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Abstract

Many firms allow consumers to customize their own products by making a series of choices about individual product attributes. This paper investigates extensions of mass customization systems that capitalize on the fact that customized products are often one of a kind—i.e., *strictly unique*. The first extension is informing the consumer that this is the case (strict uniqueness *feedback*). The second is assuring the consumer that, once purchased, his or her specific product configuration will remain unique and not be available to other consumers (strict uniqueness *blocking*). We hypothesized that both strict uniqueness feedback and strict uniqueness blocking increase consumers' valuation of a product. Evidence from a series of field, lab, and online experiments provides compelling support for this theorizing. It also shows that these effects are attenuated when the size of the mass customization system's solution space is made transparent to consumers. Conversely, the effects are amplified for conspicuous (vs. non-conspicuous) product attributes, providing direct managerial implications. This research advances our understanding of the psychological forces that govern consumers' appreciation of customized products by identifying two related extensions of mass customization systems that exploit the notion of strict product uniqueness.

Keywords: mass customization, product uniqueness, automated feedback, conspicuousness

Imagine the following scenario: A sneaker aficionada customizes her own individual sneakers online through a mass customization (MC) system. The system allows her to independently select the color of each of 20 different attributes of the sneakers—for each feature, she can choose among 50 different colors. After some trial and error, she comes up with an appealing configuration that is quite different from those of her peers. Before adding the sneakers to her cart, the following message pops up on her screen: "You are the first to create this product configuration. We guarantee that your configuration will remain unique for two years by blocking it for future customers." Would such a message affect how the aficionada values her customized sneakers?

On the one hand, the message may not create value for the aficionada. From an objective standpoint, many customized products are actually strictly unique given the vast number of attributes and options that consumers can choose from in MC systems (e.g., 115 trillion possible sneaker configurations on nike.com/nike-by-you and 566 quadrillion possible cereal mixes on mymuesli.com/mixer). The solution space of many MC systems is not only expansive but also finely granulated, meaning that extreme proximity of solutions becomes possible. This, in turn, makes it unlikely that a specific configuration will be chosen more than once.

On the other hand, the message may create value for the aficionada. First, consumers may underestimate the likelihood or neglect the possibility that their own customized product is strictly unique (Paulos 1988; Sunstein 2002). Second, MC systems may selectively attract consumers with a high desire for uniqueness as they enable the creation of non-standardized and individualized products (D'Angelo, Diehl, and Cavanaugh 2019; Franke and Schreier 2008; Lynn and Harris 1997; Michel et al. 2009). Third, early production technologies such as mass production and photography have impaired the "aura" of unique products (Benjamin 2008;

Fuchs, Schreier, and Van Osselaer 2015), which is further accelerated by new technologies that enable perfect digital reproducibility (Waugh 2017). These developments may strengthen individuals' desire for unique artifacts and experiences (Morgan 2019) and are in line with people's increased quest for the unique (Francis and Hoefel 2018; Reckwitz 2017).

If it indeed creates value to inform the aficionada about the uniqueness of her configuration and to guarantee its future uniqueness, this would represent an extraordinary opportunity for firms that provide MC systems. It would be straightforward and inexpensive for firms to implement the proposed feedback function, as the feedback can be generated automatically based on a simple database query of past sales. Based on research into product uniqueness (Lynn and Harris 1997) and MC (Bharadwaj, Walker, and Hofstede 2009; Franke, Schreier, and Kaiser 2010), we propose that providing consumers with automated feedback indicating the strict uniqueness of their configured product and, in addition, assuring them that their particular product configuration will be blocked enhances their valuation of that product.

Evidence from a series of field, lab, and online experiments shows that strict uniqueness feedback and strict uniqueness blocking increase consumers' valuation of a customized product as reflected in conversion rate and willingness to pay (WTP). We propose and find important boundary conditions: The effect is attenuated when the size of an MC system's solution space (i.e., the number of possible configurations) is made transparent to consumers, whereas it is amplified for conspicuous (vs. non-conspicuous) product attributes. This research contributes to the MC literature by demonstrating how the functionality of these systems can be enhanced through automated feedback on, and the blocking of, strict uniqueness. Moreover, it adds to the product uniqueness literature by showing that this guarantee of strict uniqueness can create value for consumers. The current findings have direct implications for companies providing MC

systems. Specifically, firms should consider integrating an automated feedback and blocking function to inform consumers about strict product uniqueness to generate value for consumers.

Theoretical Background

Strict Uniqueness in Mass Customization

Companies increasingly involve the consumer in the new product development process by providing MC systems (Fuchs, Prandelli, and Schreier 2010; Klesse et al. 2019). These systems enable consumers to define their own product configuration and to adapt the configuration closely to their individual preferences (Bharadwaj et al. 2009; Dellaert and Stremersch 2005; Von Hippel and Katz 2002). Despite their prevalence across industries and markets, it has been argued that MC systems have not yet exploited their full potential (de Bellis et al. 2016; Franke and Hader 2014). A considerable amount of research has been devoted to three factors that determine the value generated by MC for consumers (Moreau 2011). Two of these factors are preference fit, that is, the superior fit of the product to individual preferences (Dellaert and Stremersch 2005; Franke, Keinz, and Steger 2009; Schreier 2006) and process-related benefits, that is, positive feelings elicited by the process of customizing a product (Franke et al. 2010; Moreau and Herd 2010). A third value-generating factor is the uniqueness of the customized product (Franke and Schreier 2008; Michel et al. 2009; Schreier 2006). The marketing literature typically relates to unique products as products that few consumers possess and thus to products that are rare (Cheema and Kaikati 2010; Irmak, Vallen, and Sen 2010; Lynn and Harris 1997; Tian, Bearden, and Hunter 2001). We conceptualize a strictly unique product as a product being literally one of a kind in that it exists only once. Franke and Schreier (2008) showed that uniqueness is an important motive to customize products. Specifically, they showed that uniqueness generated value for consumers, even when controlling for preference fit and

process-related benefits. The natural next step in this stream of research is to investigate how the value for consumers can be increased along the three value-generating factors.

In an attempt to improve the design of MC systems, some studies focused on integrating a feedback function. Feedback functions allow a two-way flow of information and thus foster the interactive nature of interfaces (Dahan and Hauser 2002; Payne, Storbacka, and Frow 2008). This body of research shares two characteristics: First, most studies investigate ways to increase preference fit (Dellaert and Stremersch 2005; Franke et al. 2009) and process-related benefits (Franke et al. 2010; Moreau and Herd 2010). Less is known about how to increase the subjective feeling of uniqueness, and especially the strict uniqueness, of customized products. Second, most studies investigate a specific form of feedback, namely social feedback given by other users online (Franke, Keinz, and Schreier 2008; Hildebrand et al. 2013). This type of feedback implies consumer-to-consumer interactions (Yadav and Pavlou 2014). There is little evidence on automated feedback, which is increasingly used and facilitated by new technologies, provided by the manufacturer through the MC system itself (Franke and Hader 2014). In contrast to social feedback, automated feedback implies company-to-consumer interactions (Yadav and Pavlou 2014), with the important advantage of being fully under control of the MC system provider.

Whereas consumers oftentimes value uniqueness in products (Snyder and Fromkin 1980; Sridhar and Srinivasan 2012), they sometimes also desire non-unique products (Bearden, Netemeyer, and Teel 1989). An example are bestselling books where consumers appreciate the fact that many other consumers bought the same product (Ghiasalleh, Kocher, and Czellar 2020; Sorensen 2007). The results of an explorative study we conducted with a European car manufacturer showed that customers differ in whether they desire their car to be unique (for study details, see Experiment 4b). Some customers valued strict uniqueness of their vehicle (“It

makes clear to me that my taste is very individual") and some did not ("Doesn't matter to me as long as I like my car"). Past research has shown that MC systems facilitate the creation of unique products and thereby create value for consumers (D'Angelo, Diehl, and Cavanaugh 2019; Lynn and Harris 1997; Michel et al. 2009; Schreier 2006). Since the current research employs an MC context, we focus on settings in which consumers generally value product uniqueness.

Feedback on the strict uniqueness of a product may refer to the configured product being unique in that it has never been configured before. This information may create value for the consumer. In addition, firms could ensure (and advertise) that the product will remain strictly unique in the future by blocking it for future consumers. For example, in the context of art, uniqueness implies not only that the artifact is unique when it is created or sold, but also that the artifact cannot be reproduced perfectly thereafter (Benjamin 2008; Hirschman 1983). We expect this information to create additional value compared to giving consumers strict uniqueness feedback alone. In sum, we propose that feedback on the strict uniqueness of a product ("Your product configuration has never been created before") creates value for consumers and that being informed that the strictly unique product configuration was blocked ("Your configuration will be blocked for future customers") creates additional value.

H1a: Strict uniqueness feedback increases consumers' valuation of their customized product.

H1b: Strict uniqueness blocking further increases consumers' valuation of their customized product.

Transparency of Solution Space Size

Our key hypothesis is that feedback on strict product uniqueness creates value for consumers. However, from a rational perspective, it is not obvious that strict uniqueness

feedback and strict uniqueness blocking create value. Many MC systems provide tremendous amounts of possible attribute combinations, thus providing an extremely large solution space (Franke and Hader 2014; Liechty, Ramaswamy, and Cohen 2001). For instance, Nike offers its customers 115 trillion (i.e., 115,000,000,000,000; see nike.com/nike-by-you) configuration possibilites in its sneaker configurator and cereal producer MyMuesli offers its customers 566 quadrillion (i.e., 566,000,000,000,000,000; see mymuesli.com/mixer) configuration possibilites in its muesli configurator. The solution space of many MC systems is not only but also fine-grained which allows very similar configurations. If potential imitators were willing to copy a given configuration, they could easily duplicate it in 19 out of 20 attributes and choose a close option in the final attribute (e.g., "light blue" instead of "dark blue" for the seam on the back of the customized shoes). These minimal differences would likely not matter to consumers.

A simple combinatorial enumeration reveals that for many MC systems there are so many configuration possibilities that it is unlikely that a configuration will be chosen more than once within a limited timeframe (e.g., one year). Whereas not all configuration variants have the same likelihood of being chosen (due to potential preference clusters), consumer preferences in MC have been shown to be highly heterogeneous (Franke and Piller 2004). This is illustrated by an impressive example: Florian Janker, founder of the cereal platform mymuesli.com, revealed in personal communication that out of 100,000 configured and shipped cereal products only 42 were identical. This suggests that, objectively, feedback indicating that a particular product configuration is (and might continue to be) unique conveys only little new information.

Why might consumers nevertheless value strict uniqueness feedback and blocking? Possible answers are that they underestimate and/or neglect the size of the solution space of MC systems (Paulos 1988; Sunstein 2002). On the one hand, consumers are likely to make biased

estimates of the likelihood that their own customized product is unique and instead develop an intuitive understanding of this likelihood. As the number of configuration possibilities in MC systems is typically extremely large, we expect that consumers underestimate the likelihood of a unique configuration (Paulos 1988). On the other hand, consumers tend to unintentionally neglect the possibility that their own customized product is unique (or not) and make biased estimates on that basis (Sunstein 2002; Suter, Pachur, and Hertwig 2016).

Therefore, explicitly providing consumers with information about the (large) number of possible attribute combinations in MC systems should reduce the effect of strict uniqueness feedback and blocking on consumers' product valuation. This can be done by revealing the actual size of the solution space in MC systems to consumers, thereby highlighting the fact that many product configurations are strictly unique anyway. Taken together, we theorize that in an MC setting, consumers tend to neglect the fact that the product they have configured is actually likely to be unique, and to underestimate the probability of it being unique. By making the solution space of MC systems transparent to consumers the subjective value they attribute to their configured product likely decreases.

H2: The effect of strict uniqueness feedback and strict uniqueness blocking on consumers' valuation of their customized products is attenuated when the number of possible product configurations is made transparent to consumers.

Product Conspicuousness

Whereas H2 laid out conditions under which the proposed effect is attenuated, we next explore conditions under which the effect is amplified, potentially providing valuable managerial implications. Strict uniqueness feedback and blocking are likely to increase consumers' product valuation in product domains and for product attributes in which consumers particularly value

uniqueness. Prior research has revealed that consumers value uniqueness for publicly visible products. Consumers are more likely to select variety and thus unique options when their behavior is subject to public scrutiny. The reason is that consumers expect others to evaluate their decisions more favorably when they seek uniqueness (Ratner and Kahn 2002). Moreover, publicly visible consumption has been identified as a factor likely to influence the degree to which customizing products creates value for consumers. The reason is that consumers may intend to impress others rather than please themselves when configuring a product (Moreau 2011). Building on these findings we argue that consumers value uniqueness particularly for conspicuous customized solutions, which are defined as being discretionary products that are publicly consumed (Bourne 1957).

Prior research identified two prerequisites for conspicuousness: publicly versus privately consumed products and discretionary versus necessary products (Bourne 1957). Whereas products that are consumed in public are visible to others (e.g., wristwatches or man's suits), those consumed in private are less visible to others (e.g., refrigerators or mattresses; Bearden and Etzel 2002; Bourne 1957). The second prerequisite of conspicuousness are discretionary versus necessary products. No matter how publicly visible a product is, it is not considered conspicuous if it is owned by a vast majority of consumers. By definition, necessities are owned by many consumers, while discretionary products are not. Thus, conspicuous product domains or product attributes are both consumed in public and are discretionary (Bourne 1957). Mass-customized products are often not only publicly visible but also discretionary, as the high solution space of MC systems prevents the creation of mass products. Conspicuousness can either refer to products or product attributes. Whereas examples of conspicuous products are luxury cars and sailboats

(Amaldoss and Jain 2005a, b; 2015; Bearden and Etzel 1982), examples of conspicuous product attributes are the exterior of luxury cars or sailboats.

Taken together, we theorize that in an MC setting, consumers tend to value uniqueness feedback and blocking more for conspicuous product attributes. Examples from practice show that marketers of conspicuous products have recognized this as they often emphasize the uniqueness of these products (Amaldoss and Jain 2005a, b). By providing consumers with such strict uniqueness feedback and blocking information, the subjective value they attribute to their configured product likely increases.

H3: The effect of strict uniqueness feedback and strict uniqueness blocking on consumers' valuation of their customized products is amplified for conspicuous (vs. non-conspicuous) product attributes.

Overview of Experiments

The findings of five experiments provide compelling evidence that strict uniqueness feedback and strict uniqueness blocking create value for consumers, and that this effect is moderated by solution space transparency and product conspicuousness. Experiment 1 examines the impact of strict uniqueness feedback in a field setting, demonstrating that such feedback has a positive effect on actual conversion rates. Experiment 2 investigates whether both strict uniqueness feedback and blocking drive the subjective value consumers attribute to their customized products. The study shows that strict uniqueness blocking generates additional value through increased willingness to pay (WTP). Experiment 3 examines whether making the solution space transparent to consumers attenuates the effect, providing evidence for such a boundary condition. Experiments 4a and 4b investigate whether the effect is amplified for conspicuous product attributes, offering direct managerial implications.

Overall, we test our theorizing across different samples (actual customers, representative consumer samples, business students, and crowdsourcing platform workers) and product domains (cereals, sneakers, sunglasses, and cars). We also employ different study designs (field, lab, and online experiments) and different operationalizations of product valuation (conversion rate and WTP).

Experiment 1: Uniqueness Feedback

The first experiment examines whether strict uniqueness feedback has a positive effect on the subjective value that consumers attribute to the product (measured as conversion rate; H1a). We conducted the field experiment with actual customers in collaboration with a large European MC system provider in the domain of customized cereals.

Method

Participants. We ran the field experiment in Germany, the largest sales market of the cereal producer. The sample included 36,592 customers (M_{age} = 36.5 years; 72% female), out of which 86.2% or 31,542 customers configured a strictly unique cereal. Unless noted otherwise, we focused our analyses on customers who configured a unique cereal to control for any effects of actual product uniqueness.

Procedure. The MC system of the cereal producer provides a vast number of different cereal configurations (566×10^{15} possible configurations; see Web Appendix A). We used the original interface that was online before we launched the field experiment. Customers followed a typical MC procedure to configure their desired product: They first chose from a set of 15 cereals (e.g., oats and crunchy) and 24 refined bases (e.g., flakes and puffs), before they had the option to select up to 18 different fruits (e.g., cranberry and raisins), 13 nuts and seeds (e.g., hazelnut

and sunflower seeds), and 16 types of chocolate (e.g., dark and white chocolate). As a result, customers could choose from 13 to 24 options for these five attributes.

After finishing their cereal configuration, customers were randomly assigned to two conditions in a between-subjects design. In the uniqueness feedback condition, customers received feedback informing them that their individual configuration was strictly unique. Specifically, we informed them that they were the first to create their cereal configuration. The optical integration of the pop-up window with feedback on uniqueness matched the style of the MC system to keep customers blind to the experiment. Uniqueness feedback constituted the only alteration to the interface's configuration process. In the no feedback condition, customers did not receive any feedback after configuring their cereal. Across both conditions, customers continued the original process that asked them to assign a name to their cereal (e.g., "Tim's Cereal") before clicking the "put in basket" button. Finally, they were asked voluntarily to indicate their age and gender.

Measures. The key dependent variable in this field experiment was customers' conversion rate, defined as the share of customers who actually bought their customized product out of those who completed the configuration process. The conversion rate was assessed after the product was put in the basket and purchased. Merely saving the cereal configuration in the basket does not constitute a legally binding contract, whereas purchasing the product requires customers to provide their address and payment information. Thus, we focus on a variable with economic downstream consequences for customers. In addition, we received data on customers' age and gender as well as the price of their configured cereal, and whether they placed the cereal in the shopping basket. These variables served as covariates in our analyses.

Results

Preliminary analyses. We found no significant differences between the two conditions with regard to gender ($M_{no\ \_feedback}$ = 73% female, $M_{uniqueness\_feedback}$ = 72% female; F(1, 32,999) = .10, p = .750), purchase price ($M_{no\ \_feedback}$ = €8.76, $M_{uniqueness\_feedback}$ = €8.74; F(1, 32,999) = .35, p = .553), and in-basket placement ($M_{no\_feedback}$ = 0.96, $M_{uniqueness\_feedback}$ = 0.96; F(1, 32,999) = 1.45, p = .229). However, customers' age ($M_{no\_feedback}$ = 37.12, $M_{uniqueness\_feedback}$ = 36.03; F(1, 15,951) = 27.06, p < .001) differed between conditions. Note that the reported effects are robust when controlling for age differences.

Main analyses. Analyzing the conversion rates across conditions indicates that uniqueness feedback on the customized product creates value for customers. Specifically, we found a significant difference in conversion rates between the uniqueness feedback and the no feedback condition of 2.24% (χ^2(1, 33,001) = 16.50, p < .001; see Figure 1), supporting H1a. A 2.24% increase in conversion approximates to €1,145,601 in additional yearly revenue for the cereal producer. We tested for robustness with a binary logistic regression and found similar effects even when controlling for the influence of the covariates age, gender, purchase price, and in-basket placement (b = 0.12, SE = 0.06, z = 2.17, p = .030).

Additional analyses. Adding to the robustness of these effects, we found that customers in the uniqueness feedback condition also ordered a larger amount of items compared to those in the no feedback condition ($M_{no\_feedback}$ = .95, $M_{uniqueness\_feedback}$ = .98; F(1, 32,999) = 7.79, p = .005). Thus, customers are not only more likely to order the customized product after being provided with uniqueness feedback, but they also order more items of the customized product.

For the sake of completeness, we computed an analysis for unique and non-unique products and across the two experimental conditions (i.e., uniqueness feedback and no feedback).

We analyzed the differences in conversion rates between the two experimental conditions and those customers who did not configure a unique cereal and therefore were not assigned to one of the experimental conditions. We found a considerable difference in conversion rates between customers who configured a non-unique cereal and the no feedback condition of 5.65%, which corresponds to an overall increase in conversion rate of 7.89% (see Figure 1). A chi-square test showed that the difference in conversion rates between the experimental conditions and those customers who configured a non-unique cereal was significant ($\chi^2(1, 36{,}592) = 93.44$, $p < .001$). This further supports our theorizing that uniqueness feedback significantly increases product valuation even when considering the 13.8% of consumers who configured non-unique products.

--- Insert Figure 1 about here ---

Discussion

The findings of the field experiment provide evidence of the proposed effect of strict uniqueness feedback in a naturalistic setting where real consumers made consequential purchase decisions. These findings are noteworthy especially for a non-conspicuous product, as the effect of uniqueness feedback may be more pronounced for conspicuous products (Moreau 2011). In our final two studies, we will explore whether strict uniqueness unfolds its value particularly for conspicuous product attributes. To ascertain that the effect is indeed driven by the uniqueness feedback given, we used tightly controlled experimental paradigms in the subsequent studies.

Experiment 2: Uniqueness Blocking

The second experiment examines whether strict uniqueness blocking, in addition to strict uniqueness feedback, can drive the subjective value consumers attribute to their customized products (measured as WTP; H1b). We conducted an online experiment using an MC system to customize sunglasses.

Method

Participants. The sample included 206 Amazon Mechanical Turk workers from the USA. Twelve participants had to be excluded from the analysis due to language problems, 13 participants due to failing attention checks, and four participants due to an extreme WTP of above US$150 (the next lower WTP was US$100 with evenly decreasing values thereafter), resulting in a final sample size of 177 (M_{age} = 34.7 years; 40% female).

Procedure. Since we used food (cereal) as stimuli in the first study, we selected accessories (sunglasses) for this experiment. Participants were presented with a flash representation of the Canvas sunglasses configurator (see canvaseyewear.com). The Canvas configurator provides a large solution space (6.3×10^6 possible configurations). Participants were asked to configure their own preferred sunglasses. Navigating through five subsequent steps, they were requested to choose the color of the front frame, left and right temple view, lenses, and pattern design.

After having finished configuring their sunglasses participants were randomly assigned to one out of three conditions in a between-subjects design. In the uniqueness feedback condition, they were shown a screenshot of the feedback information that their configuration was strictly unique and that they were the first to create their sunglasses (see Web Appendix B). In the uniqueness blocking condition, participants were also shown a screenshot that indicated that their configuration was strictly unique. They were informed that their configuration would stay strictly unique in the future by blocking it for future customers (see Web Appendix B).

In the previous experiment, participants in the control (i.e., the no feedback) condition did not receive any feedback. In Experiment 2, we added a third treatment condition, in which participants were given non-uniqueness feedback. Specifically, we informed them that they were

not the first to create their sunglasses and that many others have configured them before (see Web Appendix B). We did so to test whether this message is perceived differently than giving consumers no feedback as in the previous experiment. Specifically, we wanted to exclude the alternative explanation that providing consumers with uniqueness feedback and uniqueness blocking might increase their awareness of a value dimension that had not been salient before (Ames and Iyengar 2005). It has been found that important product features that are not salient fail to provide value to the customer, while this value is seen immediately if the dimension is featured prominently or advertised (Ratneshwar et al. 1997).

After receiving either of the three messages, participants were asked to indicate at what price they would be willing to purchase the sunglasses (WTP). Finally, participants responded to the covariates brand attitude, status consumption, age, gender, and income that might affect consumers' WTP. We controlled for brand attitude to ensure that brand image and the emotional attachment to the focal brand did not affect the results. Additionally, we controlled for status consumption to make sure that the desire for status and the expression of this desire through the consumption of products did not affect our results.

Measures. We measured WTP using the contingent valuation method (CVM; Cummings and Taylor 1999; Mitchell and Carson 1989). The CVM method allows for determining the WTP hypothetically. In order to reduce the left skewness of the data we used a cube root power transformation to induce normality.

We measured a series of variables that served as covariates in our analyses: brand attitude ("To me, the brand 'Canvas' is likeable"; 7-point Likert scale) adapted from Sengupta and Johar (2002); status consumption ("I would buy a product just because of its status," "I am interested

in products of high status," "I would pay more for a product because of its status"; 7-point Likert scale; α = .89) adapted from Eastman, Goldsmith, and Flynn (2015); age; gender, and income.

Results

Preliminary analyses. We found no significant differences between the three conditions with regard to the covariates brand attitude ($M_{unique\_blocking}$ = 5.30, $M_{unique\_feedback}$ = 5.30, $M_{non\text{-}unique\_feedback}$ = 4.87; F(1, 175) = 2.67, p = .104), status consumption ($M_{unique\_blocking}$ = 3.93, $M_{unique\_feedback}$ = 4.22, $M_{non\text{-}unique\_feedback}$ = 3.49; F(1, 175) = 1.25, p = .265), age ($M_{unique\_blocking}$ = 34.37, $M_{unique\_feedback}$ = 34.80, $M_{non\text{-}unique\_feedback}$ = 34.83; F(1, 175) = .08, p = .776), gender ($M_{unique\_blocking}$ = 1.40, $M_{unique\_feedback}$ = 1.36, $M_{non\text{-}unique\_feedback}$ = 1.43; F(1, 175) = .14, p = .712), and income ($M_{unique\_blocking}$ = 3.81, $M_{unique\_feedback}$ = 4.13, $M_{non\text{-}unique\_feedback}$ = 3.66; F(1, 175) = .19, p = .66).

Willingness to pay. The findings indicate that both uniqueness feedback and uniqueness blocking significantly increased WTP (see Figure 2). A one-way ANCOVA, with strict uniqueness as between-subjects factor, WTP as dependent variable, and brand attitude, status consumption, age, gender, and income as covariates showed a significant effect of strict uniqueness on WTP ($M_{unique\_blocking}$ = US$50.02, $M_{unique\_feedback}$ = US$43.94, $M_{non\text{-}unique\_feedback}$ = US$35.47; F(2, 169) = 10.02, p < .001). An ANOVA without covariates also produced a significant main effect of strict uniqueness (p = .001).

Planned contrasts showed a significant difference in WTP between the non-uniqueness feedback and uniqueness feedback condition, corresponding to an increase in WTP of US$8.47 or 24% (F(1, 174) = 5.20, p = .024), providing renewed support for H1a. We further found a difference in WTP between the uniqueness feedback and uniqueness blocking condition,

corresponding to an increase in WTP of US$6.08 or 14% ($F(1, 174) = 10.37$, $p = .002$), providing support for H1b.

--- Insert Figure 2 about here ---

Discussion

Experiment 2 replicates and extends the results of Experiment 1 in a controlled setting suggesting that uniqueness feedback and uniqueness blocking significantly increase WTP by 41% or US$14.55. The study was conducted with a different product category (sunglasses instead of cereals), a different sample (representative consumer sample instead of actual customers), and a different dependent variable (WTP instead of conversion rate). Moreover, we show that non-uniqueness feedback has a similar effect on WTP as no feedback. Despite the fact that consumers sometimes value non-unique products (Bearden et al. 1989), the findings show that providing consumers with non-uniqueness feedback (i.e., many others have configured the same product) does not generate value in an MC context. The next experiment sheds light on the boundaries of the effect of strict uniqueness on consumers' product valuation.

Experiment 3: Solution Space Transparency

The third experiment examines whether making the (large) number of configuration possibilities transparent to consumers attenuates the effect of uniqueness feedback and uniqueness blocking on consumers' product valuation (measured as WTP; H2). We conducted an experiment with an online panel using an MC system to customize sneakers.

Method

Participants. We drew a nationally representative sample from a leading Austrian online panel of 1,860 individuals between 18 and 60 years. In total, 469 panelists completed a vignette experiment. We chose an experimental vignette study design to examine whether the effects also

hold in a hypothetical context (Atzmüller and Steiner 2010). Two participants were excluded before analysis due to an extreme WTP of above €500 (the next lower WTP was €360 with evenly decreasing values thereafter), resulting in a final sample size of 467 (M_{age} = 39.2 years; 51% female).

Procedure. We chose the NIKEiD MC system for this experiment since it is one of the most well-known MC systems. The NIKEiD MC system offers 115×10^{12} possible sneaker variants. All participants received an online questionnaire in which we described a scenario. Participants were asked to imagine that they desired to customize a pair of sneakers with the NIKEiD MC system. We used a series of screenshots of the NIKEiD MC system to explain the configuration process in four steps. After that, we showed participants an MC system screenshot with a completed sneaker configuration, and we informed them that they had completed their configuration.

We conducted a 2 × 3 mixed design. Participants were randomly assigned to two conditions of solution space transparency (transparent vs. non-transparent; between-subjects). In both conditions' participants received three levels of uniqueness feedback (no feedback vs. uniqueness feedback vs. uniqueness blocking; within-subject). After showing participants the screenshot of the completed sneaker configuration, we asked them about their WTP for this sneaker configuration ($WTP_{no\_feedback}$; see Web Appendix C). The scenario continued by showing participants a screenshot of the feedback information that the configuration was strictly unique; nobody had ever created it (similar to Experiment 2). Participants were again asked to indicate their WTP ($WTP_{unique\_feedback}$). Finally, we used a screenshot to simulate the opportunity to block the configuration and thus to ensure that the configuration would be kept strictly unique in the

future. Participants were asked for their WTP one last time under these circumstances ($WTP_{unique\_blocking}$).

Importantly, we made the solution space transparent to half of the participants (transparent condition). Thereby, we deliberately reduced participants' biased probability estimations (Kruger and Vargas 2008). Participants in the transparent condition were informed about true probabilities of achieving strict uniqueness with MC systems. They were notified that the NIKEiD system allows 115 trillion (115×10^{12}) possible sneaker configurations.

To make the number 115 trillion more imaginable to participants, we translated this information into an illustrative and comprehensive representation that participants are familiar with (Visschers et al. 2009). We informed them that the probability that another person will choose an identical configuration (1:115 trillion) equals the possibility of guessing one particular blade of grass on a lawn of the size of 164,000 soccer fields. The information was supported by a graphical representation of a single blade of grass and many soccer fields (see Web Appendix C). Furthermore, we clarified that blocking a configuration would not prevent other consumers from configuring a product that differs only in one small detail. We informed participants that out of 115 trillion configurations, only this exact configuration will be blocked—all other configuration possibilities will still be available for others, even if there is only a tiny difference.

In the non-transparent condition, we did not reveal the likelihood of achieving a unique sneaker configuration to participants. Finally, participants responded to the same measures as in the previous study (i.e., brand attitude, status consumption, age, gender, and income).

Measures. We measured WTP with the contingent valuation method (CVM) similar to Experiment 2 along with brand attitude, status consumption ($\alpha = .84$), age, gender, and income as covariates. As a manipulation check, we assessed the solution space size of a typical sneakers

MC system. Participants of both transparent and non-transparent conditions were asked how many variants they think can be generated with such an MC system (7-point Likert scale; anchored from < 1,000 up to > 1 trillion). The differences were highly significant (based on a Mann-Whitney U-test: W = 171,410, $p < .001$), indicating that the experimental manipulation of making the solution space transparent was successful.

Results

Preliminary analyses. We found no significant differences between the three conditions with regard to brand attitude ($M_{transparent} = 1.98$, $M_{non\text{-}transparent} = 1.92$; $F(1, 463) = .50$, $p = .479$), age ($M_{transparent} = 38.66$, $M_{non\text{-}transparent} = 39.60$; $F(1, 463) = .56$, $p = .455$), gender ($M_{transparent} = 0.51$, $M_{non\text{-}transparent} = 0.48$; $F(1, 463) = .20$, $p = .656$), and income ($M_{transparent} = 4.47$, $M_{non\text{-}transparent} = 4.60$; $F(1, 175) = .19$, $p = .66$). However, status consumption ($M_{transparent} = 4.08$, $M_{non\text{-}transparent} = 4.30$; $F(1, 463) = 4.54$, $p = .034$) differed between conditions. Note that our effects are robust when controlling for differences in status consumption.

Moderation analyses. The findings demonstrate that the effect of uniqueness feedback and uniqueness blocking on WTP is moderated by solution space transparency (see Figure 3). A mixed design ANCOVA with solution space transparency as between-subjects factor, strict uniqueness as within-subject factor, WTP as dependent variable, and brand attitude, status consumption, age, gender, and income as covariates showed a significant interaction between solution space transparency and strict uniqueness ($M_{non\text{-}transparent\&no\_feedback} = €78.94$, $M_{transparent\&no\_feedback} = €81.82$, $M_{non\text{-}transparent\&unique\_feedback} = €86.90$, $M_{transparent\&unique\_feedback} = €89.13$, $M_{non\text{-}transparent\&blocking} = €100.02$, $M_{transparent\&blocking} = €96.73$; $F(2, 926) = 4.62$, $p = .010$). This provides support for H3. We further found a significant main effect of strict uniqueness on WTP ($F(2, 926) = 150.13$, $p < .001$), which repeatedly confirms H1 based on a within-subject

design. Finally, we found a non-significant effect of solution space transparency on WTP ($F(1, 463) = .03$, $p = .873$). A mixed-design ANOVA without covariates produced similar results including a significant interaction ($p = .010$).

We next follow up on the significant main effect of strict uniqueness. Regarding the no feedback versus uniqueness feedback condition, planned contrasts in the non-transparent condition showed a significant difference in WTP of €7.96, corresponding to an increase in WTP of 10% ($F(1, 572) = 8.13$, $p = .005$), providing renewed support for H1a. Planned contrasts in the transparent condition showed a non-significant difference in WTP of €7.31, corresponding to an increase in WTP of 9% ($F(1, 354) = 2.60$, $p = .11$). Regarding the uniqueness feedback versus uniqueness blocking condition, planned contrasts in the non-transparent condition showed a significant difference in WTP of €13.12, corresponding to an increase in WTP of 15% ($F(1, 572) = 13.19$, $p < .001$), providing renewed support for H1b. Planned contrasts in the transparent condition showed a non-significant difference in WTP of €7.60, corresponding to an increase in WTP of 9% ($F(1, 354) = 2,15$, $p = .14$).

Additional analyses. Did making the solution space transparent to consumers generate value independent of informing them about strict product uniqueness (as it may highlight the high likelihood of configuring a unique product)? In line with this intuition, WTP was roughly €3 higher in the transparent (vs. non-transparent) condition for the no feedback condition. However, the difference was not statistically significant ($F(1, 458) = .77$, $p = .382$).

--- Insert Figure 3 about here ---

Discussion

Beyond the identification of solution space transparency as a moderator of the effect of strict uniqueness on consumers' product valuation, this experiment confirms the value created by

uniqueness feedback and uniqueness blocking using a nationally representative sample.

Another interesting finding refers to the extent and "stickiness" of biased estimations in our context. The manipulation check in which participants were asked to estimate the size of the solution space size in a "typical sneaker MC system" reveals that in the non-transparent condition, 91.3% of the sample estimate that there are less than one million configuration possibilities. Compared to the actual solution space of the sneaker MC system used in this experiment, the estimate of one million is a drastic underestimate of the true value (i.e., 115 trillion). In proportional terms, it is similar to estimating the height of the Empire State Building as being less than .0038 millimeters. The transparent condition is also still biased despite the intense efforts to educate participants: 43.3% of participants in the transparent condition estimate the number of possibilities to be less than one million. It appears that biased intuitions regarding MC system solution spaces are hard to overcome (Garfield and Ben-Zvi 2007; Kahneman and Tversky 1973). This might explain why a value increase (though not significant) can still be observed through uniqueness feedback and blocking in the transparent condition, although we use a strong manipulation to make the solution space transparent (see Web Appendix C). We discuss alternative explanations in the General Discussion section.

Experiments 4a: Product Conspicuousness in the Lab

Experiment 4a examines whether product conspicuousness amplifies the effect of uniqueness blocking on consumers' product valuation (measured as WTP; H3). As the previous experiments provided repeated evidence for the distinct effects of uniqueness feedback and blocking, we focus on uniqueness blocking in this experiment. We conducted a lab experiment using an MC system to customize cars.

Method

Participants. The sample included 212 students from a European business school. Due to the COVID-19 pandemic, data collection in the lab was interrupted and had to be continued online with the same population (see additional analyses in the Results section). In total, 79% of the data were collected in the lab and 21% online. Ten participants had to be excluded from the analysis as outliers (due to an unrealistic WTP) or because they indicated to feel overly insecure due to COVID-19. This resulted in a final sample size of 202 (M_{age} = 23.5 years; 42% female). Participants were offered a payment of US$5.00 (local currencies were converted to US$).

Procedure. Participants were presented with a flash representation of the Audi A6 configurator that provides a large solution space. We chose this product domain as it includes conspicuous (exterior car configuration) and non-conspicuous (interior car configuration) product attributes, which serves as a manipulation of product conspicuousness. Participants were asked to configure their own preferred car. Navigating through eight subsequent steps, they were requested to choose four exterior attributes (i.e., exterior color, wheels, headlights, and design) and four interior attributes (i.e., interior color, seats, seat covers, and decorative inlay).

After having finished configuring their car, participants were randomly assigned to one of three conditions in a between-subjects design. In the exterior blocking condition, they were shown a screenshot of the feedback information that their exterior configuration was strictly unique and that they were the first to create that exact Audi A6. They were also informed that their configuration would stay strictly unique in the future by blocking it for future customers. In the interior blocking condition, participants received the same uniqueness feedback and blocking information, but instead referring to the interior of their configuration. The feedback messages

were framed similarly to the previous experiments. Participants in the no blocking condition did not receive any message after configuring their car.

Having received either of the two messages or no message, participants were asked to indicate at what price they would be willing to purchase the car (WTP). For the data that were collected during the COVID-19 pandemic, we included a question about participants' perceived insecurity. Finally, participants responded to the same covariates as in the previous studies.

Measures. We measured WTP with the CVM method similar to Experiments 2 and 3. In order to reduce the left skewness of the data we used a Tukey's ladder power transformation to induce normality. The covariates brand attitude, status consumption ($\alpha = .89$), age, and gender were assessed as in Experiments 2 and 3. Insecurity due to COVID-19 was measured with a one-item scale ("I feel insecure by the current pandemic situation (COVID-19)"; 7-point Likert scale). Income was not measured as most students do not have a regular income.

Results

Preliminary analyses. We found no significant differences between the three conditions with regard to the covariates brand attitude ($M_{exterior\_blocking} = 5.48$, $M_{interior\_blocking} = 5.43$, $M_{no\_blocking} = 5.58$; $F(1, 200) = .22$, $p = .636$), status consumption ($M_{exterior\_blocking} = 4.16$, $M_{interior\_blocking} = 3.85$, $M_{no\_blocking} = 3.64$; $F(1, 200) = 3.46$, $p = .064$), age ($M_{exterior\_blocking} = 23.03$, $M_{interior\_blocking} = 23.91$, $M_{no\_blocking} = 23.57$; $F(1, 200) = .47$, $p = .496$), and gender ($M_{exterior\_blocking} = 2.37$, $M_{interior\_blocking} = 2.34$, $M_{no\_blocking} = 2.54$; $F(1, 200) = 3.69$, $p = .056$).

Moderation analyses. The findings demonstrate that the effect of uniqueness feedback and uniqueness blocking on WTP is moderated by conspicuousness (see Figure 4). A one-way ANCOVA with strict uniqueness as between-subjects factor, WTP as dependent variable, and brand attitude, status consumption, age, gender, and insecurity caused through COVID-19 as

covariates showed a significant effect of strict uniqueness on WTP ($M_{exterior\_blocking}$ = US$58,464, $M_{interior\_blocking}$ = US$51,402, $M_{no\_blocking}$ = US$53,050; F(1, 195) = 3.97, p = .048). An ANOVA without covariates produced a marginally significant main effect of strict uniqueness (p = .059).

Planned contrasts showed a significant difference in WTP between the exterior blocking and the no blocking condition, corresponding to an increase in WTP of US$5,414 or 10% (F(1, 130) = 5.11, p = .025). We also found a significant difference in WTP between the interior blocking and exterior blocking condition, corresponding to an increase in WTP of US$7,062 or 14% (F(1, 135) = 4.72, p = .032). As predicted, we did not find such an effect between the interior blocking and the no blocking condition (F(1, 133) = .23, p = .635). These results provide support for H4.

--- Insert Figure 4 about here ---

Discussion

Beyond the identification of product conspicuousness as a moderator of the effect of strict uniqueness on consumers' product valuation, Experiment 4a provides renewed support for the value created by uniqueness feedback and uniqueness blocking as shown in the previous Experiments 1 to 3. The results suggest that uniqueness feedback and uniqueness blocking significantly increase WTP by 14% or US$7,062 when referring to the exterior of the car. It is possible that conspicuous products (vs. product attributes) might even induce a stronger effect as consumers might not distinguish enough between exterior and interior product attributes. The next experiment explores additional managerial implications of the moderating effect of conspicuousness in a real-life environment.

Experiment 4b: Product Conspicuousness with Actual Customers

Experiment 4b follows up on the findings of Experiment 4a by examining whether product conspicuousness amplifies the effect of uniqueness feedback on consumers' product valuation. In contrast to the previous experiment we explore whether consumers desire a proof of uniqueness and whether they would change their configuration to make it unique. We conducted a study with actual customers in collaboration with a premium European car manufacturer that provides an MC system to customize cars.

Method

Participants. The sample included 102 actual customers of a premium European car manufacturer (M_{age} = 55 years; 8% female). We chose an experimental vignette study design as we could not modify the actual car configurator.

Procedure. In a first step, customers were presented with a scenario in which they were asked to imagine that they had just configured their preferred car. When clicking on the summary page they were randomly assigned to two conditions in a between-subjects design. All customers received feedback that their configuration had never been chosen before and therefore was strictly unique. Customers in the exterior condition received feedback that their car configuration was unique based on a unique exterior. Those in the interior condition received feedback that their car configuration was unique based on a unique interior. After receiving either of the two feedback messages, participants were asked whether they desired a proof that their configured vehicle was unique. They were also asked whether they would change their car configuration in order to make it unique.

Measures. We assessed the desire for a proof of uniqueness with a single-choice question ("What kind of proof would you like that the exterior/interior and therefore your car is unique?":

"an invitation to an event"; "a logo for the exterior"; "an exterior logo for experts"; "a logo for the interior"; "a signed certificate"; "a different kind of proof"; "no proof at all"). Moreover, the desire of changing the configuration was also assessed with a single-choice question ("Could you imagine to change something in your car configuration to make the exterior/interior unique?": "yes"; "no"; "don't know").

Results and Discussion

The results showed that customers desire a proof of uniqueness when they are informed that the exterior of their configuration rather than the interior of their configuration is unique ($\chi^2 = 5.46$, $p = .019$). Further, the findings revealed that customers would rather change their car configuration to make the exterior versus interior of their configuration unique ($\chi^2 = 4.18$, $p = .041$). Web Appendix D provides additional analyses on what kind of proof customers desire, whether they would pay for such a proof, and which features they would change in their configuration to make it unique.

Experiment 4b shows that real customers would desire a proof of uniqueness and would change their configuration to make it unique when their exterior rather than their interior is unique. This provides more precise recommendations for managers on which product attributes they should focus to reap the benefits of strict uniqueness.

General Discussion

Preference fit, process-related benefits, and product uniqueness have been identified as sources of consumer value in the MC literature. The current research introduces the concept of strict product uniqueness and sheds light on its role as a value-generating force to further exploit the potential of MC systems. The findings of five experiments yield robust evidence that consumers' awareness of strict product uniqueness can be increased using simple feedback

information on the product's uniqueness and informing consumers that their unique product is blocked for other consumers. We also shed light on the underlying psychological mechanisms by showing that solution space transparency and product conspicuousness moderate the effect of uniqueness feedback and uniqueness blocking on consumers' product valuation. We find consistent effects for different dependent variables (conversion rate and WTP), product categories (cereal, sunglasses, shoes, and cars), and samples (actual customers, representative consumer samples, business students, and crowdsourcing platform workers).

Theoretical Contributions

The findings contribute to two strands of marketing literature. First, they advance our understanding of consumer behavior in connection with MC systems (Moreau and Herd 2010). This research suggests that the value consumers obtain from using an MC system can be influenced by the MC system's provider via the functionality and design of the system. A considerable amount of research has been devoted to incorporating preference fit (Dellaert and Stremersch 2005) and process-related benefits (Franke et al. 2010) as sources of consumer value in MC systems. However, it is largely unknown how the awareness of product uniqueness of customized products can be increased. We address this gap by showing that the value for consumers can be significantly increased through feedback on the products' strict uniqueness and informing them that their configuration was blocked. While several studies focus on social feedback from peers (Hildebrand et al. 2013), our findings indicate that feedback automatically generated by the MC system can be a significant driver of consumer value. In general, our findings highlight the imperative of making more and better use of the interactional nature of MC systems. However, our findings are not restricted to the MC context alone. Giving consumers automated feedback on products' uniqueness can be expanded to B2C e-commerce in

general. For example, companies could inform customers on their website about products that are unique or produced in a limited quantity via an automated feedback message.

Second, the current research contributes to the literature on product uniqueness. The marketing literature typically refers to product uniqueness as a product that is rare (Lynn and Harris 1997). In a narrower sense, we conceptualize strict product uniqueness as a product that is literally one of a kind in that it exists only once with the exact same features, thereby expanding our understanding of the construct of product uniqueness and how consumers respond to it. The results show that strict product uniqueness can be integrated and increased by giving consumers automated uniqueness feedback stating that the configured product has never been configured before. In addition, consumers can be assured that their product will remain strictly unique in the future by blocking it for consumers.

The findings also relate to research on social exclusion. Providing consumers uniqueness feedback and blocking information excludes others from having the same consumption experience. Being socially excluded from consumption experiences may lead consumers to buy unique products to differentiate themselves (Wan, Xu, and Ding 2014; Wang, Rui, and Shiv 2011). Social exclusion may also elevate consumers' perception of a brand and in turn increase their WTP (Ward and Dahl 2014). Thus, consumers who are not provided uniqueness feedback and blocking information might be more encouraged to configure unique products. They might also develop a positive attitude towards the brand and/or increase their WTP.

While we demonstrate that uniqueness feedback and blocking create value for consumers in regard to MC products, strict uniqueness may create value in regard to unique products in general. Our results can, for example, be generalized to companies offering custom-tailored products like business suits or ready-made products such as unique jewelry.

Managerial Implications

The findings of this research indicate that MC system providers should integrate automated uniqueness feedback and blocking functions into their interfaces. Such feedback can be generated at low cost and is fully under the control of the MC system provider. It appears to be a promising and easy-to-implement way to enhance the value consumers obtain from configuring their product.

Moreover, we show that uniqueness feedback and blocking functions should be integrated particularly in product domains or for product attributes in which consumers value uniqueness. Our results show that customers value uniqueness feedback and blocking more when it relates to conspicuous exterior product attributes rather than non-conspicuous interior product attributes. This suggests that firms should promote uniqueness particularly for conspicuous product attributes. We also show that consumers desire a proof of uniqueness and that they would change their configuration to make it unique. These findings suggest that managers could offer their customers a proof of uniqueness and integrate a feedback message informing them about the degree of uniqueness of their configuration, including a possibility to change their configuration to make it unique.

The integration of an automated uniqueness feedback and blocking function in MC systems is a very timely matter for three reasons. First, in the current age of automation and Industry 4.0, MC is experiencing a revival as the perfect production of individualized products is increasingly facilitated, particularly through new technologies like Artificial Intelligence (AI; Waugh 2017). Second, AI provides multiple possibilities of implementing automated feedback and information messages (e.g., Microsoft PowerPoints' AI driven feedback function; Lardinois 2019). Third, modern societies show an increasing desire for unique products (Francis and

Hoefel 2018). Feedback on uniqueness and blocking (possibly accompanied by an attractively designed certificate or logo as a proof of uniqueness) are relatively easy to implement and inexpensive for the manufacturer. These functions basically involve a simple database query (Marion, Meyer, and Barczak 2015).

Companies could additionally provide feedback that the customized product will be unavailable to other consumers over a specific period in time (e.g., one year) and a specific spatial distribution (e.g., the consumers' state or country), as reproducing the selected product configuration (given that the configuration is unique) will be disabled. Firms can decide how to distribute the additional value gained through uniqueness feedback. For example, they may charge higher prices and thus appropriate the returns directly. The results show that the additional WTP for a configured product in the experiments was considerable, ranging from 13-41%. This amounts to an average increase in WTP of nearly 27%. Alternatively, the company may leave prices as they are and enjoy higher customer satisfaction, retention, and more positive word-of-mouth. Firms may also let consumers decide themselves whether they want to block their designs and charge an additional sum for this privilege.

Some MC system providers have begun to work along these lines by giving consumers the possibility to block their designs independent of whether they are unique. Specifically, car manufacturer Porsche offers consumers the opportunity to block certain exterior colors for two years at an additional cost of €10,000 per car (Porsche Exclusive Manufaktur 2017), whereas watchmaker Unity allows consumers to block configurations of watches at an extra cost of 50% of the standard price (see unitywatches.com/design-your-own-watch).

We recommend managers to give consumers the possibility of blocking unique configurations, thereby guaranteeing current strict uniqueness at the point of sale and future strict

uniqueness by blocking the configuration for other consumers. The only exception may be business models that build on using consumer designs as a starting point or standard designs for other users. In such a case, information that increases the perceived value of a consumers' own design (as the feedback on uniqueness and blocking information does) is likely to be counterproductive. Consumers who perceive their designs as more valuable (once they realize their uniqueness) might be more likely to refrain from allowing the company to use it for free than consumers who underestimate the uniqueness of their own designs. Taken together, implementing uniqueness feedback can be perceived as "low-hanging fruit" for companies and will considerably increase value for consumers.

Limitations and Future Research

While we focus on cases in which consumers value unique products (Snyder and Fromkin 1980), there are also cases in which consumers value non-unique products (Bearden et al. 1989). Future research could analyze influencing factors that determine when consumers desire unique products and when they rather prefer non-unique products. For example, these influencing factors might include hedonic versus functional, durable versus nondurable, or (as indicated in Experiments 4a and 4b) conspicuous versus non-conspicuous product attributes (Moreau 2011; Steinhart et al. 2014).

Throughout our studies, participants were given general uniqueness feedback and blocking information that they were the first to create a product configuration and that their configuration would remain unique. Another possible direction for future research could be to dive deeper into potential forms of uniqueness feedback and blocking information given to consumers. For example, uniqueness feedback and blocking could refer to the unique relationship to the company or brand, to the consumers' unique identity or preferences, or to

unique production. It would be interesting to analyze whether these forms of feedback messages impact consumer product valuations differently.

Future research is needed to map out potential mechanisms of the effect between uniqueness feedback and blocking on consumers' product valuation. One explanation for this effect might be the social value attached to the scarcity signal—i.e., the explicitly confirmed uniqueness of the product. Explicit and objective evidence supporting the uniqueness of one's own product might facilitate conspicuous consumption (Gierl and Huettl 2010). For example, a consumer could post the uniqueness certificate on their Facebook page and derive value from this (Nadkarni and Hofmann 2012). The "certainty effect" (Kahneman und Tversky 1979) might provide a second explanation. Recall that although it is quite unlikely from an objective standpoint, it is still possible that another consumer will come up with an identical design. Uniqueness feedback and the blocking information preclude this small risk. It is possible that consumers attribute a disproportionally high value to the small difference between certainty and high probability. Research on insurance proves that "overpriced" full-coverage policies are favored over policies with deductibles (Shapira and Venezia 2008).

Finally, irrational and superstitious beliefs concerning personal luck or bad luck might also play a role in this context. For example, the belief in being lucky explains the ignorance of chance in gambling contexts (Darke and Freedman 1997; Wagenaar and Keren 1988). In line with this argument, the opposite might also be true: If someone believes they are cursed by misfortune, he or she might be afraid of "doppelganger" designs. These additional explanations for the main effect constitute fascinating opportunities for further research.

The current research also shows that making the solution space transparent to consumers attenuates the effect of strict uniqueness on consumers' product valuation, whereas product

conspicuousness amplifies the effect. Another potential moderator that could be looked at by future research is the desire for uniqueness. Consumers with a high desire for uniqueness will likely attribute more value to uniqueness feedback than consumers with a low desire for uniqueness (Tian et al. 2001). This effect could also be analyzed in a cross-cultural context. Whereas Western cultures tend to have a higher desire for uniqueness, Eastern cultures place less emphasis on uniqueness (Kim and Drolet 2003).

Conclusion

Returning to the introduction vignette, the aficionada likely attaches greater value to her configured sneakers after receiving the message that nobody has created and will be able to create the same pair of sneakers. Specifically, informing the aficionada that she is the first to create her particular sneakers configuration (uniqueness *feedback*) and in addition guaranteeing that her sneakers configuration will remain unique (uniqueness *blocking*) should increase her valuation of the sneakers. Moreover, her valuation of the sneakers should be attenuated when the (large) number of possible sneaker configurations in the MC system is made transparent to her, and it should be amplified for conspicuous sneaker attributes such as the exterior color. We recommend that companies employing MC systems implement automated uniqueness feedback and blocking functions to increase the effectiveness of these systems.

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