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KEEP IT SIMPLE? CONSUMER PERCEPTIONS OF BRAND SIMPLICITY AND RISK

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ABSTRACT

Evoking simplicity in marketing communications has become popular among marketing practitioners, but little is known about its effects on consumers and firms. The current work focuses on consumers' perceptions of the simplicity or complexity of brands and a previously overlooked consequence of those perceptions. Results from six experiments and analysis of a proprietary customer satisfaction dataset from *Consumer Reports* (N = 147,600) show that when consumers think brands are simple, they judge them to be less likely to experience product or service failures. Although these lower risk judgments could be positive for brands, they can also lead consumers to punish simpler brands more in the event of failures. Results also suggest that consumers' simplicity/complexity perceptions reflect the dimensionality of their mental representations of brands, and the relationship between simplicity and lower risk is attenuated when additional brand dimensionality is framed in terms of redundancy. The findings cast doubt on the degree to which evoking simplicity is a uniformly positive marketing strategy and encourage practitioners to more thoughtfully consider simplicity's implications for consumer and firm welfare.

Keywords: simplicity, complexity, mental representation, brands, risk

"Simple can be harder than complex."
-Steve Jobs

Marketers revere simplicity. Over the past decade it has become a popular strategy for practitioners to evoke simplicity in marketing communications. Simplicity has been called "the most powerful branding principle" (Meyer 2012), and "the difference [between] an award-winning ad and an ad that brings in the results," (Ahto 2015). Renowned design firm IDEO "seeks simplicity in brand design to the nth degree" (personal communication: B. Crosier, March 4, 2019). Branding agency Siegel+Gale has even published a Global Brand Simplicity Index annually since 2009, arguing that simpler brands perform better financially, gain more trust, and inspire more customer loyalty (Belk and Rafferty 2012; Siegel+Gale 2023). Despite the increasing importance of simplicity to practitioners, the critical role that brands play in marketing, and the extensive academic literature on brand perceptions, it is not well understood how consumers' perceptions of the simplicity or complexity of brands influences downstream outcomes for consumers and firms.

The current work makes three main contributions. The first is substantive. Our findings reveal a potential unintended pitfall associated with evoking simplicity in marketing, which is now a ubiquitous strategy. As discussed above, simplicity is mentioned by practitioners almost exclusively in positive terms, with its virtue painted as an obvious truth. However, our results suggest that the truth is more nuanced: Simplicity may give rise to unfounded consumer expectations of lower risk of failures and thus stronger feelings of anger, disappointment, or dissatisfaction when failures inevitably occur. The work also builds on prior risk perceptions research by adding a previously undocumented antecedent of consumers' judgments of risk—their perceptions of brand simplicity—which are subjective and dynamic but can be manipulated

via marketing communications. The second main contribution is conceptual. The current work builds on prior research on brands as cognitive association networks by marking a novel connection between a consumer's perceptions of brand simplicity and the dimensionality of their mental representation of a brand. The dimensionality of mental representations has been studied in the cognitive/social perception literature, but the current work is the first in consumer research to connect subjective perceptions of simplicity/complexity to those mental representations, and the first to do so specifically for brands. Third, the work makes a methodological contribution by adapting a paradigm and measure for quantifying the dimensionality of individuals' mental representations of people and objects, applying it to representations of brands. Using this adapted technique led to the work's substantive findings, and other researchers interested in consumers' mental representations of brands, products, people, or even phenomena may also find it fruitful. We document these contributions in a combination of laboratory studies and via the analysis of a proprietary customer survey dataset from *Consumer Reports,* containing approximately 150,000 observations of real consumers' evaluations of products.

BRAND SIMPLICITY: DEFINITION AND COGNITIVE UNDERPINNINGS

Given the importance of simplicity to marketing practitioners there is a surprising lack of research on consumer perceptions of the simplicity of brands in the academic marketing literature. One reason for this may be that the idea of brand simplicity perceptions does not neatly fit into the most influential frameworks of consumer-brand relationships, especially those that treat brands as possessing human characteristics (Aaker 1997; Aaker, Fournier, and Brasel 2004; Fournier 1998). Instead, our conceptualization is consistent with the idea of brands as subjective networks of associations in consumers' minds (see Keller's customer-based model of brand equity; Keller 1993, 2012). We define brand simplicity as a consumer's overall gestalt

feeling of simplicity or complexity associated with a brand. Brand simplicity thus refers to a subjective consumer judgment, not an objective brand trait.

Drawing on the cognitive science and psychology literatures, we propose that a consumer's perception of brand simplicity depends on the dimensionality of their underlying mental representation of the brand, with perceived complexity increasing with dimensionality. A brand that is mentally represented with more components or features will be deemed more complex. For example, the health insurance brand Oscar, with its sparse, hand-drawn marketing imagery and website copy promising "Simple health insurance, smart healthcare," likely seems relatively simple to consumers. In contrast, a brand like United Healthcare, with its busy marketing imagery, combination of photos and graphics, and web messages encouraging users to "Explore our many insurance plans" likely seems more complex, because consumers' representation of it will likely include more components (such as plans, products, providers, situations to consider, etc.).

In cognitive science, concepts are often modeled as structured networks of sub-concepts that support inductive inference. For instance, in the influential Causal Bayesian Network framework, concept networks are composed of nodes representing variable sub-concepts and directed links between nodes representing causal relations. Probability theory and causal logic are used to evaluate conditional probabilities of variables given the presence or absence of other variables (Pearl 2009, Sloman 2005, Spirtes, Glymour, and Scheines 2000). A mental model of "bird" might include nodes for "feathers," "wings," "animal," and "flight," and the network would support an inference like "flight will not occur in the absence of wings." There are many competing models and theories of conceptual knowledge, and it is beyond the scope of this paper to advocate a specific theory. Instead we rely on the idea common to many theories that brands,

like other concepts, are represented by structured networks of sub-concepts and can be evaluated to make inductive inferences like predictions and diagnoses (see also Long, Fernbach & De Langhe 2018).

Following prior research in psychology, we operationalize this conceptualization of simplicity/complexity as the number of non-redundant sub-concepts ("dimensions") in an individual's mental representation (Linville 1982, 1985, 1987; Scott 1962, 1969). Brand components could include things like products, categories, departments, people, suppliers, competitors, or any other subjectively important aspect of a brand stored in memory. We argue that simple branding such as visually sparse advertising or marketing communications that explicitly suggest simplicity discourage consideration of—and elaboration on—additional components, and will therefore lead to a lower-dimensional mental representation of the brand.

We propose the following process by which a consumer arrives at a judgment of brand simplicity: First, they develop a mental representation of the brand. This could occur via learning through specific interactions with the brand like visiting the website, seeing an ad, making a purchase, or interacting with sales or customer service. Alternatively, in the case of a novel company where the consumer has little pre-existing experience, they might import a mental schema (Halkias 2015) based on experiences with other presumably similar brands. In either case, this representation would contain components such as "products," "competitors," "departments," "categories," "programs," or any others the consumer catalogs as important to maintain an understanding of the brand and make future decisions about it. Each component would, in turn, be composed of sub-concepts, with varying degrees of redundancy across the representation. Next, the mental representation is interrogated by the consumer, yielding a feeling of relative simplicity or complexity depending on its dimensionality.

This proposal does not imply that the representations of brands in the minds of consumers are necessarily comprehensive or veridical. On the contrary, representations of complex objects tend to be schematic, sparse, vague, and idiosyncratic (Sloman and Fernbach 2018). We are also not arguing that this is an explicit or conscious process. People often make judgments like these outside of conscious awareness, have difficulty unpacking their beliefs (Rozenblit and Keil 2002), and sometimes transmit feelings about one object to another ("halo effect;" from a brand's marketing to the brand itself, for example, Nisbett and Wilson 1977).

To summarize, we argue that brand simplicity is an important and previously overlooked evaluative judgment guiding consumer behavior. We conceptualize brand simplicity as the dimensionality of a consumer's mental representation of a brand, which is built up through learning or imported based on experiences with similar brands. These representations are likely to be sparse, error-prone, and hard to unpack but are sufficient to support judgments of brand simplicity or complexity, and affect downstream judgments, as described below.

CONSEQUENCES OF BRAND SIMPLICITY

Having defined brand simplicity and discussed its cognitive underpinnings, we now turn to deriving predictions about its impacts on important consumer judgments and behaviors. For context, we first discuss why the common practitioner assumption regarding consumers' preference for simplicity may be justified, before turning to our two main predictions vis-à-vis consumer risk judgments and dissatisfaction following failures.

From a marketer's perspective, there is a good argument in favor of evoking simplicity in marketing: People generally like simpler things. Research from cognitive science has shown that humans seek the simplest representations and briefest explanations of incoming information that still allow them to make sense of the world. This fundamental sense-making behavior manifests

itself in a general preference for simpler things (Chater 1999; Chater and Loewenstein 2016; Chater and Vitányi 2003; Hahn, Chater, and Richardson 2003). Many findings from the marketing literature support this insight (see Rogers 2003; Pieters, Wedel, and Batra 2010; Jhang, Grant, and Campbell 2012; Fernbach, Sloman, et al. 2013; Eytam, Tractinsky, and Lowengart 2017).

One potential reason for humans' preference for simplicity is that simple things are processed more fluently, i.e., with less mental effort, which people usually try to avoid (Kahneman and Tversky 1979, Newell and Simon 1972). For instance, consumers rate products as higher quality when their labels are presented in a more fluent font (Alter and Oppenheimer 2009), prefer products with brand names that are easier to pronounce (Song and Schwarz 2008), and choose investments that are more fluent because they are perceived to be less risky (Cornil, Hardisty, and Bart 2019). These findings highlight the importance of considering fluency in marketing strategies, as well as how it potentially relates to simplicity and risk judgments.

In the current work we put aside this question of preference for simplicity to focus instead on a previously overlooked consequence of consumers' brand simplicity perceptions: their relationship with judgments about the likelihood of product or service failures and subsequent dissatisfaction.

Brand Simplicity and Risk

Prior research has shown that lower risk perceptions positively influence consumers' purchase intentions, choice, willingness to pay, and more (Bettman 1973; Dowling 1986; Mitchell 1999). Risk has been defined in multiple ways across different literatures (e.g., Fischhoff et al. 1978; March and Shapira 1987; Slovic 1987; Weber, Shafir, and Blais 2004). In this work we focus specifically on the risk of product or service failures; a purchase is defined as

more risky if there is a higher probability that something goes wrong, like a product defect, issues with order fulfillment, or a bad customer service experience. Our main prediction is that consumers judge simpler brands to be lower risk.

This prediction follows from the idea that complex brands are those with more parts. In many cases, risk scales with dimensionality. If a system is more complex it likely has more potential points of failure. In the case of a company, a complex supply chain may be more likely to break more often, a complex customer service organization may make it harder to resolve difficult problems, and so on. This conceptualization is consistent with prior work showing that the ease with which consumers can bring exemplars of an event to mind influences their judgments about the likelihood of product failures (Folkes 1988). Fewer perceived brand components mean fewer imagined opportunities for failure.

Outside of marketing, researchers studying complex systems have defined complexity as a function of both dimensionality and interdependence (Jacobs 2007; Simon 1962). Kremer's (1993) O-ring theory of economic development describes a production function in which there are "many tasks, all of which must be successfully completed in order for the product to have full value" (Kremer 1993, 551). The name of this theory is a reference to the 1986 NASA Space Shuttle Challenger, which exploded during takeoff due to the failure of an O-ring seal on one of its boosters. The perception of higher risk for complex brands may reflect a similar O-ring-type consumer model of the relationship between complexity and risk, in which consumers perceive complex entities as more susceptible to failure due to the higher potential for interdependencies among their components.

The link between number of parts and risk appears to be a strong belief in the mind of consumers even to the point of being over-generalized to cases where it does not apply. For

instance, Reinholtz et al. (2019) found that many people incorrectly believed a diversified portfolio was more risky than an undiversified portfolio because more investments meant more things could go wrong. Relatedly, Long et al. (2018) found that people incorrectly assessed companies they felt they understood better to be safer investments, perhaps because sense of understanding was associated with a simpler mental representation.

As in the case of diversification, additional parts do not always increase risk. For instance, if additional parts are added to provide redundancy in the case of a component failure, they should reduce risk. Thus, we expect that the effect of complexity on risk should be attenuated if participants are explicitly told that additional dimensions provide redundancy. This boundary condition is tested in study 4.

Brand Simplicity and Customer Dissatisfaction

If the hypothesized relationship between simplicity and risk exists, it appears to be a point in favor of evoking simplicity in marketing. However, we argue that it could also backfire. According to the expectation-confirmation theory of consumer satisfaction, consumer evaluations of an experience depend both on the quality of the experience itself and the gap between the experience and the consumer's expectation prior to the experience (Oliver 1980). Thus, an equally poor experience will yield more dissatisfaction if expectations are higher *a priori*. This has been demonstrated in numerous marketing studies (e.g., Diehl and Poynor 2010; Oliver 1993; Spreng, MacKenzie, and Olshavsky 1996; Swan and Trawick 1981). Thus, marketing that evokes simplicity may act as a perceived promise to consumers that risk is low. And while this could be beneficial in consideration and choice, it could spell trouble in the event of product or service failures. To the extent that brand simplicity establishes an expectation of minimal product and service failure risk, projecting brand simplicity can therefore create the

conditions for significant consumer dissatisfaction when something goes wrong.

Some marketers may not intend for simple marketing to be a promise of low risk. They may choose simple marketing because it is fashionable or because they are focused on liking and trial, without thinking about potential dangers later in the customer journey. This creates the conditions for a mismatch between actual and perceived risk. Thus, simpler brands are likely to be punished (in terms of dissatisfaction, disappointment, and subsequent ratings) to a greater extent than complex brands when failures occur. This prediction is tested in studies 5, 6, and 7.

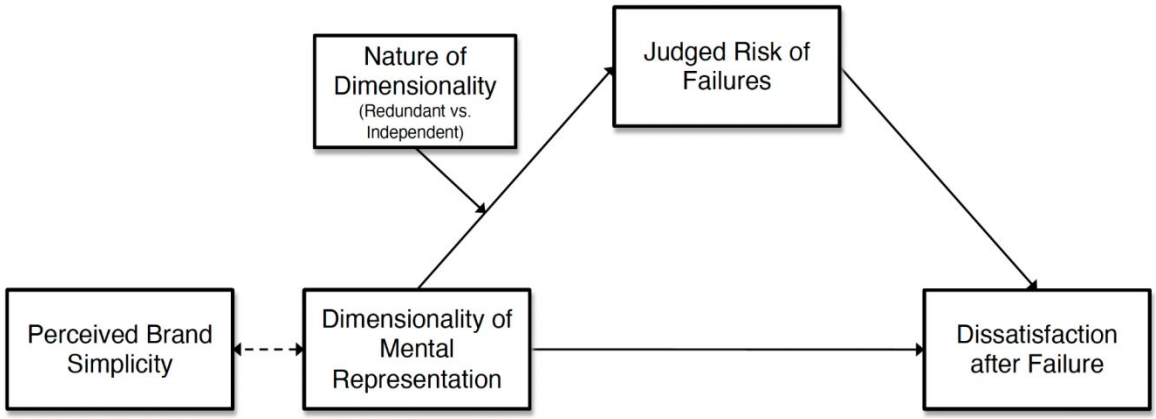
SUMMARY OF PREDICTIONS

Our predictions are listed below and depicted in figure 1. In the figure, consumer perceptions of brand simplicity are conceptualized as the dimensionality of consumer's mental representations of the brand. A consumer receives incoming information about a brand and constructs a mental representation of it. The consumer queries this representation when making risk and simplicity judgments. Likewise, if the consumer is instead instructed to think of a brand that is simple or complex, they will then bring to mind a lower or higher-dimensional representation. This conceptual relationship is depicted with a bidirectional dashed arrow between Perceived Brand Simplicity and Dimensionality of Mental Representation in figure 1. Perceived simplicity in turn affects judgments of product and service failure risk. This relationship is attenuated when increased complexity is framed as increasing redundancy. Finally, lower judged risk is hypothesized to increase dissatisfaction when failures occur. To summarize:

1. Perceived brand simplicity is conceptualized as the dimensionality of consumers' representations of brands, implying that manipulating simplicity/complexity will influence measures of dimensionality, and vice versa.
2. Consumers think that brands they perceive as simpler are less risky, i.e., less likely to experience product and service failures than brands they perceive to be more complex.

3. The relationship between perceived brand simplicity and risk is attenuated when additional brand dimensions are framed as increasing redundancy.
4. When product or service failures occur, consumers punish simper brands more (in terms of their dissatisfaction, disappointment, and associated ratings and recommendations).
5. The relationship between perceived brand simplicity and dissatisfaction after a failure is mediated by judged risk of failures.

FIGURE 1: CONCEPTUAL MODEL



SUMMARY OF KEY FINDINGS

Across seven studies we test the predictions enumerated above. In study 1 we find that consumers believe simpler brands are less risky than complex ones when perceived simplicity is manipulated by altering the visual appearance of advertisements for fictitious brands and controlling for the confounding variables of liking, perceived professionalism, luxury, and size of the company. In study 2 we find the same pattern of effects when the *relative* simplicity of a focal brand is manipulated by contrasting it with either a visually simpler or more complex competitor brand's marketing image. Probing our conceptualization in study 3, we find evidence that the dimensionality of consumers' mental representations of brands, assessed using an established measure from cognitive/social perception research, predicts judged risk, over and above the effects of fluency. In study 4 we find that the effect of simplicity on risk is attenuated

when additional dimensions are framed as redundancy. Study 4 also uses a marketplace proxy measure for risk judgments: consumers' interest in reading a product's return policy. In study 5 we find additional support for dimensionality of a mental representation of a brand as the conceptualization of perceived brand simplicity, as well as its effect on downstream dissatisfaction, mediated by judged risk. To further triangulate the nature of these relationships, Study 5 also uses different measures of dimensionality, risk, and dissatisfaction, replicating the main pattern of effects. In study 6, we use proprietary *Consumer Reports* customer survey data on product reliability and satisfaction to test whether simpler brands are punished more in the event of failures, and we find that consumers are less likely to recommend simpler brands after failures compared to more complex brands. Finally, in study 7 we replicate the pattern of effects from the secondary data in a controlled online experiment. Materials and pre-registrations are available at an OSF repository (osf.io/ewdx8), and supplemental analyses appear in the web appendix.

STUDY 1: MANIPULATING SIMPLICITY PERCEPTIONS

We designed study 1 to establish the basic effect that when consumers think a brand is simpler, they feel it is less risky (in terms of product/service failures). We manipulated perceived brand simplicity by varying the visual simplicity/complexity of advertisements, showing that merely the visual appearance of a marketing image can make consumers feel that there is a difference in simplicity and risk between simpler and complex brands, even if other important factors about the brands are held constant. We chose this manipulation to both maximize internal validity (since it is straightforward to manipulate visuals of an ad without changing other characteristics) and because visual elements are important tools used by marketers seeking to influence consumers' judgments of brands (and are often used to evoke simplicity). We also

strengthen the interpretation of our results by including control measures for perceived company size, luxury, professionalism, and liking, all of which could change risk perceptions independent of perceived simplicity.

Method

611 participants[1] completed a Qualtrics survey via Cloud Research. Study 1 used pairs of brands in five product categories: software development, financial services, bicycles, food, and apparel. Each participant was randomly assigned to view only one of the five categories, and each category included two fictional brands, one with a simple marketing image and one with a complex one.

The images were manipulated in line with findings from visual complexity research by Pieters et al. (2010); complexity was increased by including additional images, edges, textures, colors, and copy, and reducing empty space. The simple stimulus in each category was black and white only, and included a stylized hourglass graphic, the company name, and three category-specific words, as well as a large amount of white space. The complex stimulus image used an abstract background of crisscrossing lines, hexagons, and different colors. Across product categories, the images and company names were the same within simplicity levels, but the copy on the stimuli was changed to reflect the appropriate category. For example, the simple apparel company condition copy read, "Streetwear. Workwear. Sketch.," while the simple financial services condition copy read, "Investing. Planning. Sketch.," even though both brands used the same visuals and names. Examples of simple and complex stimuli are shown in figure 2, and all stimuli can be found in the OSF repository.

[1] In determining sample sizes, we obtained the largest samples we could based on resource considerations and reasonable estimates of the likely effect sizes.

We are interested in participants' subjective perceptions of simplicity. However, because all stimulus images used in the experiment were the same height, width, and file format, objective visual complexity of the stimuli could be assessed by the size of each image file (for an excellent discussion of image compression, visual complexity, and file size, see Pieters et al. 2010). Across the five categories, the average file size of the complex condition stimuli was significantly larger than that of the simple condition stimuli (see OSF repository).

FIGURE 2: STUDY 1 EXAMPLE STIMULI FOR SIMPLE AND COMPLEX BRAND CONDITIONS

After being randomly assigned to a category, participants were then assigned to one of two presentation order conditions (simple first or complex first). They viewed either the simple or complex marketing stimulus in their assigned category, then judged the perceived simplicity of the company ("In your opinion, how simple or complex is this company?"), measured on an 8-

point “Extremely simple” to “Extremely complex” scale. Participants then answered four questions about potential confounding factors in random order. The first was the size of the company (“In your opinion, how small or large is this company?”), measured on a 6-point “Very small” to “Very large” scale. The second was luxury (“Please rate how much you agree/disagree with the following statement: I think of this company as a luxury company.”), measured on a 6-point scale from “Strongly disagree” to “Strongly agree.” The third was professionalism (“In your opinion, how professional is this company?”), measured on a 6-point “Not professional at all” to “Very professional” scale. The fourth was liking, measured on a 6-point “Do not like at all” to “Like very much” scale. Participants then viewed the stimulus and answered questions for the other brand / level of simplicity in their assigned category. Participants were then shown both stimuli again and were asked to evaluate whether consumers of company A or company B (simple-complex counterbalanced across conditions) would be more likely to experience unexpected product or service failures. The wording of the risk measure was, “When buying something or interacting with a company, sometimes consumers experience issues that they didn't expect. These issues include anything that would cause a consumer to return something, post a negative review, or contact customer service for any reason. Based on what you know, are consumers of Company A or Company B more likely to experience these kinds of issues?” It was a direct-comparison 6-point measure from “Consumers of Company A much more likely to experience issues” to “Consumers of Company B much more likely to experience issues.” Lastly, participants answered demographic questions about their age, gender, and education history before ending the survey.

Results and Discussion

The simplicity manipulation was successful: the average within-subject difference in perceived simplicity between the simple and complex stimuli across the five product categories was 1.31 on an 8-point scale ($t(610) = 18.27$, $p <. 001$, 18.7% of range), and was significant for all five categories individually (all ps < .001). To test the risk prediction, we used a linear mixed-effects model with random intercepts by category, four within-subject difference-score control variables (complex minus simple) for perceived size, luxury, professionalism, and liking, as well as a contrast-coded presentation order control variable, to test the effect of manipulated simplicity on judged risk of unexpected issues. Because the dependent measure in the experiment was a single bipolar item centered at 0, we can easily interpret and test the significance of the model intercept, with positive values indicating perceptions of more risk for the complex company, and negative indicating more risk for the simple company. As predicted, consumers judged the simpler brands to be less risky than the complex brands, over and above the effects of differences in liking, luxury, professionalism, and size ($\beta_0 = .21$, $t(601) = 4.22$, $p < .001$, 4.2% of range).

For robustness we ran nine versions of the main model, first as a simple OLS test of the intercept, (model 1), then as linear mixed effects models with random intercepts by category, adding in a contrast-coded variable for presentation order (model 2), then with each control difference-score variable individually (models 3-6), then with all four difference-score variables together (model 7), with difference-score and order variables (model 8), and with all previous variables plus gender, education, age, and income (model 9). Because we are testing the intercept in each model (which is meaningful only when all other independent variables have a value of zero), all difference-score and contrast-coded variables were zero-centered, and age, income, and variables were mean-centered at zero. The intercept in model 9, for example, can be interpreted

as the perceived difference in risk between the complex and simple brands for participants at the average age, income, education, and across genders, for whom there is no difference in perceived company size, luxury, professionalism, or liking. See table 1 below for regression coefficients for all nine models. The value of the intercept is positive and statistically significant in all models, indicating less judged risk for the simpler brands.

TABLE 1: REGRESSION COEFFICIENTS FOR ALL STUDY 1 MODELS TESTING THE EFFECT OF SIMPLICITY ON RISK

	Dependent variable: **Risk comparison (midpoint-centered)**								
	OLS (model 1)	*Linear mixed-effects (models 2-9)*							
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Intercept	**.21*****	**.32*****	**.26****	**.43*****	**.30***	**.17****	**.21*****	**.22*****	**.21*****
Presentation Order		.23*						.10	.09
Prof.diff			-.38***				-.16**	-.15**	-.15**
Size.diff				-.24***			-.04	-.05	-.04
Lux.diff					-.29***		-.07	-.07	-.09*
Like.diff						-.40***	-.27***	-.27***	-.27***
Male									-.01
Education									-.02
Age									.01*
Income									-.01
Notes:	*$p<.05$, **$p<.01$, ***$p<.001$, dfs and *p*s estimated w/ Satterthwaite's method for models 2-9. Simplicity coded with higher values indicating more complexity. Full model specifications and analyses appear in the OSF repository.								

Study 1 results provide initial support for the predicted effect of simplicity on risk after controlling for multiple potential confounding factors. We also note that this same pattern of effects was replicated in two similar studies not reported in the main text, one of which manipulated simplicity via stimulus selection using advertisements and websites from real brands (see studies A and B in the web appendix).

STUDY 2: BETWEEN-SUBJECTS CONTRAST EFFECTS

Study 1 provides support for the predicted relationship between perceived simplicity and risk but is a within-subjects experiment in which brand is confounded with simplicity level. For this reason, study 2 tests the simplicity-risk relationship in a between-subjects experiment.

Method

604 participants were recruited from Amazon Mechanical Turk via Cloud Research. They were assigned to one of two between-subjects conditions. In one condition, the focal brand, a fictional apparel company, was made to seem simple by comparison. In the other, the same focal brand was made to seem complex by comparison. In each condition the same marketing image from the focal brand was presented next to either a very visually simple or complex fictional competitor brand's marketing image (see OSF repository for stimuli). The manipulation of perceived simplicity was thus achieved via contrast effect.

Participants then proceeded to the main variables of interest, reporting perceived simplicity, risk of failures, and liking for both the focal and competitor brand in their assigned condition. The items were similar but not identical to those in study 1. The simplicity items asked, "In your opinion, based on the marketing images above, how simple or complex are the two companies?" (matrix, 8-point scales from "Extremely simple" to "Extremely complex"). The first part of the risk items was the same as those in study 1, but then asked, "Based on the marketing images above, how likely are consumers of each of the two companies to experience these kinds of issues?" (matrix, 8-point scales from "Extremely likely" to "Extremely unlikely"). The liking items asked, "In your opinion, based on the marketing images above, how much do you like the two companies?" (matrix, 6-point scales from "Do not like at all" to "Like very much"). As with the previous studies, participants finished the survey by answering age, education, and gender questions.

Results and Discussion

Because participants in both conditions viewed and evaluated the identical image from the same focal brand (with only its competitor brand varying between them), we tested for between-condition differences in perceived simplicity and risk for the focal brand. The simplicity manipulation was successful: when paired with a competitor brand's visually complex marketing image, the focal brand seemed simpler than when paired with a visually simple competitor ($M_{simple\text{-}by\text{-}comparison} = 3.12$, $M_{complex\text{-}by\text{-}comparison} = 4.37$, $t(602) = 11.77$, $p < .001$, 17.9% of range; higher values indicate more complexity). As hypothesized, these differences also extended to participants' judgments of the risk of unexpected issues, with participants rating the focal brand as less risky when it seemed simpler ($M_{simple\text{-}by\text{-}comparison} = 4.15$, $M_{complex\text{-}by\text{-}comparison} = 4.46$, $t(602) = 2.83$, $p = .005$, 4.4% of range; lower values indicate less risk).

Study 2 provides additional support for the hypothesized effects of perceived brand simplicity on judged risk of failures in a between-subjects experiment with good internal validity. When the same focal brand seemed simpler to participants, they rated its customers as less likely to experience unexpected issues, compared to when it seemed more complex.

STUDY 3: DIMENSIONALITY AS A DRIVER OF SIMPLICITY-RISK PERCEPTIONS

Results from the previous studies suggest that the relationship between consumer perceptions of brand simplicity and the risk of product failures is fairly robust. However, these studies did not provide evidence for why simpler brands are thought to be less risky. We therefore designed study 3 to test the prediction that the dimensionality of consumers' mental models of brands drives the relationship between perceived simplicity and risk. Another goal of study 3 is to probe the role of fluency as an alternative mechanism. Fluency, the metacognitive feeling of ease when processing information, has been shown to drive preferences across

numerous contexts, with more fluent objects or information preferred to less fluent ones (Alter and Oppenheimer 2006, 2008, 2009). It is plausible, then, that the brands consumers feel are simpler are those that are more fluent to evaluate, and that feelings of fluency could spill over to judgments of risk. If true, the relationship between simplicity perceptions and risk judgments could be driven by feelings of fluency when mentally representing a brand. We test this possibility here in study 3.

Method

Participants completed a Qualtrics survey via Prolific Academic (N = 749 after 10 participants who failed an attention check and 49 who did not write the name of a brand in the manipulation prompt were removed from the dataset). The study used a 2 x 2 x 3 between-subjects design. After being randomly assigned to one of three product category stimulus replicate conditions (food, consumer electronics, or home goods), each participant was randomly assigned to either a simple or complex condition and one of two survey order conditions. Because a major goal of the study was to test the potential conceptualization of perceived brand simplicity as the dimensionality of a consumer's mental representation of a brand, the experimental manipulation of simplicity or complexity was deliberately vague, allowing participants to interpret simplicity or complexity without bias induced by the manipulation. It read, "Brands can be rated on a number of different things, including how simple or complex they are. Please take a moment to imagine what a [simple/complex] rating would mean for a brand in the real world, then write down the name of a [category] brand that you consider to be [simple/complex] in the text box below."

After the manipulation, participants moved on to a question measuring either their judgments of risk or fluency, depending on their survey order condition. For half of the

participants, the risk measure preceded the dimensionality task, which was followed by the fluency measure. For the other half, the order was reversed (fluency, then dimensionality, then risk). The risk measure was identical to that of study 2, except that the description of unexpected issues ended with "These include anything that would cause someone to … contact customer service to resolve a problem," instead of "contact customer service for any reason." We made this change to eliminate the potential issue of participants factoring in their perceptions of the likelihood of contacting customer service for positive or informational reasons in their risk judgments. For the fluency measure, participants were first presented with a prompt that read, "Before answering the next question, please take a moment to create a full mental picture of [brand]." Then, on a new survey page, they were asked to "Please rate how easy/difficult it is to fully imagine [brand]" (7-point scale, from "Extremely easy" to "Extremely difficult"). This measure was adapted from prior processing fluency studies in which participants were asked to rate the ease or difficulty of thinking about or imagining an object, person, or brand (Graf et al. 2018; Petrova and Cialdini 2005; Rubin, Paolini, and Crisp 2010).

To obtain the dimensionality of each participant's mental representation of their brand, we opted for a paradigm adapted from the trait sorting task common in research measuring the complexity of representations (Linville 1982, 1985, Scott 1962, 1969). This paradigm read:

> *Next, please imagine you are trying to explain the [simple/complex] brand [brand] to a stranger who knows nothing about it. You want them to understand what it is all about. One way of understanding brands is to break them down into groups of their most important components. What these components are depends on what you think defines the brand. They could include (but aren't limited to):*
>
> - *products*
> - *departments, such as marketing, finance, customer service, etc.*
> - *services provided*
> - *categories it is involved in, such as outdoor, electronics, furniture, etc.*
> - *partner brands*
> - *competitor brands*
> - *executives or leaders*

- *different ways of communicating with customers, such as TV ads, in-person events, social media, etc.*

On the next survey page, the instructions continued with the following:

> *Please select the component groups that you think are the most important for the stranger to know about in order to gain a full picture of what [brand] is all about (at least one, and as many as ten). In the next part of the survey you will be asked to list specific examples of each component.*

Participants chose up to ten of the following components: products, departments, brand roles, areas of responsibility, categories/industries, partnerships/endorsements/collaborations, competitors, executives, programs, ways of communicating with customers, look and feel, things known for, what they stand for, places customers can buy products/services, different types of customers they target, or other (please write in). On the next page, they were shown a list of the components they selected and were asked to "write in as many examples of each category as you think would be necessary to give the stranger a full picture of the brand" in a text box next to each one. The survey ended with measures of age, gender, education, and an attention check.

Dimensionality Measure

Following prior research quantifying the complexity of mental representations, we used the *H* statistic (Linville 1982, 1985, Scott 1962, 1969), which allows us to measure the non-redundant dimensionality of each participant's brand representation. Participants are usually given a list of trait words and asked to sort them into groups of components of the object, topic, person, or self. In our study, participants were asked to select categories and generate examples (instead of sorting them). The *H* statistic is then computed on each participant's trait-sort matrix and represents the minimum number of independent components needed to replicate the matrix – in other words, its dimensionality. *H* thus increases as the number of components listed by a

participant increases but is adjusted downward with more repetition between them. *H* was calculated for each subject as follows:

(1) $H = \log_2 n - (\sum n_i \log_2 n_i)/n$

where *n* represents each participant's total number of written-in component examples across all their chosen component categories, and n_i represents a vector of the frequencies of their repeated component/example phrases. For example, if a participant's list of 17 components (*n*) includes five unique phrases (*TV*, *Samsung*, *marketing*, *Tim Cook*, and *Instagram*), three phrases repeated twice (*iPhone*, *simple design*, *easy to use*), and two phrases repeated three times (*social media*, *customer service*), they would have three n_i values: 5, 3, and 2 (see this participant example below in table 2). Calculating the rest of the equation results in each participant being assigned an *H* value (minimum = 0, mean = 2.73, max = 5.27, standard error = .035).

TABLE 2: HYPOTHETICAL EXAMPLE OF ONE PARTICIPANT'S LISTED COMPONENTS, USED TO CALCULATE H

PRODUCTS	COMPETITORS	THINGS KNOWN FOR	WAYS OF COMMUNICATING TO CUSTOMERS	AREAS OF RESPONSIBILITY	EXECUTIVES
simple design	*Samsung*	*simple design*	*Social media*	*social media*	*Tim Cook*
easy to use		*easy to use*	*customer service*	*customer service*	
TV		*customer service*	*Instagram*	*marketing*	
iPhone		*social media*			
		iPhone			

Results and Discussion

The simplicity/complexity condition prompts successfully manipulated dimensionality. The mental representations of participants in the simple brand condition showed lower

dimensionality (*H*) than those in the complex brand condition ($M_{H.simple}$ = 2.59, $M_{H.complex}$ = 2.89, t(747) = 4.33, $p < .001$). The main prediction for study 3 is that dimensionality of participants' mental representation of brands influences judged risk. Supporting this prediction, a linear mixed-effects model predicting risk with *H* and random intercepts by product category[2] shows higher *H* scores are associated with more judged risk of failures (β_H= .17, $t(746.7) = 2.87$, p = .004, 2.8% of range[3]). This effect remains significant when fluency is added to the model as a control (β_H= .17, $t(745.8) = 2.96$, $p < .003$, 2.8% of range; see OSF repository for all model results), demonstrating that dimensionality influences risk over and above the effects of fluency.

STUDY 4: REFRAMING COMPLEXITY AS REDUNDANCY

Study 4 provides another exploration of our conceptualization by testing a potential boundary condition. Study 3 showed that the relationship between perceived simplicity and risk judgments are partially driven by the dimensionality of consumers' mental representations of the brand. In general, additional complexity is perceived as riskier, but in reality some complexity exists to *prevent* failures. This is the case when components are added to serve as fail-safes for primary ones. For example, most modern elevators include a feature that keeps the brakes disengaged with electromagnets. If the power fails, the electromagnets can no longer keep the brakes disengaged, and the brakes engage automatically, preventing the elevator from falling. In terms of our conceptualization, if the motivation for additional dimensionality is explicitly stated as being for the purpose of redundancy (or "backing up" the preexisting dimensions), the

[2] For the sake of transparency, we note that the analyses presented here are different from those in the pre-registration. This was due to a change to the conceptual model requested by the review/editorial team.

[3] There is debate regarding the appropriateness of standardized effect size statistics in linear mixed-effects models. Therefore, because we use many linear mixed-effects models in this paper, we instead report an easily interpretable statistic representing a parameter's effect in terms of percent change in the dependent variable's scale range. For example, a coefficient (or slope) of 1 on a 1-8 scale range would be reported here as "14.3% of range."

positive effect of complexity on risk judgments should attenuate. We tested this prediction in study 4. The study also used a new dependent variable which represents a marketplace proxy for risk judgments: consumers' interest in reading a product's return policy.

Method

Participants (N = 816 after 26 attention check failures) on Prolific Academic completed a Qualtrics survey. They were randomly assigned to one of two main between-subjects conditions (complexity: baseline vs. redundant) and one of three product category stimulus replicate conditions: kitchen appliances, consumer electronics, or car seats and strollers. Participants viewed an introduction to the scenario which read, "We would like you to imagine that there is a [product category] brand, and the brand has 3 main component units that are crucial to its core functions. Please take a moment to think about what those 3 main brand component units could be." After a page break, they moved on to the complexity manipulation. For the baseline condition, the survey read, "Now we would like you to imagine that the [product category] brand decided to add 3 more component units to its existing 3 (resulting in 6 total units)." The redundant complexity manipulation also included this same sentence, but also two additional sentences: "The purpose of these additional component units is to serve in a redundancy/support capacity. They back up the original units." Participants then answered the two main dependent measures. The first was return policy interest, which read, "Given that products in this category sometimes fail, break, or stop working correctly, how would the brand adding these 3 additional component units change your likelihood of carefully reading the return policy before buying one of its products?" Because it is possible that adding additional complexity could actually decrease consumers' interest in reading a return policy due to intuitions about the purpose of the additional components, this measure was a 7-point scale, anchored by "Severely decreases my

likelihood of reading the return policy" and "Severely increases my likelihood of reading the return policy," with "No change" as the midpoint. The second dependent measure was change in complexity, which read, "In your opinion, what does adding the 3 additional component units in this way do to the brand's complexity?" This was also a 7-point scale, anchored by "Makes the brand much simpler" and "Makes the brand much more complex," with "No change" as the midpoint. Participants finished the survey by answering demographic questions and an attention check.

Results and Discussion

As intended, when added components were framed as adding redundancy, perceived complexity did not increase as much as in the baseline condition ($M_{baseline}$ = 1.54 vs. $M_{redundant}$ = 1.26, $t(814) = 3.97$, $p < .001$). The main prediction of study 4 was that framing additional complexity of a brand in terms of redundancy would attenuate the positive effect of complexity on judged risk of failures, operationalized as consumers' reported interest in reading a product's return policy. In both conditions the additional complexity of the brand increased participants' interest in reading the product's return policy, and the change in interest was statistically higher than the scale's midpoint of 0 (representing no change in interest) ($M_{overall}$ = .90, $t(815) = 20.5$, $p < .001$, 15% of range). However, as predicted, participants in the redundant complexity condition were less interested in reading the return policy than those in the baseline complexity condition ($M_{baseline}$ = 1.10 vs. $M_{redundant}$ = .70, $t(814) = 4.60$, $p < .001$, difference = 6.7% of range).

These findings provide additional support for our hypothesized mechanism and shed light on consumers' mental models of brand simplicity and complexity. In general, consumers think that complexity means more risk because more components provide more opportunities for something to go wrong (even when these additional components are fairly abstract). Results also

support the existence of an important boundary condition for the main effect of perceived brand simplicity on lower risk judgments. Adding dimensionality increases perceptions of complexity, but adding redundant dimensionality increases complexity and risk judgments less than dimensionality not framed as redundant.

STUDY 5: SURPRISE AND DISAPPOINTMENT IN RESPONSE TO FAILURES

In study 5 we turn to our second main prediction, that simplicity perceptions can lead to greater downstream dissatisfaction in the event of failures. A secondary goal of study 5 is to provide evidence in support of the main predictions (including mediation of simplicity's effect on dissatisfaction through judged risk) using a different simplicity manipulation and different operationalizations of dimensionality and risk. In doing so we strengthen support for our predictions by providing converging evidence.

Method

Participants (N = 354 after exclusions from 14 attention check failures and 19 memory check failures) on Prolific Academic completed a Qualtrics survey. Because the study used a fully within-subjects design, participants were told that they would read short descriptions about two competing companies that sell home security systems, and that "both companies are US-based, have the same number of employees, and have been in business for about 40 years." Following this information, participants read the descriptions representing the manipulation of brand simplicity/complexity, with more or fewer components listed for the simple or complex brand, respectively. For the simple brand, participants read:

> *Company A only makes home security systems. They have two main security system models, they sell through their own brick-and-mortar stores, and their marketing targets anyone in the USA interested in home security systems. Their supply chain includes two main supplier organizations.*

The description of the complex brand read:

Company B makes home security systems, as well as many other personal electronics and home products. They have many security system models, they sell through their website and brick-mortar-stores, large online retailers, box stores, and hardware stores. They have separate marketing campaigns that specifically target men, another campaign directed at women, and another targeting office managers. Their supply chain includes seven main supplier organizations.

Following the manipulation descriptions, participants rated the simplicity/complexity, risk, and dimensionality of both companies (three items in random order). They evaluated simplicity/complexity of both companies using the same 8-point scale measure used in study 2. Because the manipulation of simplicity/complexity in this study explicitly listed many of the kinds of components which participants in study 3 were asked to imagine and record in the dimensionality (*H*) task, we felt that repeating that task in this study would be inappropriate. As a result, after reading the same introduction used in the *H* task from study 3, participants were asked to "rate how many [important components] you think company A and B would have," using slider scales from 1 to 50. We operationalized judged risk in this study as pre-failure (predicted) surprise about each brand's likelihood of having a failure. The question asked participants to "rate how surprised you would be if something went wrong with a home security system order from each of the two companies (7-point scales from "Not surprised at all" to "Extremely surprised").

After these three measures in random order, participants recorded their dissatisfaction following a hypothetical failure. Here dissatisfaction was operationalized as disappointment. The question read, "For each company, imagine that you bought a home security system and something immediately went wrong with it. Rate how much you agree with the following statement (for each of the companies): 'Given the company's characteristics, I was really expecting a better experience than I got.'" (7-point scales from "Strongly disagree" to "Strongly agree"). Participants finished the survey by answering demographic questions, an attention check

measure, and a memory check question that asked them, "what company in the survey made only home security systems (and not other products as well)?"

Results and Discussion

The manipulation was successful in generating differences in both complexity and dimensionality ($M_{complexity.simple} = 2.97$, $M_{complexity.complex} = 6.11$, paired $t(353) = 33.91$, $p < .001$; $M_{dimensionality.simple} = 12.34$, $M_{dimensionality.complex} = 27.78$, paired $t(353) = 21.67$, $p < .001$). The simple brand was also punished more for its failure than the complex brand, with participants reporting more disappointment following a hypothetical issue ($M_{disappointment.simple} = 5.32$, $M_{disappointment.complex} = 4.67$, paired $t(353) = 6.00$, $p < .001$).

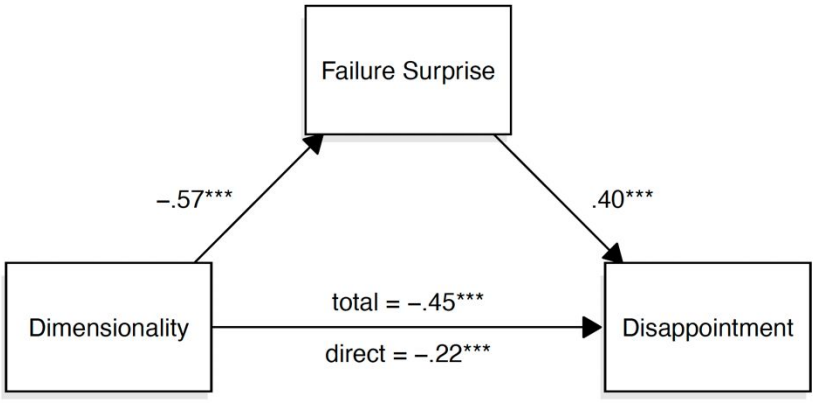
Mediation results are in figure 3. Our key analysis tests whether the difference in disappointment between the two brands was mediated by simplicity-driven differences in degree of surprise regarding a failure. The dimensionality variable was right skewed (Shapiro-Wilk statistic = .91, $p < .001$), so we used Tukey's ladder of powers transformation[4] to normalize it before testing the mediation. A mediation model with 1000 bootstrapped iterations in R revealed that participants' perceptions of brand dimensionality negatively predicted their degree of (anticipated) failure surprise, ($\beta_{dimensionality} = -.57$, $t(706) = 7.12$, $p < .001$, 9.5% of range), and more surprise was associated with higher post-failure feelings of disappointment ($\beta_{surprise} = .40$, $t(705) = 12.34$, $p < .001$, 2.5% of range). As a result, the indirect effect of dimensionality on disappointment through surprise was also negative (bootstrapped indirect effect = -.23, 95% CI = [-.30, -.16], 3.8% of range).[5] We note that although the transformation to normalize the

[4] https://rdrr.io/cran/rcompanion/man/transformTukey.html

[5] For an excellent discussion of the merits of this approach compared to one testing a mediational index, see Yzerbyt et al. 2018.

dimensionality variable is technically correct, it does not affect the results, which are the same under multiple assumptions (see web appendix).

FIGURE 3: STUDY 5 MEDIATION RESULTS



These findings provide support for all of our main predictions (except for moderation by redundancy). They substantiate the central idea that consumers become more upset about failures by brands they think are simpler, and that the effect is driven by participants' judgments of lower risk for lower-dimensional brands. They also reinforce the previous studies' findings using a different manipulation of simplicity, and different operationalizations of dimensionality and risk.

STUDY 6: RESPONSES TO PRODUCT FAILURES IN CONSUMER REPORTS DATA

The main goal of study 6 is to examine whether real consumers experiencing real product failures demonstrate the same elevated dissatisfaction for simpler brands after failures. We tested this in study 6 using proprietary secondary data. As part of their product evaluation process, product testing and rating organization *Consumer Reports* conducts extensive consumer experience surveys. We were given access to the consumer survey data for 2018 in four product categories: blenders, grills, mowers, and vacuums.

This dataset was ideal for our purposes because it includes measures of both an overall evaluation (recommendation likelihood) and a report of how many problems a consumer

experienced with a product. *Consumer Reports* does not measure brand simplicity in its consumer experience surveys. Therefore, we collected brand simplicity judgments from an independent sample for the brands in the *Consumer Reports* data. Our key prediction was an interaction between experienced problems and perceived brand simplicity on recommendation likelihood, such that simple brands are penalized more than complex ones when problems occur.

Consumer Reports Data

Consumer Reports' product reliability and satisfaction data is based on responses to their annual, quarterly surveys. Their Spring survey is emailed to a census sample of about 3 million *Consumer Reports* members, while their Winter, Summer, and Fall surveys utilize probability samples of these same people. Combined, these online surveys generate more than 800,000 responses per year. The data are representative of *Consumer Reports* members and the products they own. Each product category, aside from cars, is surveyed once per year.

We obtained data from the 2018 survey year for blenders, grills, mowers, and vacuums. The original dataset consisted of 171,059 customer surveys. We excluded incomplete responses and brands with fewer than 100 observations (because we wanted to have a tractable number of brands for which to collect simplicity scores). After these exclusions, the final dataset consisted of 147,460 observations across 63 brands. (Blenders: 12 brands, 26,727 observations; Grills: 12 brands, 33,360 observations; Mowers: 20 brands, 35,742 observations; Vacuums: 19 brands, 51,631 observations). The median number of observations per brand was 677.

The first key variable of interest was recommendation likelihood ("How likely is it that you would recommend a/an [brand, product] to your friends or family?"). This was measured on a 4-point "Extremely likely" to "Extremely unlikely" scale, which we recoded so that higher numbers indicated greater recommendation likelihood. The second key variable was number of

problems experienced. For grills, mowers, and vacuums the question was, "…how many times did it break or stop working as well as it should?" and was measured on a 4-point ordinal scale (None," "Once," "Twice," "Three or more times"). For blenders the question was, "In total, how many problems have you had with this blender since you've owned it," and was measured on a 6-point scale ("None," "1," "2," "3," "4," "5 or more"). For consistency across categories and because there were very few observations of "4" and "5 or more," we collapsed them into one bucket with "3," to create a 4-point scale, like the other categories.

In addition to the key variables, we included controls for age of the product and price (as a proxy for premiumness). Age was measured by asking participants what year they purchased the product, and we recoded it to represent number of years since purchase. Price was measured by selecting a price-range bucket from a list. Though this scale is technically ordinal, for simplicity we include it as a continuous covariate in our main model. Treating this variable as categorical does not substantively affect the results but does make the model much more complex and difficult to interpret.

Simplicity Scores from an Independent Sample

We supplemented the *Consumer Reports* data with average brand simplicity scores that we collected from an independent sample via Prolific Academic. Five hundred participants were diverted from an unrelated study and completed a Qualtrics survey. Data from 22 participants who admitted not following directions were excluded, leaving 478 in the final dataset.

Each participant was randomly assigned to one of the four product categories, then again to a random subset of up to 12 brands within the category, which they evaluated in random order. For each brand, participants were instructed to browse its website (via a link we provided) for several minutes before answering three 7-point, agree-disagree overall simplicity questions:

("Overall I think 'simple' is a good word to describe [brand]," "Compared to other [category] companies, [brand] is one of the simplest," "Compared to other [category] companies, [brand has an aura of simplicity"). This gave us one composite measure of simplicity per brand per participant, which we averaged across participants to give us a mean simplicity score for each brand in the dataset. The average number of participant judgments per brand was 66.7.

Analysis, Results, and Discussion

Prior to merging the data, we calculated descriptive statistics by product category. They are shown below in table 3. For the main analysis we merged the data for the four categories into a single data set, first z-scoring the recommendation likelihood, simplicity, price, and age variables within category.

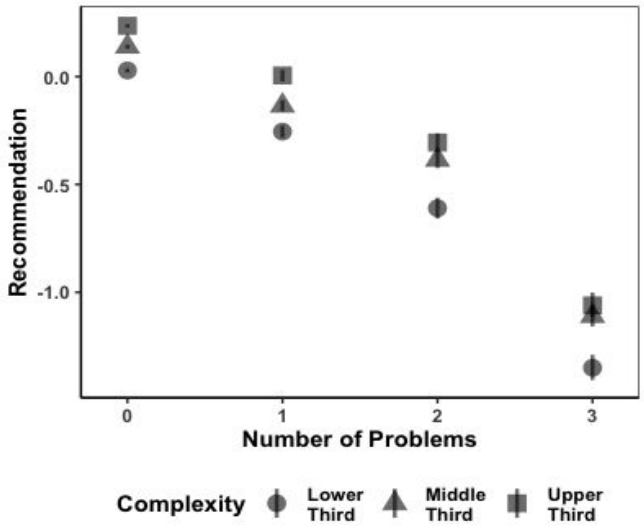
TABLE 3: STUDY 6 DESCRIPTIVE STATISTICS BY CATEGORY

Category	Blenders	Grills	Mowers	Vacuums	Total / Mean
Number of Brands	12	12	20	19	63
Number of Observations	26,727	33,360	35,742	51,631	147,460
Mean Recommendation Likelihood	3.50	3.57	3.57	3.47	3.52
Mean Complexity	4.14	3.91	4.06	3.85	3.97
0 Problems	88.6%	79.1%	70.6%	78.8%	78.6%
1 Problem	7.7%	11.0%	14.2%	10.8%	11.1%
2 Problems	2.4%	4.8%	7.5%	5.0%	5.1%
3 or More Problems	1.2%	5.2%	7.7%	5.5%	5.2%

Because of the way the problem variable was measured by *Consumer Reports*, we ran two versions of the main model: one with the problem variable operationalized with dummy codes, and one by a set of Helmert contrast codes (Judd et al. 2009). Both were linear mixed-effects models. They tested whether the effect of experiencing a problem on consumers' willingness to recommend a product depends on the perceived simplicity of the brand. The

advantage of the dummy coded model is that it allows us to test the effect of simplicity on recommendation when moving from zero problems to one problem. Its downside is that the model intercept is not meaningful for our predictions, and neither are the remaining dummy-coded interaction variables (zero versus two problems, zero versus three or more, etc.) The benefit of the Helmert code version of the model is that it allows us to test the effect of simplicity on recommendation when moving from zero problems to the remaining three problem levels. Its intercept is also more interpretable because it represents the mean of all problem level group means on the recommendation dependent variable. We are focused primarily on the interaction of simplicity and problems on the recommendation dependent variable, and each model included random intercepts and slopes by product category. We also ran these models both with and without control variables for the age and price of the product. Note that the sample size for the models with controls is reduced to 126,475 observations because we had incomplete price and age data. Complete results of all models are shown in table 4. Figure 4 shows average recommendation likelihood as a function of brand complexity tercile groups and number of problems experienced.

FIGURE 4: STUDY 6 RECOMMENDATION LIKELIHOOD MEANS AT THREE LEVELS OF BRAND COMPLEXITY AND INCREASING REPORTED PROBLEMS (WITH 95% CONFIDENCE INTERVALS)



Both versions of the model support our prediction: Experiencing more problems with a product decreases consumers' subsequent willingness to recommend it, but this is more pronounced for simpler brands. In figure 4, this interaction is apparent by the larger distance between the upper (squares) and lower terciles (circles) of complexity as the number of problems increases. In the dummy code version of the model, the interaction of a none-versus-one problem dummy code and a brand simplicity variable (with higher values indicating more complexity) on recommendation likelihood was positive and significant ($\beta_{interaction} = .02$, $t(147400) = 3.01$, $p = .003$, .7% of range). In the other version of the model, the interaction of a contrast-coded problem variable (representing one problem versus the average of the remaining three levels of problems) and brand simplicity (with higher values indicating more complexity) was also positive and significant ($\beta_{interaction} = .03$, $t(147100) = 3.72$, $p < .001$, 1.0% of range). These positive interaction coefficients (bolded in table 4 below) indicate that brand simplicity exacerbates the downward effect of problems on recommendation likelihood. This pattern of results replicates when we include control variables for age and price of the products.

TABLE 4: REGRESSION COEFFICIENTS FOR ALL STUDY 6 INTERACTION MODELS

	Dependent variable: Recommendation Likelihood			
Variables in Model	**(Dummy model w/ controls)**	**(Dummy model)**	**(Contrast model w/ controls)**	**(Contrast model)**
0 vs. 1 problem (dummy)	-0.29***	-0.27***		
0 vs. 2 problems (dummy)	-0.59***	-0.57***		
0 vs 3+ problems (dummy)	-1.35***	-1.31***		
0 vs 1+ problems (contrast)			-0.75***	-0.71***
1 vs. 2+ problems (contrast)			-0.68***	-0.67***
2 vs 3+ problems (contrast)			-0.76***	-0.74***
Complexity	0.05	0.10***	0.07*	0.12***
Product Age	0.00		0.00	
Product Price	0.10***		0.10***	
Dummy0vs1*Complexity	**0.03*** **	**0.02*** **		
Dummy0vs2*Complexity	0.04***	0.04***		
Dummy0vs3+*Complexity.	0.04***	0.04***		
Contrast0v1+*Complexity			**0.034*** **	**0.03*** **
Intercept	0.16***	0.13***	-0.40***	-0.40***

Note: *p<.05, **p<.01, ***p<.001

Across all versions of our models in study 6, we find that consumers are less likely to recommend simpler brands when there is an unexpected problem. These analyses are correlational and so interpretations of causality or direction should not be made, but they do provide real-world support for our key prediction. Notably, simpler brands also received poorer evaluations overall. A regression predicting recommendation likelihood with simplicity (again coded with higher values as more complexity) and random intercepts by category shows a positive and significant effect ($\beta_{complexity} = .09$, $t(147500) = 35.87$, $p < .001$, 3.0% of range). As can be seen in figure 4, recommendation likelihoods were lower for simpler brands at all levels of experienced problems. We mentioned earlier that brand simplicity may benefit liking. Here, in a post-usage context, we found that simpler brands obtained lower recommendation likelihoods. One possible explanation is that simpler brands are held to a higher standard. In the case of this *Consumer Reports* data, pre-purchase liking was likely to be high for all brands because the consumers chose to purchase the option they reported on. The fact that evaluations for simpler

brands were lower, even in the absence of reported problems, should be worrying to marketers of simple brands. It suggests that simplicity could be good for generating attention and trial but could be less beneficial to post-purchase satisfaction and customer retention.

STUDY 7: MANIPULATED PRODUCT FAILURE

The goal of study 7 is to conceptually replicate the correlational findings of study 6 after experimentally manipulating perceived simplicity *and* failure. Data from study 6 provide real-world support for consumers' more acute dissatisfaction with simpler brands after failures. In study 7 we test whether these effects are driven by lower judged risk for simpler brands by experimentally manipulating both simplicity and failure, and measuring risk and subsequent star ratings, using the same four product categories from the *Consumer Reports* data.

Method

A combined sample of 2,053 participants from Cloud Research and Prolific Academic completed a Qualtrics survey.[6] Fifty-eight participants were excluded for either failing an attention check or being bots), leaving a final sample of 1995 participants (525 from Cloud Research, 1750 from Prolific Academic; 47.3% female).

Study 7 used a two (simple vs. complex) by two (failure vs. no failure) between-subjects design. Participants were first randomly assigned to one of four product categories, which were the same as those in study 6: vacuums, mowers, grills, or blenders. They then viewed both a simple and complex brand's marketing image from their assigned category, representing the simplicity manipulation. Each brand thus served as a contrast or reference point to the other, reflecting how consumers often consider brands in the real world. Like studies 1 and 2,

[6] We planned to collect the entire sample on Cloud Research, but because only participants with reliable worker statistics who had not completed our previous studies were permitted to take the survey, it was taking too long to complete. We therefore paused the survey after about 550 responses and re-launched it to another 1500 participants on Prolific Academic. Other than this change, all plans were pre-registered on AsPredicted.org.

simplicity was manipulated visually, as well as a brief tagline that read, “Blend. Simple.” or the equivalent from one of the other three product categories. In the complex condition manipulation, the image contained additional edges, words, and shapes (see OSF repository). Each image also contained one of two images of the category product itself (e.g., a blender), which was counterbalanced to randomly appear in either the simple or complex condition. Across all categories, the same brand names accompanied the simple and complex brands: Simplicity and Xvolve. Therefore, while participants were assigned to answer questions about only the simple or complex brand, they saw both the simple and complex brands’ images. After viewing the stimuli, participants then answered the 8-point simplicity and 6-point risk questions from the previous studies about either the simple or complex brand, in random order.

Participants then moved on to the failure manipulation and were given the following prompt: “Imagine that you have decided to buy the [brand name] [product]. Imagine that you use it, then decide to write an online review of it. On the next page you will see your written review of the product. Please read it carefully.” They then read the product review, which looked like an Amazon review. Participants in the “no failure” condition read the following, which was changed slightly for each category: “Overall, this blender works very well. It blends frozen fruit and ice cubes quickly and smoothly, is fairly quiet, and the lid seals nicely to prevent splatters in my kitchen." The failure condition review included the same copy, plus the additional sentence (or its category-specific equivalent): “But every once in a while it turns off unexpectedly, and I have to unplug it, wait a minute, then plug it back in to get it working again.” Finally, participants were shown their category- and simplicity level-specific brand images again, before answering the following question: “Based on what you know about the company and the product, what is your star rating of the [brand name] [product]?” (9-point scale from 1 to 5 stars

with half stars in between). Finally, they answered demographic measures of age, gender, and education before completing the survey.

Results and Discussion

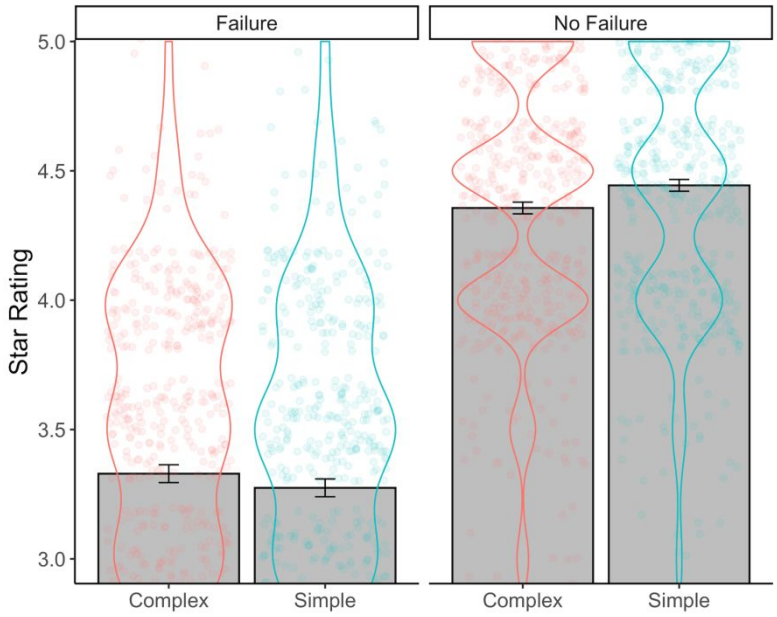
The simplicity manipulation was successful (M_{simple} = 2.96, $M_{complex}$ = 5.62, $t(1993)$ = 43.01, $p < .001$). The main study 7 analyses examine the relationships between our constructs of interest in three ways.[7] First we test whether the manipulated simplicity variable predicts star ratings, mediated by judged risk. This model is comparable to the main mediation model in study 5, except here the estimate for the effect of risk on star ratings (the mediation model's *b* path) represents an average across the failure and no-failure conditions. For this reason, we then separately test whether judged risk predicts star ratings, moderated by a contrast-coded variable for failure or no-failure condition. Finally, for clarity we test for the existence of a significant interaction between the two manipulated factors (simplicity and failure) on star ratings, which is analogous to the main model in study 6.

We tested the mediation model's component paths in R with 1000 bootstrapped iterations. The manipulated simplicity/complexity factor (coding: simple = -.5, complex = .5,) positively predicts participants' risk judgments ($\beta_{complex.contrast}$ = .25, $t(1993)$ = 4.69 , $p < .001$, 5.0% of range), which in turn led to lower average star ratings (β_{risk} = -.11, $t(1992)$ = -3.22, p = .001, 1.4% of range). As a result, the indirect effect of manipulated complexity on star ratings is negative (95% CI = [-.05, -.01]). Unpacking the risk-to-ratings relationship via moderation, risk judgments negatively predict star rating, but this negative effect is positively moderated by failure, indicating that failure is not as disappointing when participants have higher ex ante expectations of risk ($\beta_{interaction}$ = .17, $t(1991)$ = 3.45, $p < .001$, 2.1% of range).

[7] As with previous studies, divergence in analytical approach from our pre-registration protocol in this study is due to changes requested by the editorial/review team.

Figure 5 shows the results of the two-factor interaction model. A contrast-coded failure variable significantly and negatively predicted star rating, but the negative relationship was significantly worse for the simple brand condition, in a linear mixed-effects model with random intercepts by product category ($\beta_{interaction} = .28$, $t(1991) = 2.44$, $p = .01$, 3.5% of range; positive interaction coefficient indicates an attenuation of the negative effect of failure on star rating for more complex brands, or a worsening of the effect for simpler brands).

FIGURE 5: STUDY 7 STAR RATING MEANS (WITH STANDARD ERRORS) BY CONDITION



Note: Y axis restricted to make condition differences more visible.

Results from study 7 provide experimental support for the prediction that consumers punish simpler brands more for failures, and that the more acute punishment is driven by perceptions of brand simplicity lowering risk judgments. These data corroborate the correlational results from the *Consumer Reports* study and provide converging evidence for our predictions.

GENERAL DISCUSSION

Results from seven studies, including six experiments and analysis of proprietary secondary data, revealed important consequences of consumers' brand simplicity perceptions. By manipulating brand simplicity by varying the visual complexity of advertisements, findings from studies 1 and 2 demonstrated that consumers judge simpler brands as less risky. Results from study 3 suggest that consumers' simplicity perceptions are driven by the dimensionality of their mental representations of brands, which are associated with judged risk over and above the effects of fluency. Dimensionality was captured with a paradigm and measure of the complexity of mental representations, *H*, adapted from cognitive psychology. The important boundary condition of redundancy (study 4), which attenuated the positive association of complexity and risk, was explored in order to provide additional clarity surrounding our proposed mechanism. Study 5 replicated the main pattern of effects and provided support for all the major predictions in the manuscript using different operationalizations of the key constructs. Analysis of a proprietary customer satisfaction dataset from *Consumer Reports* in study 6 revealed that consumers penalize simple brands more than complex ones when problems occur in the real world. These findings were then replicated in an experimental design that manipulated failure in study 7.

Implications and Opportunities for Future Research

Among marketing practitioners, projecting simplicity in marketing is a popular strategy. Marketers have rightfully acknowledged that too much marketing can leave consumers with information overload. Simplicity of marketing, the thinking goes, allows marketers to reach overstimulated consumers to communicate benefits or a brand identity. There is some evidence that simplicity can be attention-grabbing in certain contexts. When the marketplace is cluttered with many options, each offering its own unique features, the simple option can stand out (Long

2019). Another possibility was raised by Pieters et al. (2010), who showed that one form of visual complexity encourages consumer attention, while another hurts it. Some have even suggested that there could be cultural differences in attention to simplicity (Masuda and Nisbett 2006).

The current research suggests that simplicity in marketing has a previously undiscovered downside. If it is interpreted by consumers as a kind of promise of simplicity in general, they may develop unrealistic and inaccurate expectations of risk, which can cause dissatisfaction in the event of a product or service failure. Data from study 6 also introduces the possibility that brands perceived to be simple may be held to a higher standard even in the absence of a failure. If this is true, marketers should be more careful about the simplicity messages they are sending to consumers. For marketers of objectively simple, high-quality products with low frequency of failures, simplicity in marketing may be the right choice. However, for marketers of complex products with higher risk of failures, simplicity of marketing (and possibly customer acquisition efforts) may need to be traded off with sending more accurate signals of complexity and risk.

A remaining question is whether (or the degree to which) marketing practitioners are aware of these potential consequences of consumers' perceptions of brand simplicity. To answer this question, we conducted a survey of marketing practitioners (N = 24) from two marketing agencies and one in-house team to gain insight into real marketers' intuitions regarding the benefits and risks of simplicity in marketing (see OSF repository for materials). Results revealed that practitioners think consumers view simpler brands as less risky than complex ones ($p <$ .001) and believe consumers like simpler brands more ($p < .001$). However, despite being prompted to consider consumers' risk perceptions by the previous question in the survey, not one practitioner mentioned increased consumer dissatisfaction after failures in their responses to an

open-ended question asking them to list "any possible downsides to suggesting or projecting simplicity as a marketing strategy." Thus, the current work's predictions have important, novel, and non-obvious implications for marketers, scholars, and consumers alike.

In this research we did not measure the implied tradeoff between the potential benefits of perceived brand simplicity and the dissatisfaction it may cause, compared to companies perceived to be more complex. Whether (or the degree to which) this is a tradeoff marketers should make is an empirical question that may itself depend on specific characteristics of brands. The existence of this tradeoff also depends in part on the simplicity-liking relationship. Although not discussed above in detail, we collected measures of liking in several of the studies reported here, and the simpler brands were indeed better liked in all but one instance (see web appendix for analyses). These findings and their variability suggest that the link between perceived simplicity and liking could be more nuanced than many marketing practitioners expect (and thus may be influenced by potential moderators). For example, prior research has suggested that consumers are attracted to complexity during choice (when framed in terms of additional features), but regret that during product use, instead preferring simplicity (Thompson, Hamilton, and Rust 2005). As a result, it is possible that consumers do not reward brands for simplicity earlier in the customer journey, even if they do reward them later. Findings from the current work suggest that product failures could introduce yet another nuance in the relationship.

Of course, there are also numerous potential moderators of the main pattern of effects, any of which could be fruitful opportunities for future research. For instance, the link between simplicity and risk may be weaker in more complex domains where simple solutions could be viewed as insufficient to solve problems or generate utility. Similarly, categories with extremely low baselines of involvement or risk may also show weaker effects. An additional consideration

is the degree to which simpler brands may give consumers expectations of procedural fairness (with fast and simple resolutions), which has been shown to positively influence consumer satisfaction and loyalty after service failures (Goodwin and Ross 1992). Finally, in terms of individual-level moderators, consumers with higher need for cognition (Cacciopo and Petty 1982) or tolerance for ambiguity (Budner 1962) could value simplicity less or think less in general about the relationship between complexity and risk (Fernbach et al. 2013).

Finally, it is an open question whether brand simplicity is positive or negative for consumers themselves. We acknowledge that there is often a compromise between simplicity and functionality, and do not expect that consumers prefer simplicity at all costs. Rather, we speculate that marketing should be as simple as possible while still preserving the features that consumers are attracted to. If the relationship between simplicity and liking does not translate to higher levels of choice for simpler brands because consumers are able to undertake a risk-benefit analysis weighing simplicity and functionality, concerns about consumers being taken advantage of by marketers may be unfounded. All else equal, educating consumers about the judgments they might make in response to simplicity in marketing may be the most reasonable first step.

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Web Appendix

Keep It Simple? Consumer Perceptions of Brand Simplicity and Risk

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PRE-TEST FOR APPENDIX STUDY A

Pre-Test Items

Three of these 19 items (items 17-19) were used to measure the overall perceived simplicity of the 40 brands in the pre-test (in order to use some of them in study 1). The rest were collected to see which correlated with overall simplicity scores. Since each participant only evaluated one brand, each brand's simplicity score was calculated by taking a within-participant average of the three overall simplicity score items, then taking the sample-level average of those within-participant averages.

Table W1

Item Number	Statement
1	Visually, the [brand] website is sparse/uncluttered.
2	Visually, [brand] ads are sparse/uncluttered
3	The words on [brand] ads are easy to understand.
4	In general, the physical design of [brand] products is simple
5	In general, [brand] product packaging is simple.
6	The name [brand] is simple.
7	I have a good understanding of how [brand] products work.
8	It would take a short amount of time to learn how to use [brand] products.
9	In general, [brand] products are easy to make.
10	The process of purchasing [brand] products is simple.

11	The process of deciding on which [brand] product to purchase would be simple.
12	From the point when a customer decides to buy some [brand] product, the customer would have access to the product quickly.
13	Getting set up to use [brand] products after a customer has one is easy.
14	[Brand] offers very few products.
15	In general, [brand] products have very few uses.
16	In general, when promoting their products, [brand] lists many features of those products.
17	Overall, I think 'simple' is a good word to describe [brand].
18	[Brand] has an aura of simplicity.
19	Compared to other companies, [brand] is one of the simplest.

APPENDIX STUDY A

In this study we tested the simplicity-risk prediction using stimuli from real brands from a pre-test (N = 513) that measured consumers' perceptions of the simplicity of 40 brands (see details in this appendix, above). We ran this pre-test in order to obtain brand simplicity scores and to learn several potential methods for manipulating brand simplicity perceptions in subsequent studies. Participants in the pre-test viewed their randomly-assigned brand's webpage and print/billboard ads, then answered several agree-disagree items related to simplicity perceptions, including three intended to capture perceptions of the overall simplicity of the brand (e.g., "[Brand] has an aura of simplicity"). We averaged these three overall simplicity measures across participants for each brand, which allowed us to select brands to use in this study (see OSF repository for materials and web appendix for average brand simplicity scores).

In this study we chose a subset of the brands from the pre-test that differed in judged simplicity, had participants view their websites and advertisements, and judge risk and liking. We predicted that the simple brands would be deemed lower risk. Manipulation of perceived brand simplicity was accomplished via stimulus selection. We considered two plausible alternative explanations for an association between perceived simplicity and risk. First, participants may see simpler brands as more premium and more premium brands as lower risk. Second, it could be the case that risk judgments do not depend on simplicity per se, but instead are fully mediated by liking. That is, participants may like simpler brands better and deem things they like to be lower risk. If this were true, it would mean that anything that increases liking should decrease risk, without a theoretically interesting place for simplicity. To test these alternatives, we included a measure of brand premiumness and controlled both for it and for liking when assessing the effect of simplicity on risk.

Method

204 Amazon Mechanical Turk participants completed a Qualtrics survey via Cloud Research for $2.00. Data from 11 participants who admitted not viewing study stimuli and three participants who took less than five minutes to complete the survey were deleted from the data set before analysis began, resulting in 190 complete responses.[1]

The study used a within-subjects design. We took pairs of brands—the simplest and the most complex from four of the eight product categories in the pre-test, based on average simplicity judgments. The brands were Sleep Number and Casper (mattresses), Aetna and Oscar (insurance), Charles Schwab and SoFi (financial services), and OGX and Suave (hair products). All participants viewed the websites and advertisements of all eight brands, with order of website

[1] The mean completion time for the remaining 190 participants was 21 minutes, 20 seconds. Participants could not, in good faith, complete the survey in less than five minutes because they were instructed to visit the websites of 8 brands, spend several minutes on each, view multiple advertisements by those brands, and answer more than 50 questions in total. For robustness checks without these exclusions, see appendix.

or ads first counterbalanced, which were identical to the pre-study stimuli for those brands. This represented our manipulation of brand simplicity by stimulus selection. After viewing the website and advertisements of a brand, participants then answered four questions which were presented in randomized order. The questions measured liking ("How much do you like the company [brand]?", "Do not like at all" to "Like very much"), simplicity ("In your opinion, how simple or complex is the company [brand]?", "Extremely simple" to "Extremely complex"), premiumness ("Please rate how much you agree disagree with the following statement: I think of [brand] as a high-end brand", "Strongly disagree" to "Strongly agree"), and perceived risk ("Extremely low risk" to "Extremely high risk") in response to the following statement:

> "When buying something or interacting with a company, sometimes consumers experience issues that they didn't expect. These issues include anything that would cause a consumer to return something, post a negative review, or contact customer service for any reason. In your opinion, what is the risk of this kind of issue happening with [brand]?"

Participants then answered a question asking them if they viewed all eight of the brands' websites, and reported age, gender, and income.

Results and Discussion

We first checked for meaningful differences in perceived simplicity between the simple and complex brands in each product category. We tested if the average within-subject difference between the simple and complex brands was significantly different from zero. Replicating the perceived differences from the pre-test, the simple brands were rated as simpler than the complex brands in each product category (all *p*s < .001, see OSF for all analyses).

The predicted effect of simplicity on perceived risk was confirmed. The average difference in risk between simple and complex brands was .18 (on a 7-point scale, M_{simple} = 3.45, $M_{complex}$ = 3.63). To test if this difference was statistically significant, we ran a linear mixed-

effects model with a within-subject risk difference score (complex minus simple) as the dependent variable. Because this measure represents each participant's difference in perceived risk between the complex and simple brand within each category, the model intercept represents the effect of the simplicity manipulation on perceived risk. The model also included zero-centered difference score variables to control for the effects of liking and perceived premiumness, as well as mean-centered participant demographic variables (age, gender, and income) and random intercepts for product category and participant. The intercept was positive and significant indicating that participants believed simpler companies to be lower risk (simplicity coded with higher numbers indicating more complexity; $\beta_0 = .36$, $t(5.56) = 5.60$, $p = .002$). We also examined the effect of perceived simplicity on liking judgments. We ran a model with the same demographic controls and random intercepts predicting within-subject differences in brand liking. The model revealed a positive intercept which was not statistically different from zero ($\beta_0 = .11$, $t(3.23) = .54$, $p = .63$). Across eight brands from four product categories, participants demonstrated that they believe that simpler brands are lower risk than complex brands, after controlling for liking and perceived premiumness. There was no significant effect of simplicity on liking.

In testing the effect of simplicity on the risk difference score in study 1, we also ran several robustness check models. The first represents the same model reported in the paper's main text, but without participant exclusions based on time spent on the survey (of which there were three). It replicated our results almost exactly ($\beta_0 = .37$, $t(4.93) = 5.31$, $p = .003$).

The second robustness check we ran tested whether participants' randomly assigned presentation order condition (ads or websites first) meaningfully affected their risk perceptions. A model identical to that reported in the paper, but with a contrast-coded order variable added

revealed a significant difference in risk perceptions such that participants in the ads-first condition reported higher risk for the complex companies compared to participants in the web-first condition ($\beta_{adsfirst.cc}$ = .23, t(187.33) = 2.00, p = .05). In order to test if this difference affected our interpretation of the data, we ran two models. The first was identical to the main model reported in the study except it contained a dummy-coded predictor variable for order with 0 as ads first and 1 as web first. The second was identical except the dummy-coded order variable was coded as 1 for ads first and 0 for web first. These two models allow us to test the magnitude and significance of the intercept for both order conditions separately. In both models (as in the main paper) the intercept was positive and significant, indicating more risk for companies perceived to be more complex ($intercept_{adsfirst}$ = .47, t(15.15) = 5.66, p < .001; $intercept_{webfirst}$ = .24, t(19.18) = 2.72, p = .01).

A third robustness check model tested the direct effect of perceived simplicity (coded with higher numbers indicating more complexity) on judged risk, controlling for age, gender, income, liking, and perceptions of premiumness, with random effects by brand and participant. Replicating the effects in the main text, more complexity was associated with more risk ($\beta_{complexity}$ = .27, t(1384) = 11.72, p < .001).

A final model tested for the effect of simplicity condition (complexity = .5, simplicity = -.5) on judged risk, controlling for perceptions of liking and premiumness, with random effects by brand, participant, and category. The same pattern of effects replicated ($\beta_{complexity}$ = .34, t(1343.6) = 5.17, p < .001).

APPENDIX STUDY B

As mentioned in the main text, we replicated the pattern of effects from study 2 in a very similar study (which we call appendix study B here). 617 Amazon Mechanical Turk participants completed a Qualtrics survey via Cloud Research for $.80. Like study 2, study 2b used pairs of brands, but this time in five product categories: software development, financial services, bicycles, food, and apparel. Each participant was randomly assigned to view only one of the five categories, and each category included two fictional brands, one with a simple marketing image and one with a complex one.

The images were manipulated in line with findings from visual complexity research by Pieters et al. (2010); complexity was increased by including additional images, edges, textures, colors, and copy, and reducing empty space. The simple stimulus in each category was black and white only, and included a stylized hourglass graphic, the company name, and three category-specific words, as well as a large amount of white space, reflecting takeaways from the pre-test about visual sparseness. Across product categories, the images and company names were the same within simplicity levels, but the copy on the stimuli was changed to reflect the appropriate category. For example, the simple apparel company condition copy read, “Streetwear. Workwear. Simplicity,” while the simple financial services condition copy read, “Investing. Planning. Simplicity,” even though both brands used the same visuals and names.

After being randomly assigned to a category, participants were then randomly assigned to one of two presentation order conditions (simple first or complex first). They viewed either the simple or complex marketing stimulus in their assigned category, evaluated the perceived simplicity of the company (using the same measure as in study 2), then answered four questions about potential confounding factors in random order. The first was size of the company (“In your opinion, how small or large is this company?”), measured on a six-point “Very small” to “Very

large" scale. The second was luxury ("Please rate how much you agree/disagree with the following statement: I think of this company as a luxury company."), measured on a six-point scale from "Strongly disagree" to "Strongly agree." The third was professionalism ("In your opinion, how professional is this company?"), measured on a six-point "Not professional at all" to "Very professional" scale. The fourth was liking, measured on a six-point "Do not like at all" to "Like very much" scale. Participants then viewed the equivalent stimulus and answered questions for the other brand / level of simplicity in their assigned category. Participants were then shown both stimuli again and were asked to evaluate whether consumers of company A or company B (simple-complex counterbalanced across conditions) would be more likely to experience unexpected product or service issues. The risk measure was identical to that of study 2.

Results and Discussion

The simplicity manipulation was successful: the average within-subject difference in perceived simplicity between the simple and complex stimuli across the five product categories was 2.18 on an eight-point scale ($t(616) = 27.88$, $p <. 001$), and was significant for all five categories individually (all ps $< .001$). To test the risk prediction, we used a linear mixed-effects model with random intercepts by category, four within-subject difference-score control variables (complex minus simple) for perceived size, luxury, professionalism, and liking, as well as a contrast-coded presentation order control variable, to test the effect of manipulated simplicity on perceived risk of unexpected issues. Because the dependent measure in the experiment was a single bipolar item, we zero-centered it at the midpoint of the scale. This allows us to easily interpret and test the significance of the model intercept, with positive intercept values indicating perceptions of more risk for the complex company, and negative indicating more risk for the

simple company. As predicted, consumers judged the simpler brands to be less risky than the complex brands, over and above the effects of perceived differences in liking, luxury, professionalism, and size ($\beta_0 = .21$, $t(608) = 3.09$, $p = .002$; see OSF repository for full set of results).

Study 2b also provided support for the association between simplicity on liking: the within-subject difference in liking between the complex and simple brands indicated more liking for the simpler brands (average within-subject difference on the six-point measure = .35, $t(613) = 6.50$, $p < .001$).

STUDY 1

Study 1 Additional Analyses

Study 1 also provided support for the practitioner's assumption of the positive effect of simplicity on liking: the within-subject difference in liking between the complex and simple brands indicated more liking for the simpler brands (average within-subject difference on the six-point measure = .38, $t(605) = 7.18$, $p < .001$).

STUDY 2

Study 2 Additional Analyses

Findings from study 2 also replicated the liking results from study 1. Participants in the simple-by-comparison condition reported more liking for the focal brand than those in the complex-by-comparison condition ($M_{simple\text{-}by\text{-}comparison} = 3.62$, $M_{complex\text{-}by\text{-}comparison} = 3.06$, $t(602) = 5.32$, $p < .001$; higher values indicate more liking). Importantly, our main simplicity-risk results

were also robust to the inclusion of liking as a control variable. In a model predicting risk with condition and a control variable for liking, the complex condition was still perceived to be significantly riskier than the simple condition ($t(601) = 2.38$, $p = .02$).

STUDY 3

Study 3 Additional Analyses

In the main text we reported using a Tukey transformation on the dimensions variable because it was not normally distributed, but that the main mediation model was robust under different assumptions. Here we report the results of two additional versions of the mediation model, one with no transformation of the dimensions variable, and another using a log transformation.

A mediation model with no transformation of the dimensions variable replicated the pattern as well, with participants' perceptions of brand dimensionality negatively predicting their degree of (anticipated) failure surprise, ($\beta_{dimensionality} = -.03$, $t(706) = 6.47$, $p < .001$), and more surprise was associated with higher post-failure feelings of disappointment ($\beta_{surprise} = .40$, $t(705) = 12.55$, $p < .001$). As a result, the indirect effect of dimensionality on disappointment through surprise was also negative (bootstrapped indirect effect = -.01, 95% CI = [-.01, -.01])

In a mediation model with a log transformation of the dimensions variable, participants' perceptions of brand dimensionality negatively predicted their degree of (anticipated) failure surprise, ($\beta_{dimensionality} = -.42$, $t(706) = 7.29$, $p < .001$), and more surprise was associated with higher post-failure feelings of disappointment ($\beta_{surprise} = .40$, $t(705) = 12.28$, $p < .001$), and the

indirect effect of dimensionality on disappointment through surprise was again negative (bootstrapped indirect effect = -.17, 95% CI = [-.22, -.12])

STUDY 6

Study 6 Additional Analyses

The crucial interaction effect reported in the main text (i.e., that the negative effect of failures on recommendation is worse for simpler brands) is seemingly robust to a number of different specifications (as reported in the main text). However, none of those analyses include any participant demographic controls or brand-specific random effects. In the analysis below, we report the results of a linear mixed effects model predicting recommendation likelihood with linearized number of reported problems, complexity of the brand, their interaction, the price and age of the product, plus the gender of the participant, and random effects by brand. The results replicate the pattern reported in the main text: more problems have a negative effect on consumers' willingness to recommend a product ($\beta_{problems}$ = -.38, t(126500) = -115.0, p < .001), but the effect is more negative for simpler brands ($\beta_{problems*simplicity}$ = -.010, t(126500) = 2.94, p = .003).