically, financial resources available for costly R&D). Perceived product type (low-tech vs. high-tech) differentially affects the accessibility of the lay theories, which determines the direction of the effect of company size (larger vs. smaller) on quality evaluations and product choices.

companies and increasing choice of high-tech products from larger companies (see Figure 1).²

Research Overview

We focused primarily on midmarket, for-profit companies³ to test our predictions (Studies 2–6). This focus enabled a conservative test of our theorizing as we could alter perceptions of company size via framing while holding objective size constant. However, we first tested for an interaction between company size and product type on quality evaluations in an ecologically valid context, using secondary data on actual company size along with proxies for product type and quality evaluations (Study 1). Then, we experimentally tested the interaction across multiple product categories (Study 2).

We then investigated the proposed lay theories framework underlying this key interaction. We used a moderated mediation approach: evaluating low-tech (vs. high-tech) products

increased accessibility of the intrinsic motivation lay theory, whereas evaluating high-tech (vs. low-tech) products increased accessibility of the financial resources lay theory (Study 3). Then, we tested a pair of interventions that challenged each lay theory's diagnosticity (Studies 4a and 4b).

Finally, we confirmed that the phenomenon affects not only quality evaluations but also real product choices in incentive-compatible designs (Studies 5 and 6 and Supplemental Study 4). Importantly, we also replicated the effect while holding the product itself constant; we used a subtle framing manipulation to portray the same low-tech product as relatively high-tech and found a shift in choice share toward the larger company's product (Study 6). Table 2 summarizes the studies. We report pre-registrations, data, analysis code, and materials on OSF (<https://osf.io/vtfb2>) and power analysis details in Web Appendix E.

Study 1

Study 1 utilized secondary data to test our prediction that the relationship between company size and perceived quality varies by product type. As a proxy for perceived quality, we scraped Net Promoter Score (NPS) data for companies on the *Fortune* 500 list, and we scraped company size metrics (number of employees and revenue) from the *Fortune* website. We supplemented the secondary data with primary data on consumers' perceptions of product type at the industry level. We predicted an interaction between company size and industry type (low-tech vs. high-tech), such that a larger size would negatively predict NPS for low-tech industries but would positively predict NPS for high-tech industries.

² We employ a diversity of study designs to test this proposed conceptual model. In studies involving perceived product type as a factor (Studies 1, 2, 3, 5, and 6), whether we treat the product type (low-tech vs. high-tech) as the moderator or the independent variable (IV) depends on the outcome of interest: When quality evaluations are the outcome of interest, we treat the product type as the moderator and company size as the IV (analyses in Studies 1–3). When the accessibilities of the two lay theories are the outcome of interest, we treat the product type as the IV (parallel mediation analyses in Studies 3 and 5). When product choice (larger vs. smaller company) is the outcome of interest, we treat product type as the IV and company size is embedded in the choice outcome (Studies 5 and 6).

³ We test our theorizing in the context of for-profit firms (vs. nonprofits or for-profit social ventures; Lee, Bolton, and Winterich 2017) using a traditional business model (i.e., not a sharing economy; Costello and Reczek 2020).

Table 2. Overview of Studies.

Study^a	Sample	Dependent Variable	Independent Variable	Test Statistics
1	480 companies	Net Promoter Score	Product type × company size	$B = 1.90, SE = .52, t(476) = 3.67, p < .001$
2	601 MTurk participants	Quality evaluations	Low-tech High-tech	3.99 (1.21), n = 151 4.85 (1.15), n = 149 $F(1, 597) = 20.40, p < .001, \eta_p^2 = .03$ $F(1, 597) = 20.71, p < .001, \eta_p^2 = .03$
3	554 MTurk participants	Quality evaluations	Low-tech High-tech	4.84 (1.22), n = 142 4.39 (1.24), n = 134 $F(1, 550) = 15.01, p < .001, \eta_p^2 = .03$ $F(1, 550) = 18.82, p < .001, \eta_p^2 = .03$
4a	489 MTurk participants	Quality evaluations	Baseline Intervention	4.77 (1.05), n = 96 3.14 (1.26), n = 98 4.05 (1.42), n = 100 4.69 (1.17), n = 98 $t(484) = 4.35, p < .001, d = .58$ $t(484) = 9.73, p < .001, d = 1.41$
4b	512 MTurk participants	Quality evaluations	Baseline Intervention	4.18 (1.27), n = 104 4.58 (1.33), n = 104 $t(507) = 5.11, p < .001, d = .75$ $t(507) = 2.24, p = .026, d = .31$ $t(507) = 5.51, p < .001, d = .74$
5	191 MTurk participants	Choice of smaller (vs. larger) company's product	Low-Tech (n = 92) High-Tech (n = 99)	67.4% 34.3% $\chi^2(1, N = 191) = 20.83, p < .001, \phi = .33$
6	208 students	Choice of smaller (vs. larger) company's product	Low-Tech Frame (n = 102) High-Tech Frame (n = 106)	64.7% 46.2% $\chi^2(1, N = 208) = 7.18, p = .007, \phi = .19$
Supplemental Studies in Web Appendix D				
Sl a	40 firms	Employees' intrinsic motivation	Company size × judgment type (objective vs. subjective; repeated measure)	$B = -.05, SE = .02, t = -2.12, p = .034$
Sl b	136 chain restaurants			$B = -.02, SE = .01, t = -2.77, p = .006$

(continued)

Table 2. (continued)

Study ^a	Sample	Dependent Variable	Independent Variable		Test Statistics	
			Product Type	Smaller Company		Larger Company
S2	456 MTurk participants	Quality evaluations (multi-item)	Low-tech	4.75 (1.08), n = 115	4.45 (1.16), n = 112	F(1, 452) = 4.16, $p = .042$, $\eta_p^2 = .01$
			High-tech	4.57 (1.16), n = 114	5.03 (1.03), n = 115	
S3	437 MTurk participants	Quality evaluations of low-tech product	Smaller Company (n = 217)		Larger Company (n = 220)	t(435) = 5.00, $p < .001$, $d = .48$
			4.78 (1.10)		4.30 (.93)	
S4	164 MTurk participants	Choice of smaller (vs. larger) company's product	Low-Tech (n = 100)		High-Tech (n = 101)	$\chi^2(1, N = 164) = 14.63$, $p < .001$, $\phi = .30$
			68.5%		38.5%	

^aStudies 1, 2, 3, 4b, 5, 6, S2, and S4 were preregistered.

Notes: For all studies, we focus on the primary outcome variable. For continuous outcomes (i.e., quality evaluations), cell means are reported with standard deviations in parentheses. For binary outcomes (i.e., choice of products), we report the choice share of the smaller company's product. Studies 4a and 4b included a no-size control condition for exploratory purposes (Study 4a: $M_{\text{control}} = 4.44$, $SD = .86$, $n = 97$; Study 4b: $M_{\text{control}} = 4.22$, $SD = 1.11$, $n = 97$).

Method

We scraped NPS data of *Fortune* 500 companies. The NPS ranges from -100 to 100 and captures customers' willingness to recommend a company. We leveraged the NPS as a proxy for perceived quality, as it correlates with perceived quality (Busby et al. 2015; Triemstra, Menting, and Van den Berg 2021) and is widely used by marketers to gauge consumers' quality perceptions (Picoult 2021). NPS data were available for 480 companies on the *Fortune* 500 list.

To assess company size, we scraped each company's number of employees (median = 25,000; range: 55 to 2.2 million) and revenue (median = \$12.239 billion; range: \$5.190 billion to \$485.651 billion). We used these metrics because consumers often rely on them to determine company size (e.g., Paharia, Avery, and Keinan 2014; Yang and Aggarwal 2019), and substantial research assesses company size via these metrics (DeVecchio, Deeter-Schmelz, and Anselmi 2013; Hung et al. 2005; Lennon and Harris 2002; Sung, Lim, and Lee 2022). As preregistered (<https://aspredicted.org/eh7jq.pdf>), we standardized each metric and averaged them ($r = .68$). Data on company size and NPS were from 2015, the most recent year that our research team was able to access for free (from Customer Guru).

We supplemented these secondary data with consumers' perceptions of each company's industry (low-tech to high-tech). As preregistered, 240 MTurk workers ($M_{\text{age}} = 41.10$ years, $SD = 13.37$; 46.7% female) each evaluated a random subset of 20 companies from the total set of 480 companies. Participants viewed each company's name and industry and rated the industry on a seven-point scale (1 = "Low-tech," and 7 = "High-tech"). We averaged the ratings for each company to compute a continuous variable of industry type. For example, PetSmart and Dollar General were perceived as relatively low-tech (≤ 2), whereas Boeing and Microsoft were perceived as relatively high-tech (≥ 6).

Results

A regression of NPS on company size, industry type, and their interaction term revealed a significant interaction ($B = 1.90$, $SE = .52$, $t(476) = 3.67$, $p < .001$). A floodlight analysis (Spiller et al. 2013; Figure 2) supported our prediction that product type drives opposing relationships between company size and quality evaluations. For companies in relatively low-tech industries, a larger (vs. smaller) size was associated with significantly lower NPS; for companies in relatively high-tech industries, a larger (vs. smaller) size was associated with significantly greater NPS. As a robustness check, we confirmed that these results held in an additional analysis controlling for company age and type (business-to-consumer, business-to-business, or both; see Web Appendix F).

Discussion

Study 1 found that the relationship between company size and NPS is influenced by consumers' perception of the company's industry (from low-tech to high-tech). Companies in industries

that were perceived as relatively low-tech benefited from a smaller size, whereas companies in industries that were perceived as relatively high-tech benefited from a larger size.

We used *Fortune* 500 companies in Study 1 for two reasons: First, their NPS data (i.e., the quality proxy data) were readily available. Although other factors beyond perceived quality may contribute to the NPS, perceptions of quality are a primary driver (Busby et al. 2015; Triemstra, Menting, and Van den Berg 2021). Second, many of these companies are well known to consumers and are used in research assessing inferences that consumers draw from company size metrics (Bhattacharjee, Dana, and Baron 2017). Indeed, although these companies are relatively large, their sizes vary considerably. Overall, Study 1 thus offers two key benefits: (1) it tests our theory in the real world and (2) it examines a wide range of companies across diverse industries.

Study 2

Study 2 provides a causal test of our theorizing. Using a conservative manipulation of company size, we held objective size constant and altered perceived size by providing information about the size of competitors. We predicted an interaction between framed company size and product type (low-tech vs. high-tech): for low-tech products, we expected consumers to infer that larger (vs. smaller) companies produced lower-quality goods, but for high-tech products, we expected consumers to infer that larger (vs. smaller) companies produced higher-quality goods. We tested this prediction across multiple product categories.

Method

We preregistered this study (<https://aspredicted.org/94k5f.pdf>) and recruited 601 MTurk workers ($M_{\text{age}} = 39.43$ years, $SD = 11.94$; 45.9% female). Participants needed to pass an attention check to participate. We randomly assigned participants to a condition in a 2 (framed company size: smaller vs. larger; between-subjects) \times 2 (product type: low-tech vs. high-tech; between-subjects) \times 4 (product replicate: chair vs. blanket vs. soap vs. meat; within-subjects) mixed model design.

All participants evaluated four different products created by four different companies; product type and framed company size varied by condition. All participants learned that each company's founders "came from industry, are well resourced, and are favored to succeed in the market"; we included these details to ensure that our manipulation affected perceptions of company size rather than perceptions of the company as an underdog (Paharia, Avery, and Keinan 2014). Furthermore, participants read that the products were machine-made, ensuring that participants did not infer that the products were handmade (Fuchs, Schreier, and Van Osselaer 2015). All participants then evaluated the quality of four different products (product order counterbalanced). Participants in the low-tech condition viewed a standard chair, blanket, soap, and meat product, while participants in the high-tech condition viewed a robotic

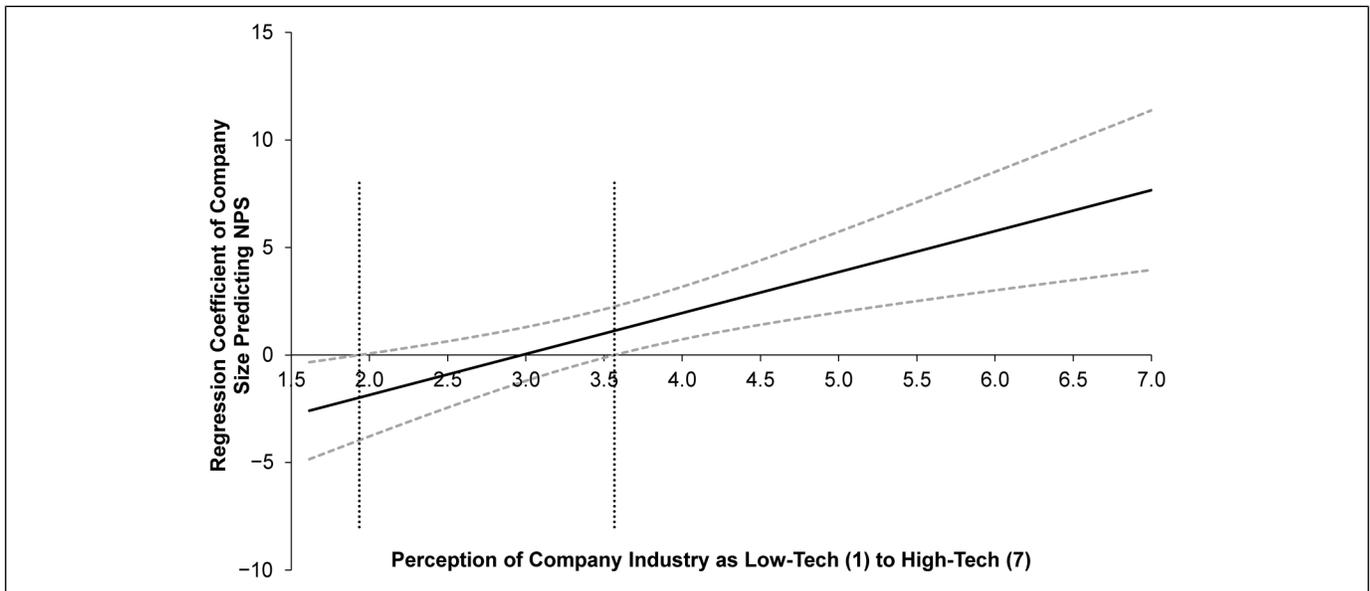


Figure 2. Regression Coefficient of Company Size as a Predictor of NPS for Company Industries Perceived as Low-Tech to High-Tech.

Notes: The solid line represents the estimated regression coefficient of company size as a predictor of NPS (i.e., the simple effect) across the continuum from perceived low-tech to perceived high-tech industries, with 95% confidence bands marked by gray dashed lines. The vertical dotted lines mark the Johnson–Neyman (JN) points at which the simple effect becomes significant (i.e., $p < .05$). Specifically, company size was negatively associated with NPS in industries that were perceived as relatively low-tech ($JN \leq 1.94$) but was positively associated with NPS in industries that were perceived as relatively high-tech ($JN \geq 3.57$). The range of the x-axis reflects the industry type score (averaged across participants' ratings at the company level), which ranged from 1.6 to 7.

wheelchair, a smart electric blanket, an infrared soap dispenser, and an artificial plant-based meat product.⁴

All participants learned that each product was produced by a different company with a unique name (stimuli in Web Appendix F), and they viewed company size information for the focal company and two of its competitors. For example, one of the products in the low-tech condition was a chair produced by FurnitureCo. Participants viewed FurnitureCo's number of employees (101) and revenue (\$1.2 million) alongside metrics for two other furniture companies of either larger or smaller sizes (adapted from Yang and Aggarwal [2019]). In the larger-frame condition, the two competitors had fewer employees and less revenue (competitor 1: five employees and \$59,000; competitor 2: four employees and \$48,000), making FurnitureCo appear larger by comparison. In the smaller-frame condition, the two competitors had more employees and more revenue (competitor 1: 2,550 employees and \$30 million; competitor 2: 2,040 employees and \$24.4 million), making FurnitureCo appear smaller by comparison.

After viewing each product and company information, participants evaluated the product's quality, for example, "Do you think that FurnitureCo's wooden chairs are of a lower or higher quality than wooden chairs made by other companies?" (1 = "Much lower quality," and 7 = "Much higher quality"; adapted from Ahire, Golhar, and Waller [1996] and Spiller

and Belogolova [2017]).⁵ After participants evaluated all four products, we included a manipulation check question to confirm that the size manipulation was successful (Web Appendix F).

Results

As preregistered, we averaged each participant's quality evaluations of the four products into a single index ($\alpha = .89$). As predicted, an analysis of variance (ANOVA) on the quality evaluation index revealed a significant company size \times product type interaction ($F(1, 597) = 41.11, p < .001, \eta_p^2 = .06$; Figure 3). Participants in the low-tech condition evaluated the products as lower quality in the larger (vs. smaller) frame condition ($M_{\text{larger}} = 3.99, SD = 1.21; M_{\text{smaller}} = 4.58, SD = 1.16; F(1, 597) = 20.40, p < .001, \eta_p^2 = .03$), whereas participants in the high-tech condition evaluated the products as higher quality in the larger (vs. smaller) frame condition ($M_{\text{larger}} = 4.85, SD = 1.15; M_{\text{smaller}} = 4.25, SD = 1.05; F(1, 597) = 20.71, p < .001, \eta_p^2 = .03$).

Discussion

Study 2 replicated the interaction observed in Study 1 using a controlled experiment: Consumers inferred that larger (vs. smaller) companies produced lower-quality low-tech products but higher-quality high-tech products. The interaction

⁴ In Studies 2–5 and Supplemental Study 4, pretests confirmed that each product in the low-tech condition was perceived as low-tech, and each product in the high-tech condition was perceived as high-tech (Web Appendix C2).

⁵ We replicated the interaction effect using a multi-item quality evaluation scale in Supplemental Study 2 (see Web Appendix D).

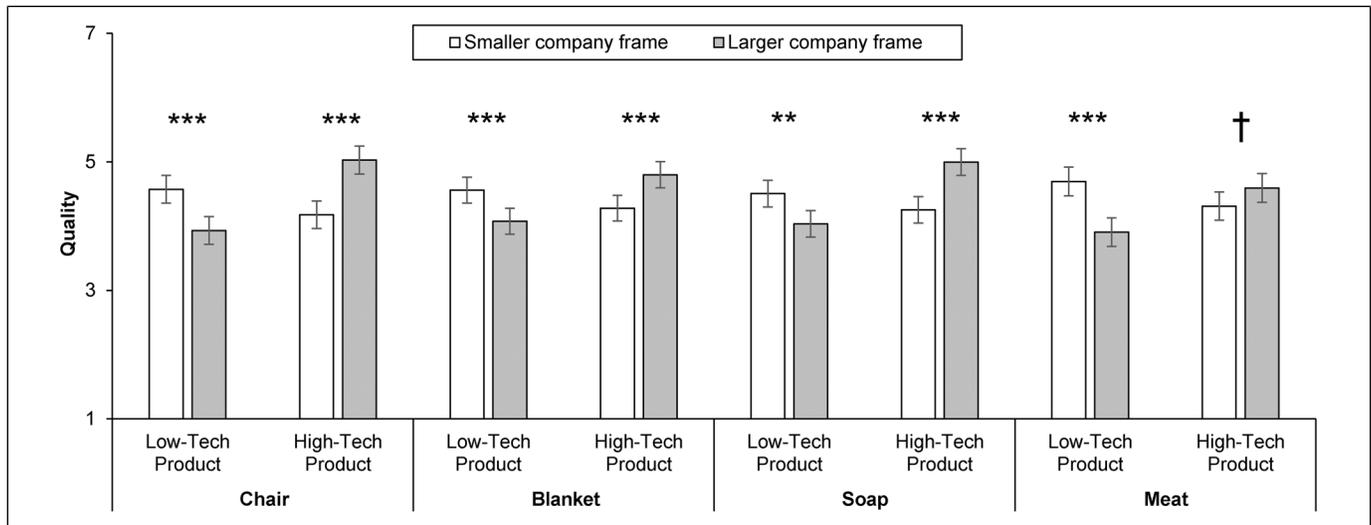


Figure 3. Interaction Between Company Size Frame and Product Type on Quality Evaluations for Each Product Replicate (Study 2).

† $p = .079$.

** $p = .002$.

*** $p < .001$.

Notes: Error bars indicate 95% confidence intervals of the mean.

between company size and product type was significant even though we used a conservative framing manipulation of company size (holding objective size constant) and described the companies to avoid portraying the smaller one as an underdog (Paharia, Avery, and Keinan 2014) or as offering handmade products (Fuchs, Schreier, and Van Osselaer 2015).

Study 3

We theorize that the interaction between company size and product type occurs because perceptions of product type prompt differential accessibility of two lay theories—the employee intrinsic motivation lay theory and the financial resources lay theory—that consumers hold about how company size influences the core resources that companies use to provide value to consumers. We predict that evaluating a product perceived as low-tech (vs. high-tech) increases accessibility of the intrinsic motivation lay theory, leading consumers to infer that products produced by larger (vs. smaller) companies are lower in quality. Simultaneously, we predict that evaluating a product perceived as high-tech (vs. low-tech) increases accessibility of the financial resources lay theory, leading consumers to infer that products produced by larger (vs. smaller) companies are higher in quality.

Study 3 tests this process using a moderated mediation model. Since we propose that perceptions of product type influence lay theory accessibility, we treat product type as the independent variable, each lay theory’s accessibility as parallel mediators, and company size as moderating the effect of each lay theory’s accessibility on quality evaluations. By treating company size as the moderator, we can test our prediction that the direction of the relationship between perceived company size and quality

evaluations depends on the relative accessibility of the two lay theories, which are triggered by perceived product type.

Method

We preregistered this study (<https://aspredicted.org/n7za3.pdf>) and recruited 604 MTurk workers. After preregistered exclusions,⁶ we had a final sample of 554 ($M_{\text{age}} = 39.11$ years, $SD = 11.54$; 51.7% female). We randomly assigned participants to a condition in a 2 (framed company size: smaller vs. larger) \times 2 (product type: low-tech vs. high-tech) between-subjects design.

Participants evaluated the quality of a blanket, which was either a standard blanket in the low-tech condition or a smart blanket (with wireless-activated heating features) in the high-tech condition. As in Study 2, we held the company’s objective size constant and manipulated participants’ perceptions of its size by varying the size of two competitors.

Before evaluating product quality, participants completed two (counterbalanced) items that assessed the accessibility of each lay theory: “As I am making my quality evaluation, I am thinking that larger companies have less intrinsically motivated employees (i.e., the employees don’t love doing their work and do not find it as meaningful), compared to smaller companies” and “As I am making my quality evaluation, I am thinking that larger companies have more financial resources to use and invest in product research and development, compared to smaller companies” (1 = “Not at all thinking

⁶ We excluded participants who failed an attention check at the end of the study ($n = 50$). The exclusion rate did not significantly differ by condition ($n_{\text{larger high-tech}} = 17$; $n_{\text{larger low-tech}} = 10$; $n_{\text{smaller high-tech}} = 10$; $n_{\text{smaller low-tech}} = 13$; $p = .434$).

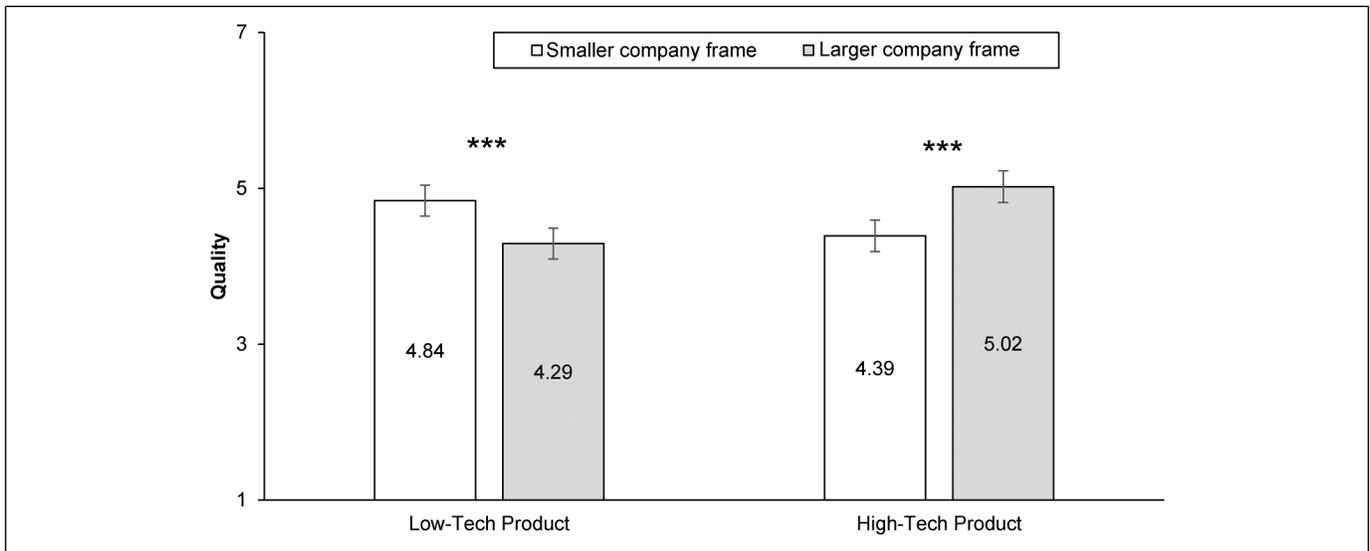


Figure 4. Interaction Between Company Size Frame and Product Type on Quality Evaluations (Study 3).

*** $p < .001$.

Notes: Error bars indicate 95% confidence intervals of the mean.

about this,” and 7 = “Very much thinking about this”).⁷ Participants then evaluated the quality of the blanket produced by the focal company, as in Study 2. Lastly, we included an attention check to carry out the preregistered exclusions.

Results

Quality evaluations. First, we tested for an interaction between product type and company size on quality evaluations, which revealed the predicted interaction ($F(1, 550) = 33.76, p < .001, \eta_p^2 = .06$; Figure 4). Participants in the low-tech condition evaluated a blanket produced by a larger (vs. smaller) company as lower quality ($M_{\text{larger}} = 4.29, SD = 1.24; M_{\text{smaller}} = 4.84, SD = 1.22; F(1, 550) = 15.01, p < .001, \eta_p^2 = .03$), whereas participants in the high-tech condition evaluated a smart blanket produced by a larger (vs. smaller) company as higher quality ($M_{\text{larger}} = 5.02, SD = 1.09; M_{\text{smaller}} = 4.39, SD = 1.24; F(1, 550) = 18.82, p < .001, \eta_p^2 = .03$). There was no main effect of product type ($F(1, 550) = 1.86, p = .173, \eta_p^2 < .01$) or company size ($F(1, 550) = .16, p = .688, \eta_p^2 < .01$).

Product type influences lay theory accessibility. We theorized that increased accessibility of the intrinsic motivation lay theory when evaluating a low-tech (vs. high-tech) product leads consumers to infer that products produced by larger (vs. smaller) companies are of lower quality; likewise increased accessibility of the financial resources lay theory when evaluating a high-tech (vs. low-tech) product leads consumers to infer that products produced by larger (vs. smaller) companies are of higher quality. Indeed, the intrinsic motivation lay theory was more accessible in the low-tech

(vs. high-tech) condition ($M_{\text{low-tech}} = 4.28, SD = 1.71; M_{\text{high-tech}} = 3.76, SD = 1.76; t(552) = 3.54, p < .001, d = .30$), whereas the financial resources lay theory was more accessible in the high-tech (vs. low-tech) condition ($M_{\text{high-tech}} = 5.47, SD = 1.51; M_{\text{low-tech}} = 4.87, SD = 1.79; t(552) = 4.21, p < .001, d = .36$).

We then tested the proposed mechanism using a moderated mediation analysis of quality evaluations using PROCESS Model 14 (Hayes 2017; 10,000 bootstrap samples, random seed). Since we propose that product type differentially influences the accessibility of the two lay theories, we preregistered product type as the independent variable (see note 2), accessibility of the two lay theories as parallel mediators, and company size as moderating the relationship between lay theory accessibility and quality evaluations. This analysis yielded significant indices of moderated mediation both via accessibility of the intrinsic motivation lay theory ($B_{\text{index}} = .26, SE = .08, 95\% \text{ confidence interval [CI]} = [.11, .43]$) and via accessibility of the financial resources lay theory ($B_{\text{index}} = .28, SE = .08, 95\% \text{ CI} = [.13, .44]$; see Figure 5).

Discussion

Study 3 conceptually replicates the phenomenon documented in Studies 1 and 2: consumers use company size metrics as an indicator of product quality, and the direction of the relationship depends on whether consumers perceive the product as low-tech or high-tech. More importantly, Study 3 reveals the underlying mechanism: evaluating a low-tech (vs. high-tech) product increases accessibility of the intrinsic motivation lay theory (leading to a negative relationship between company size and quality), whereas evaluating a high-tech (vs. low-tech) product increases accessibility of the financial

⁷ A validation test in Web Appendix C4 confirms that the single-item measures differentially captured each lay theory.

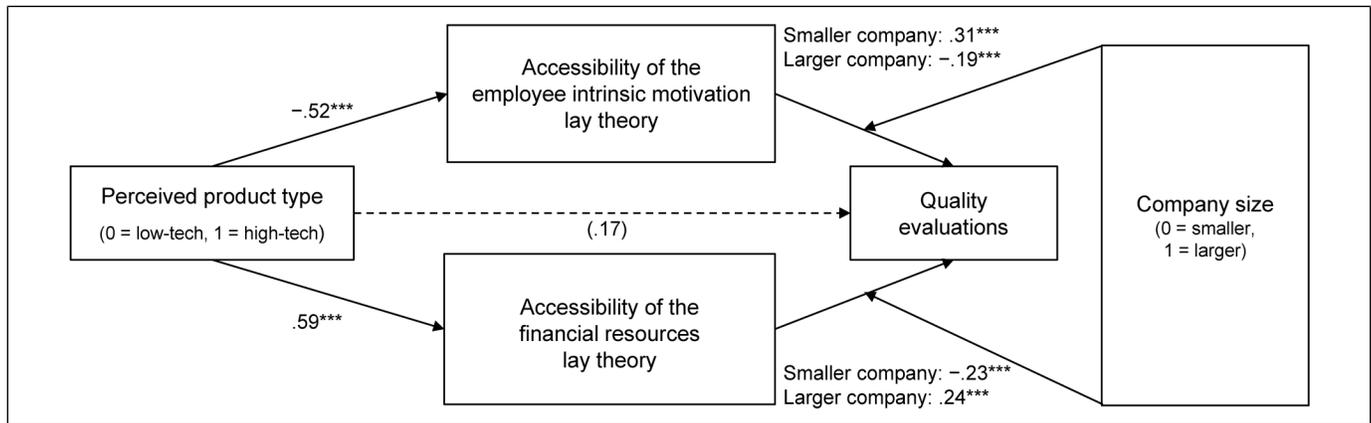


Figure 5. Moderated Mediation (Study 3).

$***p < .001$.

Notes: Mapping onto our conceptual model (Figure 1), Figure 5 charts moderated mediation in Study 3. Low-tech (vs. high-tech) products increase the accessibility of the intrinsic motivation lay theory, which leads consumers to infer that products made by larger (vs. smaller) companies are of lower quality. High-tech (vs. low-tech) products increase the accessibility of the financial resources lay theory, which leads consumers to infer that products made by larger (vs. smaller) companies are of higher quality. Path coefficients are unstandardized betas. The value in parentheses indicates the relationship between the product type and quality evaluations after controlling for the mediators.

resources lay theory (leading to a positive relationship between company size and quality). Supplemental Study 3 (Web Appendix D) provides more insight into the intrinsic motivation lay theory: consumers infer that intrinsically motivated employees devote more effort to their work, which leads consumers to infer that more intrinsically motivated employees produce higher-quality products.

Studies 4a and 4b

Studies 4a and 4b further examine the proposed lay theories framework by challenging the diagnosticity of each lay theory for quality evaluations, thereby reducing consumers' reliance on it. This approach has been used in previous research on phenomena that are driven by lay theories (Billetter, Kalra, and Loewenstein 2011; Zane, Smith, and Reczek 2020).

In Study 4a, we focus on low-tech products and the intrinsic motivation lay theory. We reveal to some participants that the larger company employs workers who are highly intrinsically motivated, thereby challenging the diagnosticity of the intrinsic motivation lay theory. We expect these participants to evaluate the company's low-tech products as higher in quality than participants evaluating a larger company's low-tech product who do *not* receive additional information about the employees' motivation (i.e., the larger-company baseline condition). Similarly, we reveal to some participants that the smaller company's employees are *not* intrinsically motivated, and we expect to find worse quality evaluations than in the smaller-company baseline condition.

In Study 4b, we use an analogous approach with high-tech products and the financial resources lay theory. We reveal to some participants that the larger company underspends its competitors on R&D, thereby challenging the diagnosticity of the financial resources lay theory. We expect to find worse quality evaluations than in the larger-company baseline

condition, where participants are free to assume that the large company size indicates high R&D spending. We reveal to other participants that the smaller company outspends its competitors on R&D, and we expect to find higher quality evaluations than in the smaller-company baseline condition.

For exploratory purposes, Studies 4a and 4b included a no-size control condition wherein participants viewed the company's name and product, but no size metrics. We preregistered this condition and corresponding analyses as exploratory in the preregistered study (Study 4b). We did not have predictions about comparisons between the size conditions and this condition because, in the absence of company size information, evaluations of product quality likely depend on multiple factors (e.g., specific product, industry, and company name). Most importantly, because company size metrics are frequently salient in the marketplace (Web Appendix A), the primary goal of our research is to investigate the inferences consumers draw from this salient information.

Study 4a Method

We recruited 489 MTurk workers ($M_{\text{age}} = 40.82$ years, $SD = 13.25$; 53.8% female). Participants evaluated a low-tech product, and we randomly assigned them to a condition in a five-cell (smaller-company baseline vs. larger-company baseline vs. smaller-company intervention vs. larger-company intervention vs. no-size control condition) between-subjects design.

Participants read about a fictitious company called Home Goods that produced standard chairs (low-tech product from Study 2). In all conditions except for the no-size condition, we described Home Goods as having \$1.4 million in revenue and 63 employees. We used the size manipulation from Studies 2 and 3 (larger-company frame conditions: competitor 1 had two employees and \$.06 million; competitor 2 had

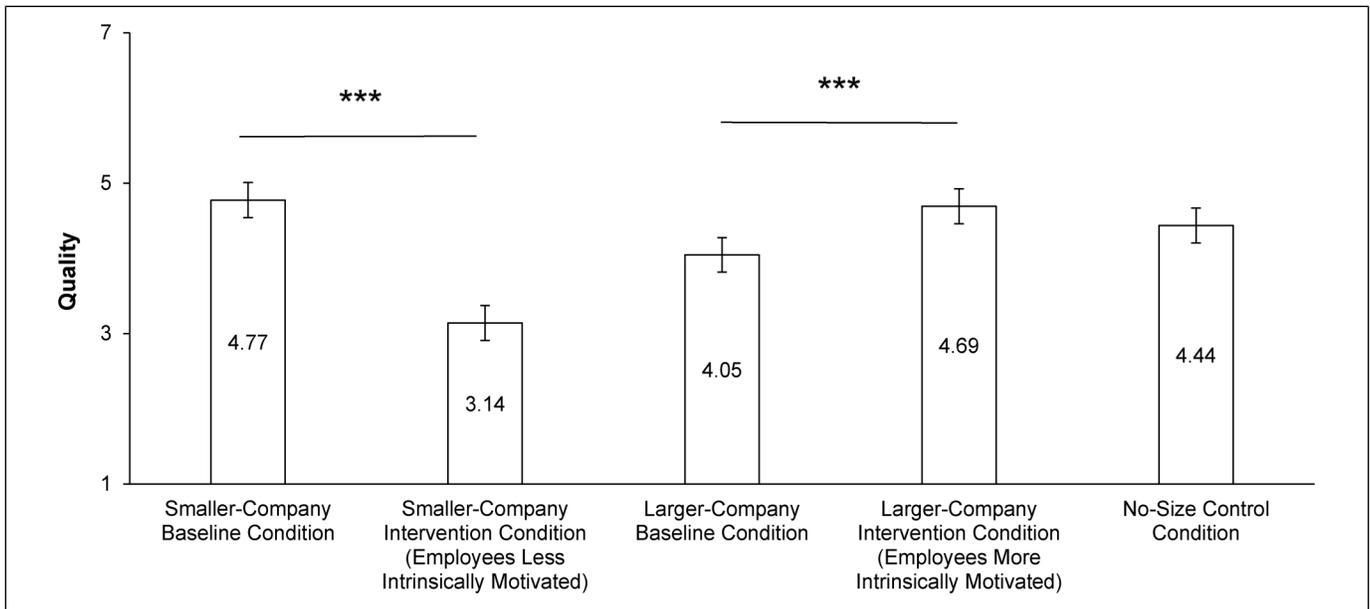


Figure 6. Challenging the Diagnosticity of the Intrinsic Motivation Lay Theory Affects How Consumers Infer the Quality of Low-Tech Products from Company Size (Study 4a).

*** $p < .001$.

Notes: Error bars indicate 95% confidence intervals of the mean.

three employees and \$.04 million, making Home Goods seem larger by comparison; smaller-company frame conditions: competitor 1 had 1,985 employees and \$33.8 million; competitor 2 had 1,323 employees and \$49.0 million, making Home Goods seem smaller by comparison).

In the two intervention conditions, we provided additional information to challenge the diagnosticity (Zane, Smith, and Reczek 2020) of the intrinsic motivation lay theory. We embedded the information in a screenshot of an anonymous employee testimonial, ostensibly from the company website (study stimuli in Web Appendix F; examples of real company websites that inspired this manipulation are in Web Appendix B). In the smaller-company intervention condition, the anonymous employee described feeling meaningless and feeling angry at work, reflecting low intrinsic motivation. This manipulation was inspired by research demonstrating that low intrinsic motivation prompts negative emotions (e.g., anger, anxiety; Wang et al. 2008). In the larger-company intervention condition, the anonymous employee described feeling meaningful and feeling gratitude at work, reflecting high intrinsic motivation. Thus, both intervention conditions revealed information that challenged the diagnosticity of the lay theory that employees at larger (smaller) companies have lower (higher) intrinsic motivation. (Notably, this intervention did not alter perceptions of the company's trustworthiness; see Web Appendix C5.) In the no-size and baseline conditions, participants did not view employee testimonials.

We measured product quality evaluations as in Studies 2 and 3. As an attention check, participants identified which company they evaluated (97.5% answered correctly).⁸

Study 4a Results

Study 4a was not preregistered; we followed Study 4b's preregistration plan for the analysis as the studies had analogous designs. An ANOVA on quality evaluations revealed a significant effect of condition ($F(4, 484) = 31.61, p < .001, \eta_p^2 = .21$; Figure 6). First, in the two baseline conditions (in which participants could rely on the intrinsic motivation lay theory), we conceptually replicated the low-tech conditions of Studies 2 and 3: participants evaluated the low-tech product as lower quality in the larger-company (vs. smaller-company) baseline condition ($M_{\text{larger}} = 4.05, SD = 1.42; M_{\text{smaller}} = 4.77, SD = 1.05; t(484) = 4.35, p < .001, d = .58$).

Second, to examine the effect of the intervention challenging the diagnosticity of the intrinsic motivation lay theory, we compared the intervention and baseline conditions for the same company size. As predicted, among participants who learned about a comparatively small company, those who learned that the company's employees had low intrinsic motivation (smaller-company intervention condition) evaluated the product as lower quality ($M = 3.14, SD = 1.26$) than participants in the smaller-company baseline condition, who could rely on the lay theory regarding the high intrinsic motivation of small companies' employees ($t(484) = 9.73, p < .001, d = 1.41$). By contrast, among participants who learned about a comparatively large company, those who learned that the company's employees had high intrinsic motivation (larger-company intervention condition) evaluated the product as higher quality ($M = 4.69, SD =$

⁸ Because this study was not preregistered, we did not exclude participants on the basis of this attention check. However, we found the same pattern and significance of results when excluding those who did not pass this attention check.

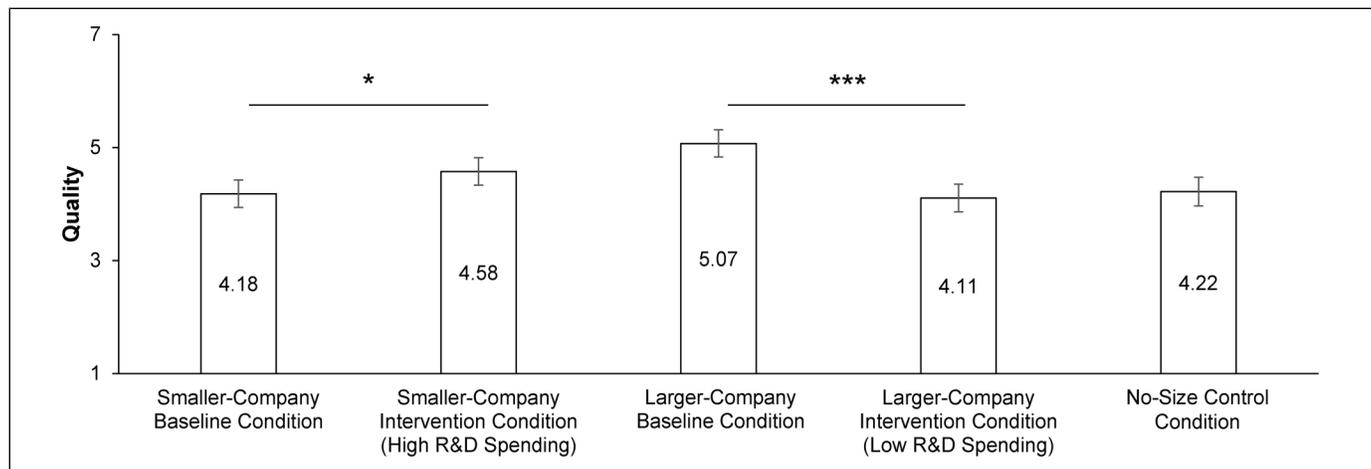


Figure 7. Challenging the Diagnosticity of the Financial Resources Lay Theory Affects How Consumers Infer the Quality of High-Tech Products from Company Size (Study 4b).

* $p < .05$.

*** $p < .001$.

Notes: Error bars indicate 95% confidence intervals of the mean.

1.17) than participants in the larger-company baseline condition, who could rely on the lay theory regarding the low intrinsic motivation of large companies' employees ($t(484) = 3.87, p < .001, d = .49$).⁹

Lastly, in exploratory analyses, we found that quality evaluations in the no-size control condition were higher ($M = 4.44, SD = .86$) than those in the smaller-company intervention condition ($t = 7.74, p < .001$) and those in the larger-company baseline condition ($t = 2.34, p = .020$), were no different from those in the larger-company intervention condition ($t = 1.52, p = .130$), and were lower than those in the smaller-company baseline condition ($t = 2.00, p = .046$). As noted, in the absence of company size information, consumers likely use multiple factors (e.g., product and company name) to evaluate product quality.

Study 4a Discussion

By challenging the diagnosticity of the intrinsic motivation lay theory for some participants, Study 4a affirmed the role of the lay theory in the negative relationship between company size and quality inferences for low-tech products. The findings also offer practical insight for managers of larger firms that produce low-tech products: Alerting consumers that employees are highly intrinsically motivated seems sufficient to close the gap in the perceived quality of low-tech products that otherwise separates larger and smaller companies.

⁹ To provide clearer managerial implications for larger companies in low-tech product domains, we conducted an exploratory comparison of the smaller-company baseline condition and the larger-company intervention condition. We found no significant difference in quality evaluations ($t(484) = .49, p = .622$). Thus, alerting consumers that employees are highly intrinsically motivated seems sufficient to close the gap in perceived quality between larger and smaller companies in low-tech product domains.

Study 4b Method

We preregistered this study (<https://aspredicted.org/v7mu4.pdf>) and recruited 512 MTurk workers ($M_{\text{age}} = 42.53$ years, $SD = 13.38$; 48.2% female). We randomly assigned participants to a condition in a five-cell (smaller-company baseline vs. larger-company baseline vs. smaller-company intervention vs. larger-company intervention vs. no-size control) between-subjects design.

Participants read about a company named TechnologyChair that produced robotic wheelchairs (high-tech product from Study 2). In all conditions except for the no-size condition, we described TechnologyChair as having \$1.4 million in revenue and 63 employees. We manipulated the company size frame in all conditions except the no-size control condition using the same company size information as in Study 4a. In the two intervention conditions, participants encountered information that directly opposed the financial resources lay theory. The information was embedded in the headline of a *Forbes* article (stimuli in Web Appendix F), which reported that TechnologyChair either was spending more on R&D than competitors (in the smaller-company intervention condition) or was spending less on R&D than competitors (in the larger-company intervention condition). Participants in the no-size control condition did not view information about company size or capacity to fund R&D; participants in the baseline conditions did not view information about R&D.

We measured product quality evaluations as in Studies 2–4a. Participants completed the same attention check as in Study 4a, and a majority (84.2%) answered correctly.¹⁰

¹⁰ We did not preregister the attention check as an exclusion criterion, so we conducted analyses on all participants. We found the same pattern and significance of results when excluding those who did not pass this attention check.

Study 4b Results

As preregistered, an ANOVA on quality evaluations revealed a significant effect of condition ($F(4, 507) = 10.53, p < .001, \eta_p^2 = .08$; Figure 7). First, in the two baseline conditions (in which participants could rely on the financial resources lay theory), we conceptually replicated the high-tech conditions of Studies 2 and 3: participants evaluated the high-tech product as higher in quality in the larger-company (vs. smaller-company) baseline condition ($M_{\text{larger}} = 5.07, SD = 1.09; M_{\text{smaller}} = 4.18, SD = 1.27; t(507) = 5.11, p < .001, d = .75$).

Second, we examined the effect of challenging the diagnosticity of the financial resources lay theory. As predicted, for participants in the smaller-company frame conditions, those who learned that the company was outspending competitors on R&D (smaller-company intervention condition) evaluated the product as higher quality ($M = 4.58, SD = 1.33$) than participants in the smaller-company baseline condition, who could rely on the lay theory regarding low R&D spending for smaller companies ($t(507) = 2.24, p = .026, d = .31$). By contrast, for participants in the larger-company frame conditions, those who learned that the company was spending less than competitors on R&D (larger-company intervention condition) evaluated the product as lower quality ($M = 4.11, SD = 1.47$) than participants in the larger-company baseline condition, who could rely on the lay theory regarding high R&D spending for larger companies ($t(507) = 5.51, p < .001, d = .74$).

Lastly, in exploratory analyses, we found that quality evaluations in the no-size control condition were lower ($M = 4.22, SD = 1.11$) than in the smaller-company intervention condition ($t = 1.99, p = .047$) and the larger-company baseline condition ($t = 4.81, p < .001$) but did not differ from the larger-company intervention condition ($t = .64, p = .526$) or the smaller-company baseline condition ($t = .21, p = .836$). As noted in Study 4a, in the absence of company size information, consumers likely use multiple factors to evaluate product quality. We focus on company size metrics because they are pervasive in the marketplace and salient to consumers (Web Appendix A).

Study 4b Discussion

By challenging the diagnosticity of the financial resources lay theory for some participants (Zane, Smith, and Reczek 2020), Study 4b affirmed the role of the lay theory in the positive relationship between company size and quality inferences for high-tech products. Together, Studies 4a and 4b corroborate the moderated mediation analysis in Study 3 and provide robust support for the proposed lay theories framework. In addition, the results have managerial implications for firms with a disadvantageous pairing of company size and product type: Managers of larger firms that produce low-tech goods can showcase their employees' high intrinsic motivation, as Study 4a finds that doing so improves quality evaluations (relative to baseline evaluations of the same product). Similarly, managers of smaller firms that produce high-tech goods can emphasize their heavy spending on R&D, as in Study 4b.

Study 5

Study 5 examined the consequences of our framework for incentive-compatible choices. We predicted that consumers who faced a choice between two low-tech products would favor the option created by the smaller (vs. larger) company, whereas consumers who faced a choice between two high-tech products would favor the option created by the larger (vs. smaller) company. We provided participants with company size information for the two products via screenshots of companies' "About Us" web pages, wherein companies highlight their size (Web Appendix B). Also, like Study 3, Study 5 measured the accessibility of the two lay theories. We predicted that the effect of product type (low-tech vs. high-tech) on choice between the smaller company's product and the larger company's product would be mediated by the differential accessibility of the two lay theories.

Method

We preregistered this study (<https://aspredicted.org/j8at3.pdf>) and recruited 203 MTurk workers. After preregistered exclusions, our final sample size was 191 ($M_{\text{age}} = 42.02$ years, $SD = 13.81$; 50.3% female). We randomly assigned participants to a condition in a between-subjects design (product type: low-tech vs. high-tech).

All participants learned that they would be choosing between two coffee makers from different companies, Coffee Now and Coffee Co.; according to randomly assigned conditions, the products were either drip coffee makers (pretested as low-tech) or smart coffee makers (pretested as high-tech; Web Appendix C2). Participants learned that they should choose the product they actually wanted as they would be entered into a lottery to win their chosen product. Before choosing, participants viewed screenshots, ostensibly from each company's "About Us" webpage (stimuli in Web Appendix F). The screenshots revealed that one company had 9,000 employees and \$3.5 billion in revenue, while the other had 25 employees and \$8 million in revenue (company names counterbalanced). Participants learned that both companies were in London, so our participants—who were all U.S.-based—would not infer that the smaller company was local (Gao, Zhang, and Mittal 2017).

Participants chose the company from which they wanted to receive the coffee maker. Lastly, participants completed the two items from Study 3 regarding the accessibility of each lay theory when making their choice (our parallel mediator measures).¹¹ After the study concluded, we selected one participant to receive a bonus credited to their account to make their coffee maker purchase.

Results

More participants chose the coffee maker created by the smaller company in the low-tech condition (67.4%) than in the high-

¹¹ A validation test in Web Appendix C4 confirms that the single-item measures differentially captured each lay theory.

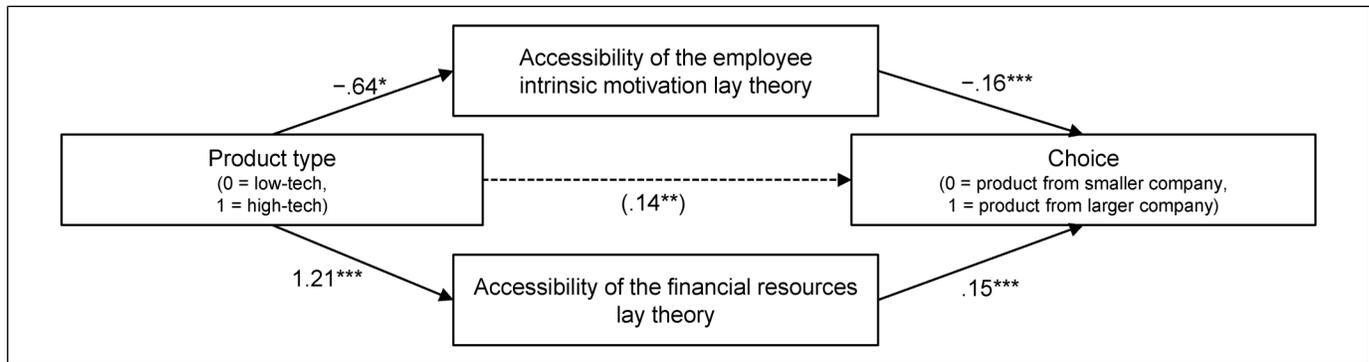


Figure 8. Parallel Mediation (Study 5).

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Notes: The path coefficients are unstandardized betas. The value in parentheses indicates the effect of product type (low-tech vs. high-tech) on choice after controlling for the mediators.

tech condition (34.3%; $\chi^2(1, N = 191) = 20.83, p < .001, \phi = .33$). Binomial tests revealed that within the low-tech condition, more participants chose the coffee maker created by the smaller company than the coffee maker created by the larger company ($z = 3.23, p = .001$), whereas within the high-tech condition, more participants chose the coffee maker created by the larger company than the coffee maker created by the smaller company ($z = 3.02, p = .003$).

Further analysis revealed that when participants made their choice, the intrinsic motivation lay theory was more accessible in the low-tech (vs. high-tech) condition ($M_{\text{low-tech}} = 3.76, SD = 2.05; M_{\text{high-tech}} = 3.12, SD = 2.01; t(189) = 2.18, p = .031, d = .32$), whereas the financial resources lay theory was more accessible in the high-tech (vs. low-tech) condition ($M_{\text{high-tech}} = 5.38, SD = 1.78; M_{\text{low-tech}} = 4.17, SD = 2.05; t(189) = 4.37, p < .001, d = .63$). A parallel mediation analysis using PROCESS model 4 (Hayes 2017; 10,000 bootstrap samples, random seed) revealed that the differential accessibility of the two lay theories mediated the effect of product type (low-tech vs. high-tech) on choice between the products of the larger and smaller companies (Figure 8). Specifically, greater accessibility of the intrinsic motivation lay theory in the low-tech (vs. high-tech) condition predicted lower choice share of the larger company's product ($B_{\text{indirect}} = .54, SE = .29, 95\% \text{ CI} = [.05, 1.18]$). At the same time, greater accessibility of the financial resources lay theory in the high-tech (vs. low-tech) condition predicted higher choice share of the larger company's product ($B_{\text{indirect}} = .82, SE = .27, 95\% \text{ CI} = [.41, 1.44]$).

Discussion

Study 5 demonstrates that the current phenomenon extends from quality evaluations to product choices: Consumers choosing a low-tech product favored the smaller company, whereas consumers choosing a high-tech product favored the larger company. In Supplemental Study 4 (Web Appendix D), we replicated the results in a different product domain (wallets) and

with company size metrics embedded on a different platform (Facebook posts): the choice share of the smaller company's wallet was larger in the low-tech condition (68.5%) than in the high-tech condition (38.5%; $\chi^2(1, N = 164) = 14.63, p < .001, \phi = .30$).

Study 5 also conceptually replicated the parallel mediation findings we initially identified in Study 3: product type (low-tech vs. high-tech) differentially affected accessibility of the intrinsic motivation lay theory and the financial resources lay theory, thereby affecting consumers' choice between products from a larger company and a smaller company.

Study 6

Consumers' product perceptions lie on a continuum from lower-tech to higher-tech (e.g., Qahmash 2018; see also Study 1's operationalization of industry type). In Studies 2–5, we manipulated the product itself to achieve a clear contrast between product types (e.g., low-tech standard blankets vs. high-tech smart electric blankets; see Web Appendix C2 for pretests). In Study 6, we provide a more conservative test of our framework by holding the product itself constant and subtly manipulating perceptions of the product's position on this continuum.

We chose a relatively low-tech product: a wooden pen. In a pretest of 102 participants assigned to condition in a between-subjects design (product framing: low-tech vs. high-tech), we confirmed that the product itself was perceived as low-tech relative to the scale midpoint ($M = 5.49, SD = 1.25, t(46) = 8.18, p < .001; 1 = \text{"High-tech," and } 7 = \text{"Low-tech"}$). In the high-tech framing condition, we enriched the pen's description with high-tech words and phrases, shifting pretest participants' perception of the wooden pen away from being a low-tech product to relatively neutral ($M = 3.71, SD = 2.15; t(54) = 1.00, p = .320$, compared with the scale midpoint). Despite the subtlety of the change in perceptions caused by the framing manipulation, we expected this high-tech

framing to significantly increase the choice share of the larger company's product.¹² We tested this prediction in an incentive-compatible lab study in which all participants received a wooden pen as a function of their choice.

Method

We preregistered this lab study (<https://aspredicted.org/u38s6.pdf>) and recruited 208 students ($M_{\text{age}} = 21.33$ years, $SD = 4.25$; 58.2% female) to participate for \$5 and a free gift. We randomly assigned participants to a condition in a between-subjects design (product framing: low-tech vs. high-tech). Participants made a choice between two wooden pens produced by different companies; they were told to choose the option they actually wanted as they would receive their chosen pen at the end of the study. All participants saw the same wooden pen with the same bullet-point descriptors: "made of wood," "customizable wording on surface," "laser carved," and "multiple size options." To manipulate the framing, we varied the order in which these descriptors were presented and the text beneath these descriptors. For example, participants in the low-tech (vs. high-tech) framing condition read, "A lot of (highly technologically-advanced laser-oriented) care and consideration is required for a wooden (vs. laser-built) pen to function ... it requires conscientious attention to (cutting-edge nanotechnological) detail to make." See Web Appendix F for the stimuli.

All participants learned that two companies, HomeStore and HomeCo, produce these pens. They viewed screenshots of Facebook posts, ostensibly from the two companies, that contained size information: 600 employees and \$17.1 million in revenue versus 21 employees and \$.6 million in revenue (company names counterbalanced). Participants learned that both companies were located in Switzerland (ensuring that the manipulation did not alter perceptions of whether the companies were local, as all of our participants were U.S.-based; Gao, Zhang, and Mittal 2017). Finally, participants indicated which company they wished to receive the pen from, and they actually received a wooden pen at the end of the study.

Results

As predicted, more participants chose the wooden pen from the smaller company in the low-tech (64.7%) versus high-tech framing condition (46.2%; $\chi^2(1, N=208) = 7.18, p = .007, \phi = .19$). A logistic regression predicting choice from condition, controlling for counterbalanced company name, was also significant ($B = -.77, SE = .29, \text{Wald } \chi^2 = 7.19, p = .007, OR = .47$).

¹² Since the subtle high-tech framing manipulation made the wooden pen seem neutral rather than high-tech, we reasoned that the manipulation would *increase* the large company's choice share but likely would not enable the large company to capture the *majority* of the choice share.

Discussion

Study 6 replicated the effect with a subtle framing manipulation shifting perceptions of product type and in an incentive-compatible design: Fewer consumers chose the wooden pen from the smaller company when we framed the pen as relatively high-tech (vs. low-tech). By holding the product itself constant, Study 6 confirms that our effect involves consumers' perceptions of the product as relatively low or high tech rather than some other difference between product types. In addition, our framing manipulation has practical implications: larger companies that make relatively low-tech products can grow their choice share by emphasizing higher-tech aspects of their products.

General Discussion

Company size metrics pervade the marketplace, and many consumers are aware of company sizes when making purchase decisions (Yang and Aggarwal 2019; Web Appendix A). Our framework uncovers why consumers, when evaluating product quality or making product choices, favor larger companies in some cases and favor smaller companies in others. Across a secondary data analysis (Study 1), controlled framing studies (Studies 2–4b and 6), and incentive-compatible choices (Studies 5 and 6), we show that whether consumers favor the larger or smaller company depends on perceived product type: For low-tech products, a smaller company size leads to more favorable outcomes (better quality evaluations; larger choice shares). For high-tech products, a larger company size leads to more favorable outcomes.

We propose a novel lay theories framework to explain why perceived product type determines the direction of the relationship between company size and quality evaluations. The lay theories pertain to two key resources, employees and financial resources, that companies utilize to provide value to consumers. In the intrinsic motivation lay theory, consumers believe that the employees of larger (vs. smaller) companies are less intrinsically motivated; evaluation of low-tech (vs. high-tech) products increases accessibility of this lay theory, which predicts lower product quality evaluations and choice share for larger companies. In the financial resources lay theory, consumers believe that larger (vs. smaller) companies have greater capacity to fund R&D; evaluation of high-tech (vs. low-tech) products increases accessibility of this lay theory, which predicts higher product quality evaluations and choice share for larger companies. Thus, perceived product type determines whether a larger or smaller company will receive better quality evaluations (Study 3) and larger choice share (Studies 5 and 6). Finally, product quality inferences based on company size metrics change significantly when consumers encounter information that challenges the diagnosticity of the most applicable lay theory (Studies 4a and 4b).

Theoretical Contributions

Our findings offer several key theoretical contributions. First, our framework helps reconcile conflicting findings regarding the

relationship between company size and quality evaluations. A review of the literature (Table 1) and a pretest of the domains examined (Web Appendix Table WC2) reveal that previous investigations that found a positive relationship between company size and quality were conducted in relatively high-tech domains (e.g., hospitals, cars, medical devices, and airlines; Boscarino 1988; Chaudhuri et al. 2018; Paharia, Avery, and Keinan 2014). By contrast, investigations that found the opposite result were conducted in relatively low-tech domains (e.g., food services; Morgan 1993; Trinca, Duizer, and Keller 2022). Our conceptual model and empirics offer one explanation for why a larger company size leads to more favorable evaluations for high-tech products but less favorable evaluations for low-tech products.

Second, we introduce two novel lay theories and delineate how they guide consumers' inferences of product quality from company size metrics. Of note, we do not propose that our framework will reconcile every finding in this literature. Rather, we contribute one overarching way of integrating and reconciling many past findings and of generating new predictions regarding when a larger company size will (vs. will not) be beneficial.

In doing so, we advance the literature on factors that affect product quality evaluations. In Web Appendix G, Table WG1, we show that previous research has explored how consumers respond to production and product composition information (e.g., Fuchs, Schreier, and Van Osselaer 2015; Newman and Dhar 2014; Reich, Kupor, and Smith 2018) as well as information about the marketing mix (e.g., product price and advertising; Erdem, Keane, and Sun 2008; Kirmani and Wright 1989; Moorthy and Hawkins 2005). Notably, what is missing from this literature is an understanding of how perceptions of product *development* affect quality evaluations. Indeed, other work examining perceptions of product development examined features that do not alter product quality evaluations (e.g., creative control affects authenticity and recognition, but not quality; Valsesia, Nunes, and Ordanini 2016). Our financial resources lay theory fills this gap by charting the perceived relationship between a company's size and its financial capacity to fund product development. We find that the lay theory affects quality perceptions and product choices in high-tech domains, with managerial implications that we discuss in the next section.

Finally, our findings relate to other lay theories consumers hold about firm resources, such as lay theories about efficient markets, which can be compensatory (Chernev and Carpenter 2001). We also document compensatory inferences: A larger firm is perceived as having many financial resources to fund R&D (i.e., a strength) but employees who are less intrinsically motivated (i.e., a weakness). Whereas previous research has found compensatory inferences involving products of the same price and quality, we examine the consequences of differential lay theory accessibility for quality evaluations and choices. Our theoretical framework is rooted in two novel lay theories, and we identify perceived product type (low-tech vs. high-tech) as a determinant of the relative accessibility of the two lay theories for quality evaluations and choices.

Managerial Implications

Our findings provide important insight for marketing managers, many of whom recognize the importance of understanding how company size metrics influence consumer behavior and yet do not intuit our findings (Web Appendix A, Pilot Data C). An inaccurate understanding may lead to a suboptimal strategy: many larger low-tech companies and smaller high-tech companies provide company size metrics on their websites and in their social media posts (see examples in Web Appendix B). Our research suggests that this strategy can harm these companies' product quality evaluations.

Our results suggest several strategies for companies that are disadvantaged by a mismatch between product type and company size. Large companies that make low-tech products may benefit from framing their company as smaller than competitors (e.g., Studies 2–4a), highlighting the intrinsic motivation of the employees who make the products (e.g., featuring testimonials from employees who love the work on the company website; Study 4a), or framing aspects of the overall low-tech product category or industry as more high-tech (e.g., emphasizing the precision of the production technology; Study 6). Meanwhile, small companies that make high-tech products may benefit from framing their company as larger than competitors (Studies 2, 3, and 4b), highlighting their “high” R&D spending (Study 4b), or framing the overall high-tech product category or industry as relatively low-tech (not tested, but analogous to Study 6).

Of course, managers need to be realistic about the extent to which they can shift perceptions. A smaller company likely cannot claim (credibly) that its R&D spending matches that of a behemoth like Amazon, but such a company may be able to frame itself and/or its spending as large relative to other smaller competitors. Alternatively, as exemplified in real communications (Web Appendix B, Figures WB12–WB14), a small company can frame R&D expenditures as large relative to self-defined metrics (e.g., their “budget”) or can simply leverage adjectives that cast its R&D expenditure as large.

The Accuracy of Consumer Lay Theories

Our framework uncovers two lay theories consumers hold about company size metrics. Lay theories are not always accurate reflections of reality (Haws, Reczek, and Sample 2017), so it is interesting to consider the accuracy of the lay theories, as previewed in the introduction.

Supplemental Studies 1a and 1b explored the accuracy of the intrinsic motivation lay theory (Web Appendix D). We scraped secondary data from Indeed.com, where employees rate their happiness and sense of purpose at their company (which we used to construct a measure of objective intrinsic motivation). We also collected publicly available data on company size (number of employees and revenue). Then, we provided the company size metrics to online participants and measured their perceptions of employees' intrinsic motivation.

Consistent with our main studies and our survey of MBA students (Web Appendix A, Pilot Data D), participants held the lay theory that employees at larger (vs. smaller) companies are less intrinsically motivated. However, across two data sets of objective intrinsic motivation, we found that this lay theory is not objectively true (Supplemental Study 1a: 40 *Fortune* 500 companies from Bhattacharjee, Dana, and Baron [2017]; Supplemental Study 1b: 136 restaurant chains).

We did not collect data regarding the financial resources lay theory because company size and R&D expenditure are generally positively correlated, especially among top R&D spenders (Skillicorn 2018). However, larger companies may not always have greater capacity to fund costly R&D (e.g., if they have extensive debt, contract obligations, or a reluctance to deviate from products that fueled their prior growth). Moreover, companies with smaller current revenues can obtain substantial future funding for expensive R&D initiatives, such as through venture capital (Klette and Griliches 2000).

Future Directions

The current research focused primarily on evaluations of product quality for midmarket, for-profit companies (Studies 2–4b; cf. Study 1). This enabled conservative tests of our theorizing as we could hold the company's objective size constant and alter perceptions of size. Future research can examine whether these findings extend to nonprofits, for-profit social ventures (Lee, Bolton, and Winterich 2017), peer-to-peer platforms (Costello and Reczek 2020), and service settings. In particular, our theoretical framework predicts (and Study 1 suggests) that our findings would apply to service offerings.

It would also be fruitful to explore how company size relates to other perceptions, including perceptions of employees' extrinsic motivation. On the one hand, intrinsic and extrinsic motivation are at times correlated (Rockmann and Ballinger 2017; Woolley and Fishbach 2018), so perhaps perceptions of extrinsic motivation mirror those of intrinsic motivation. On the other hand, consumers may perceive that larger firms have greater financial capacity not only to fund expensive R&D but also to pay employees larger salaries, which may lead to diverging perceptions of extrinsic motivation (increased by larger salaries) and intrinsic motivation (decreased). We encourage future research to test these possibilities.

Future research could also test other processes underlying the current phenomenon or other lay theories regarding company size. The lay theories that we investigate are particularly relevant to the current phenomenon because they link the company's size with its resources (employees and finances) for providing value to consumers. However, our documented effects, like many psychological phenomena, may be multiply determined (Kirmani 2015; Pham 2013). Our empirics shed light on the underlying role of the proposed lay theories framework by controlling for potential alternatives, including whether the company is local (Gao, Zhang, and Mittal 2017), is an underdog (Paharia, Avery, and Keinan 2014), offers handmade products (Fuchs, Schreier, and Van Osselaer 2015), employs warm and competent employees (Supplemental Study 4; Yang and

Aggarwal 2019),¹³ and has a larger market share (Supplemental Study 4; Hellofs and Jacobson 1999).¹⁴ We encourage future research to explore additional processes.

A company's number of employees and amount of revenue are highly correlated, so most of our manipulations of company size combined these metrics, in line with previous research (e.g., Ardito and Dangelico 2018; DelVecchio, Deeter-Schmelz, and Anselmi 2013; Hung et al. 2005; Lennon and Harris 2002; Sung, Lim, and Lee 2022; Yang and Aggarwal 2019). Supplemental Study 1b provides initial evidence that viewing revenue alone may be sufficient to prompt an effect on quality evaluations via the intrinsic motivation lay theory, and we encourage future research to examine the current phenomenon with individual company size metrics. In rare situations in which these metrics are not highly correlated, we also encourage future research to explore moderators that determine which metric is more influential in evaluations of company size and product quality. Future research also may test other dimensions that reflect company size (e.g., number of branches/stores, operating scope).

Lastly, we hope future research will examine additional moderators that may differentially affect the accessibility of our two lay theories. For example, when high-tech products are mass-produced, people may be less likely to apply the financial resources lay theory as mass produced products are farther away from the R&D phase. Conversely, product safety concerns might increase the accessibility of the financial resources lay theory, to the extent that financial resources to fund R&D could enable safer products.

Conclusion

We contribute a novel framework charting when and why consumers prefer products from larger versus smaller companies. Importantly, this framework reconciles conflicting extant findings regarding how company size affects quality evaluations. It does so by identifying two previously undocumented lay theories that consumers hold about company size and by documenting how perceived product type (low-tech vs. high-tech) differentially activates the lay theories, thereby determining the direction of the relationship between company size and quality evaluations. The results have actionable insights for large low-tech companies

¹³ Because intrinsic motivation is more closely related to competence than to warmth (McAuley, Duncan, and Tannen 1989; Ryan and Deci 2000), our predictions are distinct from Yang and Aggarwal's (2019) work on warmth versus competence. This is reinforced by Yang and Aggarwal's findings that consumers perceive small and large companies as equally competent (Studies 2a and 2b), and their theorizing that consumers prefer to patronize more competent companies even if they are less warm (p. 1372).

¹⁴ Because market share is distinct from company size (Web Appendix H, Table WH1), our findings persist when controlling for market share (Supplemental Study 4). Also, because market share and company size are distinct, and because our conceptual framework charts the consequences of two previously undocumented lay theories, our research makes novel predictions regarding the central role of perceived product type (low-tech vs. high-tech) in quality evaluations.

and small high-tech companies, which otherwise may be disadvantaged in product quality evaluations.

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