DOI: 10.1177/00222437221128576

JOURNAL of MARKETING RESEARCH

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Journal:	*Journal of Marketing Research*
Manuscript ID	JMR.20.0683.R3
Manuscript Type:	Revised Submission
Topics and Methods:	Uniqueness, Aesthetics, Customization, Design, Resale, Second-hand Market

Published in Journal of Marketing Research, 2023, vol. 60, no. 3, pp. 602-624, Which should be cited to refer to this work.
DOI: https://doi.org/10.1177/00222437221128576

Paying Twice for Aesthetic Customization?

The Negative Effect of Uniqueness on a Product's Resale Value

Matthias Fuchs

Martin Schreier

Matthias Fuchs (matthias.fuchs@ehl.ch) is an Assistant Professor of Marketing, EHL Hospitality Business School, HES-SO University of Applied Sciences and Arts Western Switzerland, Route de Cojonnex 18, 1000 Lausanne, Switzerland. Martin Schreier (martin.schreier@wu.ac.at) is a Professor of Marketing, Department of Marketing, WU Vienna University of Economics and Business, Welthandelsplatz 1, 1020 Vienna, Austria. The authors thank the entire JMR review team for their constructive feedback and guidance. They are also thankful for comments and ideas received from Emanuel de Bellis and Dennis Herhausen and seminar participants at Durham University, Emory University, Frankfurt School of Business, HEC Paris, Marketing Science Institute, Northeastern University, Swiss Academy of Marketing Science, University of Groningen, University of Leicester, University of Maryland, Vienna University of Economics and Business, and York University. Finally, the authors acknowledge funding from the Austrian Federal Ministry for Education, Science, and Research through the HRSM scheme.

ABSTRACT

Customers frequently gravitate toward unique products, and firms increasingly utilize mass customization strategies allowing customers to self-customize products according to their unique preferences. While existing research shows that customers are willing to pay extra for this uniqueness, the present investigation points to a potential cost of self-customization that has been largely overlooked thus far. Specifically, the authors argue that what creates value for the individual consumer-designer (i.e., the original customer of the self-customized product) might conversely be detrimental to potential customers on the second-hand market, particularly in the context of aesthetic (vs. functional) customization. Results of three distinct data sets (including an analysis of more than 500,000 pre-owned car sales listings) support this uniqueness-hurts-resale hypothesis and provide a series of more nuanced findings. Consistent with the theorizing and empirical studies, three follow-up experiments show that while consumer-designers' valuations are *positively* affected by uniqueness, uniqueness indeed *negatively* affects second-hand market customers' willingness-to-pay. This is because the more unique a given configuration to a given consumer-designer, the lower the likelihood that said design will meet second-hand market customers' taste preferences. The findings point to a tension between maximizing utility at first purchase and minimizing the related cost of aesthetic customization at resale.

Keywords: Uniqueness, Aesthetics, Customization, Design, Resale, Second-hand Market

It is a common assumption in marketing that uniqueness is a valued product feature. Customers are attracted to unique products as a means of self-differentiation (Tian, Bearden, and Hunter 2001). Firms have responded to this demand for uniqueness by offering customers the option to self-customize products according to their preferences—products ranging from cars to sneakers, from apparel to kitchens, from bikes to skis, and from backpacks to furniture (Dellaert and Stremersch 2005; Franke, Schreier, and Kaiser 2010; Moreau and Herd 2010). Although the desire for uniqueness is not new (Brewer 1991; Fromkin and Snyder 1980), and customers have always had the option to make products unique (e.g., via DIY or post-purchase modifications), the emergence of mass customization technologies has substantially lifted the phenomenon's relevance. For example, 44% of all new car buyers in Germany already self-customize their cars (DAT Group 2016). While the costs of producing single unit quantities are constantly reduced due to advancements in production technologies, customers are nevertheless willing to pay a substantial price premium for the resulting products that better suit and communicate their tastes, preferences, and identity (Franke and Piller 2004; Franke and Schreier 2008; Moreau et al. 2020; Townsend, Kaiser, and Schreier 2015). For this reason, mass customization is frequently considered the future of retailing (D'Angelo, Diehl, and Cavanaugh 2019; Halzack 2017).

In this research, we point to a potential cost of self-customization that has heretofore been essentially overlooked by our thinking in that space: Consumer-designers, that is, customers of self-customized products, might be paying twice to have it their way—once when purchasing the unique product, and once again when selling it on the second-hand market. We reason that our focal uniqueness-hurts-resale hypothesis—the higher the self-customized product's uniqueness, the *lower* its appeal to the second-hand market—is particularly relevant for situations wherein self-customization is difficult (as well as expensive) to change after purchase. Our theorizing

further focuses on aesthetic customization (e.g., changing a car's color, or the aesthetic design of a pair of sneakers). This is because aesthetics (vs. functional aspects of a product) are a matter of taste, allowing for so-called horizontal (vs. vertical) differentiation (Spiller and Belogolova 2017). To visualize, consider that BMW advertises its cars as "being as unique as their drivers."[1] When configuring the aesthetics of a new car, choosing a unique color may help customers express their uniqueness (D'Angelo, Diehl, and Cavanaugh 2019; Franke and Schreier 2008; Kaiser, Schreier, and Janiszewski 2017). However, the probability that this unique color will also appeal to customers on the second-hand market might be much lower than that of a more mainstream color. In short, we argue that what creates value for the individual consumer-designer might be detrimental at resale.[2]

Although this hypothesis has not been previously raised, it seems an important one. Selling and buying products in second-hand markets is becoming increasingly popular (Huang and Fishbach 2021); for example, more than 53% of American consumers reportedly bought used apparel, footwear, or accessories in 2021.[3] In some cases, second-hand markets are even bigger than the markets for the respective new products. For instance, in 2019, the American second-hand car market was more than twice the size of the new car market (40.8 million used cars vs. 17 million new cars).[4] Moreover, while used car sales have increased by 9.4% since 2015, new car sales have decreased by 2.9%. Another example is the global second-hand furniture market, which is forecast to grow to $16.6 billion in 2025, up 66% from $10 billion in

[1] https://www.press.bmwgroup.com/deutschland/article/detail/T0302492DE/der-bmw-ist-so-individuell-wie-sein-fahrer?language=de. Retrieved September 18, 2020.
[2] As we detail in our theorizing, the opposite might apply to functional customization: The more unique a given configuration (e.g., more horsepower in the case of a car), the *higher* its resale value. We further explore this notion in our General Discussion section.
[3] https://www.thredup.com/resale/. Retrieved September 4, 2022.
[4] https://www.statista.com/statistics/183713/value-of-us-passenger-cas-sales-and-leases-since-1990/. Retrieved October 26, 2020.

2017.[5]

We report the findings of a diverse set of six studies, comprising three secondary data sets and three controlled experiments, all of which align with our theorizing and offer several important contributions to the literature on uniqueness, mass customization, and beyond. Our empirical studies include a comparison of self-customized versus off-the-shelf Nike sneakers offered on eBay, an analysis of more than 500,000 sales listings on one of Germany's largest online platforms for used car sales, and another car data set comprising only one professional seller and using actual transaction prices as dependent variable. The experiments bolster and extend the empirical findings by documenting that uniqueness indeed negatively affects second-hand market customers' willingness-to-pay (WTP). This effect occurs because the more unique a given configuration (horizontal differentiation), the lower the likelihood that the design will meet the taste preferences of the second-hand market.

Our work cautions the interested reader with regards to the hitherto mostly positive picture drawn by the extant literature on uniqueness and mass customization. That is, the purported "win-win" for customers and firms might not necessarily hold up against a more holistic product life-cycle perspective. Instead, uniqueness carries a cost within the context of aesthetic self-customization, such that it negatively affects the product's value on the second-hand market.

Taken together, our work also contributes more broadly to the marketing literature by pointing to the tension between maximizing utility at first purchase versus optimizing long-term value across the entire product life cycle (Buechel and Townsend 2018; Cherrier, Türe, and Özçağlar-Toulouse 2018). The consideration of such trade-offs in consumer decision-making

[5] https://apnews.com/press-release/pr-businesswire/e3ba0790109844e8a89aa9668c51f3cf. Retrieved October 26, 2020.

processes seems particularly relevant today, due to omnipresent trends including the rise of the sharing economy (Bardhi and Eckhardt 2012), the diffusion of online platforms selling second-hand products,[6] and increased consumer demand for more sustainable and responsible means of consumption (Gollnhofer, Weijo, and Schouten 2019). Against this backdrop, we launch a call for more research in this direction, beyond the domain of mass customization.

MASS CUSTOMIZATION AND THE VALUE OF UNIQUENESS

Many customers value uniqueness in products, and the emergence of mass customization technologies has substantially lifted the marketplace relevance of unique product configurations. Indeed, the core idea of mass customization is to serve every customer with a unique product at near mass-production efficiencies (Piller and Stotko 2002; Pine 1993). By-attribute self-customization is one popular way to implement this strategy (Valenzuela, Dhar, and Zettelmeyer 2018). Customers assume the role of active co-designers, and firms equip them with easy-to-use online design interfaces or toolkits, which help them discern their preferences and translate them into a custom product design (Von Hippel and Katz 2002). Mass customization is particularly promising in domains where user preferences are heterogeneous, or where standard, off-the-shelf products are unlikely to satisfy each customer in any given segment (Franke and Piller 2004).

A robust finding in the mass customization literature is that customers are willing to pay a substantial price premium for their self-customized products (Franke and Piller 2004; Franke, Schreier, and Kaiser 2010). This value increment has been attributed to several factors, including a better preference fit and higher uniqueness perceptions. As argued by Franke and Schreier (2008, p. 94), "the almost infinite variety of products offered by MC [mass customization]

[6] https://www.prnewswire.com/news-releases/offerup-and-letgo-combine-us-marketplaces-to-deliver-a-better-buying-and-selling-experience-for-more-than-20-million-monthly-users-301029334.html. Retrieved August 29, 2022.

systems not only allows more effective adaptation to the customer's aesthetic and functional preferences, but also facilitates enhanced differentiation from other customers and their belongings by means of a truly unique product."[7]

A unique product is perceived as different from other products in the same category (Tian, Bearden, and Hunter 2001). As such, unique products help express one's individuality, a need many consumers experience (Fromkin and Snyder 1980; Lynn 1991; Tian, Bearden, and Hunter 2001). Marketers are well aware of the importance of uniqueness to consumers, and hence frequently advertise their products as rare, unique, special, and one-of-a-kind (Lynn 1991). In the context of self-customization, brands frequently urge their customers to express their uniqueness. As aforementioned, BMW wants to sell cars that are as "unique as their drivers," and Nike markets its customized sneakers with the slogan "Nike by You," inviting customers to "create something uniquely your own."[8] Similarly, Converse sells the idea of acquiring a unique pair of custom Chuck Taylor All Stars with slogans like "Every color tells a story. Find the ones that tell yours" or "Color shows more than your mood, it's your signal. What do you stand for?"[9]

One reason why marketers want customers to purchase unique products is that such products are potentially more profitable (de Bellis et al. 2016). For example, while the colors black and white are included in the new BMW 1 Series base price, unique colors such as Sunset Orange (+682.36 EUR, ~800 USD) and Storm Bay Metallic (+1,169.74 EUR, ~1,400 USD) cost significantly extra.[10] An expert survey conducted with 160 German automotive industry

[7] Toolkits in practice differ in the solution space offered to the consumer-designer (von Hippel and Katz 2002). While in some cases the design freedom is quite limited (e.g., selecting the color of a water bottle), in other cases customers can more fundamentally change a given product design. In both situations, however, the customer defines certain design elements before the product is produced by the firm to order. Naturally, the smaller the solution space, the lower the possibilities for differentiation and thus value for the customer (Franke, Schreier, and Kaiser 2010).
[8] https://www.nike.com/nike-by-you. Retrieved September 11, 2020.
[9] https://converse.com/c/colors. Retrieved September 18, 2020.
[10] https://configure.bmw.de. Retrieved September 18, 2020.

professionals (M_{age} = 36 years, 32% female, Access by Cint) confirms this in a broader sense; asked which color would cost more when buying a new car, the professionals clearly indicated that a unique (vs. common) color is associated with a higher price.[11] This is consistent with the findings provided by Franke and Schreier (2008), demonstrating that consumers' incremental WTP for self-customized products is indeed predicted by the extent to which their designs are perceived as unique.

The collective evidence suggests that self-customization reinforces consumers' quest for uniqueness, and hence likely yields unique product designs. Accordingly, the more unique these products are perceived to be by the individual consumer-designer, ceteris paribus, the higher their respective WTP. But what happens when these products hit the second-hand market?

THE POTENTIAL COST OF UNIQUE PRODUCT CONFIGURATIONS

We conjecture that there is a potential cost of uniqueness. Specifically, the aforementioned positive aspect of self-customized products might turn negative when we switch perspectives and consider probable reactions from second-hand market customers. There are two important caveats to consider for our focal uniqueness-hurts-resale hypothesis.

First, the negative effects of uniqueness might depend on the extent to which self-customization is reversible or modifiable after purchase. The practical examples for mass customization described so far—as well as the ones considered in our empirical work—are expensive and difficult to change after purchase. In the case of self-customized Nike sneakers, for example, it is almost impossible to change the design once the sneakers have been produced and purchased. Similarly, changing a car's color to a more common one before resale is difficult

[11] M = 2.44, SD = .76, $p < .001$, two-tailed one-sample t-test [test value = 2], where 1 = "A common car color costs more when bought new," 2 = "The uniqueness of the car color does not affect the price when buying new," and 3 = "A unique car color costs more when bought new." We refer back to this expert survey at several places throughout the manuscript. The survey was originally conducted in German.

and expensive. The costs incurred (direct and indirect) might actually surpass the negative effect of uniqueness we can plausibly predict. In contrast, however, it appears more straightforward (and less costly) to change the color of a few rooms in a house before putting it on the market, given that the housing market is a domain in which post-purchase customization is frequently observed. In such a situation, which is outside the scope of the present inquiry, the negative effects of uniqueness might be less pronounced.

Second, the focal effect likely depends on the type of customization. Specifically, our theorizing and empirical efforts focus on aesthetic customization (e.g., changing a car's color, or the aesthetic design of a pair of sneakers). Aesthetics are a matter of taste, and hence allow for horizontal differentiation (i.e., one product matches the individual's personal preferences better than another; Spiller and Belogolova 2017). In this context, uniqueness might hurt a product's resale value. In contrast, functional product customization might not necessarily entail the related cost because the focal differentiation might be vertical in nature (i.e., one product is objectively better than another; Spiller and Belogolova 2017). For example, a more powerful engine might be considered a matter of quality, and hence appreciated by broader parts of the market.[12]

To visualize the potential cost of horizontal differentiation facilitated by aesthetic self-customization, consider the study by Franke and Piller (2004) on wristwatches. Supporting the promise of by-attribute self-customization, they find that a manufacturer who wants to fully satisfy the revealed aesthetic preferences of 165 students must offer 159 different watches. While these watches might be unique *and* a "perfect fit" to the respective consumer-designer, it is unlikely that any given user-design will resonate as well with *another* customer.

Congruously, our expert survey revealed that it might be more difficult to sell a used car

[12] As indicated, we empirically explore this notion in our General Discussion section.

featuring a unique (vs. common) color.[13] For example, a specific consumer-designer might find a Sunset Orange BMW 1 Series to be both appealing (because they like orange) and unique (because there are hardly any other sunset orange cars of that type). However, it is unlikely that a typical (average) second-hand market customer will value the orange car to the same extent. This is because a unique product might not suit the preferences of multiple customers; if it did, it probably was not unique to begin with. If there were high customer demand for an orange BMW 1 Series, for example, BMW would meet that demand and offer it. Perceived uniqueness, in turn, would diminish. Thus, we predict that while consumer-designers might be willing to pay extra for their unique products, the opposite may apply to customers on the second-hand market: The higher the self-customized product's uniqueness, the *lower* its appeal to the second-hand market.[14]

Theoretically, this effect is likely due to the decoupling of preference fit and uniqueness. While preference fit for a given consumer-designer is presumably high, the uniqueness of that configuration should negatively affect the potential fit to the second-hand market. Put differently, consumer-designers might search for a design that is of high fit *and* unique. The more unique a given configuration (horizontal differentiation), however, the lower the likelihood that the design will meet the taste preferences of the second-hand market.[15]

TYPES OF VALUATION, EMPIRICAL APPROACH, AND OVERVIEW OF STUDIES

[13] M = 1.70, SD = .84, $p < .001$, two-tailed one-sample t-test [test value = 2], where 1 = "A commonly colored car is easier to sell on the second-hand car market," 2 = "The uniqueness of the color of a car does not affect how easy it is to sell it on the second-hand car market," and 3 = "A uniquely colored car is easier to sell on the second-hand car market."

[14] Note that from a conceptual perspective, the focal prediction does not need be centered on self-customization facilitated by firms. As noted in the introduction, customers can also customize products after purchase (or by making them from scratch). The diffusion of mass customization technologies, however, has substantially increased the phenomenon's importance. Whereas it is easy to pick sunset orange as the preferred color while configuring one's BMW, for example, it is more challenging to find someone to recolor the car accordingly after purchase.

[15] We acknowledge that there might be other processes co-contributing to the phenomenon, which we discuss in more detail in the General Discussion section.

Our focal uniqueness-hurts-resale hypothesis predicts a *negative* relationship between a product's aesthetic uniqueness and its appeal to potential customers on the second-hand market. We test this prediction over the course of six studies, summarized in Table 1; the studies comprise three secondary data sets and three controlled experiments (plus one experiment reported in the Web Appendix). While we see the studies' diversity and the related triangulation of findings as a strength, we point out that the different types of data capture different valuations from the various parties involved.[16] At the core of our theorizing is second-hand market customers' WTP, which should be negatively affected by the uniqueness of the focal product. As a result, we also conjecture a negative effect on actual transaction prices. In our first two data sets, we neither directly observe second-hand market customers' WTP nor actual transaction prices. Instead, we observe sellers' asking prices. The underlying assumption is that sellers want to sell their products quickly and make as much money as possible. Thus, to the extent that sellers have reasonable insights into the market, we take sellers' asking prices as a proxy for the products' potential value to the second-hand market. Indeed, research on real estate shows that asking prices are closely correlated with eventual transaction prices (Black and Diaz 1996).

In particular, Study 1 presents a data set comprising asking prices for Nike sneakers on eBay (n = 1,761), and Study 2 reports a large-scale German data set containing more than 500,000 second-hand cars for sale. In Study 2 we are able to further differentiate between professional and individual sellers; whereas professional sellers act as middlemen between current product owners and prospective buyers, individual sellers directly sell products they have originally purchased (and self-customized). The huge sample size allows us to effectively test for a potential seller type interaction; in particular, we argue that professional sellers, because of

[16] Naturally, the individual studies are not without limitations; we present the studies in a way that each study builds on, extends, and addresses some limitations of the prior ones (discussed in the individual study sections).

their experience and expertise in selling cars, should be better able to assess a given car's market value and hence identify the maximum prospective price on the second-hand market.

In contrast, the signal sent from individual sellers' asking prices for their cars is less clear a priori. On the one hand, they might act like professionals if they have sufficient insights into the car market. In that case, their asking prices might resemble second-hand market customers' WTP. On the other hand, should they lack the respective experience in selling the focal products, their valuations might more closely resemble their own WTP at first purchase. For example, they might take into account the higher price originally paid for their uniquely customized cars, or their attachment to their "really special" products. This is consistent with literature on the endowment effect, which has shown that individual owners value a given object more than non-owners (Thaler 1980). They might also be willing to wait and hope for the single customer that shares their own preferences and is hence willing to pay a higher price for their unique product. Similarly, they might believe that what they value in terms of uniqueness will also be appreciated by others (i.e., they might suffer from an egocentric bias; Ross and Sicoly 1979). Compared to professional sellers of cars, it is thus unclear whether individual sellers' asking prices more closely resemble second-hand market customers' WTP or, in contrast, their original WTP for their own configurations.

Study 3 extends the first two studies by presenting another car data set from one professional seller, now using *actual transaction prices* (n = 2,217) as dependent variable. Thus, Study 3 captures the realized value of the underlying cars on the second-hand market.

In Studies 4 through 6, we report a series of experiments aimed at testing our focal hypothesis in a more controlled setting while extending the insights gained in the course of the empirical studies. The basic paradigm involves an assignment of participants to the role of

consumer-designer or second-hand market customer, and a subsequent valuation of the respective products. In Study 4 (sneakers), consumer-designers either indicate their WTP or willingness-to-accept (WTA)[17] for their self-customized product, and second-hand market customers indicate their WTP for a select number of these products. Thus, the experiment allows us to directly test whether second-hand market customers' WTP is indeed negatively affected by the uniqueness of the focal product. In addition, the consumer-designers' WTA data helps us assess whether individual seller's reasoning is more closely aligned with their original valuations (consumer-designers' WTP) or with the product's appeal to the second-hand market (second-hand market WTP).

In the subsequent preregistered Study 5 we utilize an incentive-compatible WTA (consumer-designer) and WTP (second-hand market) elicitation method, respectively, and further test for the effect's underlying process via mediation. Finally, preregistered Study 6 aims to assess whether a uniqueness motive among consumer-designers is indeed a causal driver of the focal effect.

STUDY 1: NIKE SNEAKERS ON EBAY

In Study 1, we present a data set comprising asking prices for Nike sneakers on eBay. The data allows us to differentiate between self-customized and standard, off-the-shelf sneakers. In addition, we code the uniqueness of the self-customized sneakers in order to test whether uniqueness is indeed negatively related to our dependent variable.

Methods

Sample. In May 2021, we collected field data from over 1,700 listings for Nike Dunk and Nike Air sneakers (n = 1,761) posted on eBay Germany. We chose Nike Dunk and Nike Air because

[17] WTA refers to the "minimum compensation demanded" in order to be willing to sell a product (Knetsch, Thaler, and Kahneman 1990, p. 1326) and thus corresponds to sellers' asking prices as captured in Studies 1 and 2.

they represented approximately two-thirds of all customized Nike sneakers for sale on eBay at the time.

Procedure and data preparation. We created a web scraper to retrieve the data, and subsequently prepared said data. The detailed procedure is documented in Web Appendix A. This approach resulted in a sample of 1,515 off-the-shelf sneakers and a census of 246 self-customized sneakers (searching for "Nike Air By You" and "Nike Dunk By You"). We thus took advantage of the fact that self-customized Nike sneakers are clearly identifiable as such when the term "By You" is featured in the listing.[18]

Dependent variable. The sneakers' asking price served as dependent variable (*asking price*$_{ij}$, where *i* is the sneaker of model *j*). We only scraped "buy-it-now" listings (i.e., non-auction listings with stated asking prices). An initial analysis of the distribution of the dependent variable indicated that the measure contained extreme values, with a median of 149.90 EUR, a mean of 242.83 EUR, a standard deviation of 627.05 EUR, and a maximum value of 19,999.23 EUR. This distribution implied a long tail of extreme values above approximately 949.00 EUR (97.5th percentile). Given the propensity of extreme values to bias statistical tests, the extreme values were truncated (McClelland 2000). We used the median absolute deviation (MAD) method to determine extreme values (Leys et al. 2013). The MAD method does not rely on the mean or standard deviation to identify outliers. Therefore, we can dismiss the criticism that the measures used to identify outliers are influenced by the outliers themselves. Applying MAD, we determined the median of the price for each sneaker model, calculated the absolute deviations from the median for each observation, calculated the median of these absolute deviations for

[18] We conducted manual checks to see whether some sellers of "by you" sneakers may have forgotten to include the "by you" label; we did not find any such instance in the sample of standard sneakers. Vice versa, we also verified that only self-customized sneakers were included in the "by you" sneakers.

each sneaker model, and finally, after adjusting for normality, determined a threshold deviation. Leys et al. (2013) recommend a threshold of 2.5 median deviations, implying that a cutoff should capture 98.8% of the distribution. We applied the recommended 2.5 median deviations cutoff to our dataset. 196 observations (11%) featured a price above a MAD value of 2.5 and were, therefore, truncated to the maximum value for their respective sneaker models.[19]

Independent variables. We used two focal independent variables for our analysis. First, we created the dummy variable $self\text{-}customized_{ij,}$ to capture whether the sneakers were self-customized or not (where 1 = "self-customized" and 0 = "off-the-shelf"). Second, we created the variable $uniqueness_{ij}$, which captured the uniqueness of the aesthetic designs of the 246 self-customized sneakers. To judge the uniqueness of the sneakers' aesthetic design, two independent coders (one of the authors and one trained research assistant who was blind to the purpose of the study) rated how unique the aesthetic design of a given sneakers model was (1 = "Not Unique at All" and 5 = "Very Unique"). Both coders were blind to all aspects of the sneakers listings except the image featuring a given design. Their ratings were highly correlated ($r = .77$, $p < .001$) and hence averaged to create $uniqueness_{ij}$ for further analyses.

Other fixed effects. We introduced the following groups of fixed effects into the model: sneakers specifications' fixed effects, sneakers sale circumstances' fixed effects, and the median asking price of the sneakers model. First, sneakers specifications' fixed effects comprised variables that described the sneakers in the listing and were defined at the time of production. These variables (in addition to $customized_{ij}$ and $uniqueness_{ij}$) first included the sneakers' segment. On eBay, sellers can select one of five segments describing their sneakers; we hence included five dummy variables (i.e., $men's_{ij}$, $women's_{ij}$, $unisex_{ij}$, $kids_{ij}$, and $infants_{ij}$), with the

[19] Results are similar if we do not truncate asking prices (see Web Appendix A).

reference level being "none." Moreover, we captured the sneakers' European size ($size_{ij}$) as a numeric value. Sneakers listings featuring sizes in other formats (i.e., US, UK, and Australian) were converted into the European size format.

Second, sneakers sale circumstances' fixed effects comprised variables that described the moment of the listing. This included the sneakers' condition. On eBay, sellers must select one of five conditions describing their sneakers; we hence included four dummy variables (i.e., *new with box*$_{ij}$, *new without box*$_{ij}$, *new with factory defects*$_{ij}$, and *new*$_{ij}$), with the reference level being "used." Furthermore, this category included the number of times the seller was rated (*seller ratings*$_{ij}$) and the share of positive ratings (*percentage seller positive ratings*$_{ij}$). Finally, we included the median asking price of the sneakers model (*median asking price*$_j$).

Modeling approach. The sneakers' listings were nested within sneakers models. We applied several tests to determine whether a multilevel approach was warranted. We first conducted an ANOVA with the sneakers model as a predictor and truncated asking price as the dependent variable. We found significant between-group variance ($F(274, 1{,}486) = 7.55$, $p < .001$). Second, we tested a hypothetical null model with no fixed effects and the sneakers model as a random effect. The random effect of the sneakers model explained 44% of the intercept's variance ($\gamma_{00} = 136.53$; $SE_{\gamma 00} = 6.67$). Both indicators suggested that a mixed-effects approach was warranted. Therefore, we specified the mixed-effects model in Equation 1 with a random effect of the sneakers model on the intercept, where u_{0j} is the sneakers model-specific error term and ε_{ij} is the sneakers listing error term.

(1) $\text{Asking Price}_{ij} = \gamma_{00} + \gamma_{10}\,\text{Customized}_{ij}\,\text{(Model 1)} \,/\, \gamma_{10}\,\text{Uniqueness}_{ij}\,\text{(Model 2)}$

$+ \gamma_{20\text{-}60}\,\text{Segment Dummies (Men's}_{ij}\text{, Women's}_{ij}\text{, Unisex}_{ij}\text{, Kids}_{ij}\text{, and Infants}_{ij}\text{)} + \gamma_{70}\,\text{Size}_{ij} + \gamma_{80\text{-}110}$

Condition Dummies (New With Box$_{ij}$, New Without Box$_{ij}$, New With Factory Defects$_{ij}$, and

$$\text{New}_{ij}) + \gamma_{130}\,\text{Seller Ratings}_{ij} + \gamma_{140}\,\text{Percentage Seller Positive Ratings}_{ij} + u_{0j} + \varepsilon_{ij}$$

Results

The effect of self-customization on asking price. We used the R package "lme4" (Bates et al. 2015) to estimate our mixed-effects model (see Model 1 in Web Appendix A for the full model results). Most importantly, we found that self-customization is negatively related to the sneakers' asking prices (γ = -47.97, t = -5.96, $p < .001$). This effect is notable, since self-customizable Nike sneakers typically cost more than off-the-shelf versions at first purchase. For example, the self-customizable version of the Nike Air Force 1 costs between EUR 119.99 and EUR 189.99, while its off-the-shelf counterpart costs between EUR 99.99 and EUR 149.99.[20] Thus, customers indeed seem to be paying twice for self-customization: First, depending on the exact shoe model, they pay approximately EUR 30 more for self-customization (+24%). Second, at resale, self-customization is associated with a EUR 48 lower asking price, on average (-32%).

The effect of the self-customized sneakers' uniqueness on asking price. We next predicted that the uniqueness of the self-customized sneakers' aesthetic design would be associated with a lower asking price. We tested this prediction by running Model 2 (see Web Appendix A). In support of our uniqueness-hurts-resale hypothesis, we found a significant negative effect (γ = -4.09, t = -2.11, $p = .05$). Note that this coefficient is mapped onto the 1-5 uniqueness scale that the coders used to rate the shoes. This means that the aesthetic choices made by the consumer-designer could impact the sneaker's asking price by up to EUR 20.45, or 12% of the mean asking price of self-customized sneakers in the data set.

Discussion

Study 1 finds that despite being associated with higher prices at first purchase, self-customized

[20] https://www.nike.com/de/w/herren-nik1?q=nike%20air%20force. Retrieved June 7, 2021.

(vs. off-the-shelf) sneakers featured *lower* asking prices on the second-hand market. Moreover, consistent with our theorizing, we find that the aesthetic designs' uniqueness of self-customized sneakers is indeed *negatively* related to the respective products' asking prices.

STUDY 2: >500,000 CARS OFFERED ON THE SECOND-HAND MARKET

In Study 2, we aim to test our uniqueness-hurts-resale hypothesis in a different context; specifically, we analyze large-scale field data scraped from an online platform for used car sales. The asking price of each car listing serves as dependent variable, while the car's color serves as independent variable. Whereas a uniquely colored car is likely to be self-customized,[21] a car's color is also central to the consumer-designer's perception of the car's uniqueness. Picking a unique color for one's car is highly self-expressive: the practitioner literature even suggests that "the color of a car can say a lot about a person and even speak to the driver's purpose in life" (Joseph and Tate 2019). Indeed, our expert survey revealed that color choice is generally important for buyers of new cars,[22] and our experts further clarified that it is important for buyers to choose a color they personally find appealing (vs. choosing a color that will have a high resale value).[23] Thus, a car's color appears to be a sound proxy for capturing its aesthetic uniqueness at scale (however, we acknowledge that there might be other customizable elements of a car that are not captured in our data).

The data further allows us to differentiate between professional and individual sellers; we can thus test whether sellers' expertise affects the focal uniqueness effect. As indicated, while

[21] This seems particularly true for the German car market where, as indicated, self-customization is omnipresent and where recoloring after purchase is on the fringes. Naturally, a common, non-unique color could also have been self-customized. The focal hypothesis, however, is that unique (vs. common) product configurations fare less well on the second-hand market.

[22] M = 5.14, SD = 1.66, $p < .001$, two-tailed one-sample t-test [test value = 4], where 1 = "very unimportant" and 7 = "very important."

[23] M = 4.58, SD = 2.11, $p < .001$, two-tailed one-sample t-test [test value = 4], 1 = "A car color that will have a high resale value," 7 = "A color that appeals to themselves."

professional car sellers' asking prices appear to be a good proxy for the products' potential value to the second-hand market, the signal sent from individual sellers is less clear a priori.

Methods

Sample. We collected data from more than five hundred thousand listings for used cars (n = 520,190) posted on one of the leading German online car resale platforms between September and November 2019. Our data captured the 15 highest selling brands in Germany,[24] and covered cars initially registered between 2005 and 2019 (i.e., during the past 15 years).

Dependent variable. The advertised asking price served as dependent variable (*asking price*$_{ij}$, where *i* is the car of model *j*). As in Study 1, we used the MAD method to identify and truncate extreme values for asking prices; 13,515 observations (2.6%) featured a price above a MAD value of 2.5 and were truncated to the maximum value for their respective car models.[25]

Independent variable. The uniqueness of the advertised car's color served as our independent variable. Practitioner literature pointed toward the concept that a car's color is not unique per se; instead, its uniqueness needs to be defined within the context of a given car model and vintage (WhatCar? 2019). We followed suit and calculated color uniqueness as the inverted proportion of the number of cars of a given model and vintage featuring said color (*color uniqueness*$_{ij}$). We considered the car's color as indicated by the seller at the time of its listing and looked at how many cars of the same model and vintage featured the same color. For example, if there were 49 black and one red 2015 "BMW 116", a black 2015 "BMW 116" would have a color uniqueness score of .02 (1 - [49 / 50]) and the red one would be assigned a score of .98 (1 - [1 / 50]). Consequently, the variable can take any value from zero to one, with higher values

[24] https://de.statista.com/statistik/daten/studie/235380/umfrage/monatliche-marktanteile-der-automarken-in-deutschland. Retrieved November 6, 2019.

[25] Results are similar if we do not truncate asking prices (see Web Appendix B).

indicating a higher uniqueness score.

Recall that choosing a unique color typically involves an incremental cost to the buyer/consumer-designer of the new car: while we could not capture whether there was such an extra cost—and if so, how much—it is important to recognize that this makes our empirical test more conservative because any given car with a unique color should have a higher (not lower) asking price on the second-hand market, ceteris paribus.

Other fixed effects. We employed a series of control variables that are likely to predict a given car's asking price (DAT Group 2016; WhatCar? 2019). Like in Study 1, we introduced three groups of variables into the model: car specifications' fixed effects, car sale circumstances' fixed effects, and the median asking price of the model. First, car specifications' fixed effects included the car's color. On the platform, sellers had to select one of 12 colors describing their car; we hence included 11 dummy variables (i.e., $beige_{ij} - yellow_{ij}$, in alphabetical order) with the reference level (0) being "black." Moreover, we captured the car's power in horsepower ($power_{ij}$), which the sellers entered as a numeric value. We summarized engine types entered by the sellers into the two dummy variables $diesel_{ij}$ and $other\ fuel_{ij}$ (e.g., hybrid or electric cars), with the reference level being "gasoline." We then summarized transmission types entered by the sellers into the dummy variable $manual_{ij,,}$ with the reference level being "automatic." The reference level also included other variants of automatic transmission types, like dual-clutch or continuously variable transmissions. In addition to the variables just discussed, robustness checks reported in Web Appendix B included other control variables such as car brand; we omitted car brand from our model here because said brand is implied by the car model random effect (see below). Car models are exclusive to car brands. For example, one cannot buy a "BMW 116" (i.e., a BMW model) from Audi, as the model typology is unique to the respective

brand.

Second, car sale circumstances' fixed effects comprised variables that described the moment of the second-hand market listing, and included the seller type of the car as a dummy variable (where 0 = individual seller and 1 = professional seller [$professional\ seller_{ij}$]). Moreover, it included the mileage of the car in kilometers ($mileage_{ij}$) and the car's age in days since the date of first registration (age_{ij}). Last, we included the median asking price of the model ($median\ asking\ price_j$).

Modeling approach. The individual listings were nested within car models. Therefore, the structure of the data implied that a mixed-effects approach was warranted. To confirm this, parallel to Study 1, we first conducted an ANOVA with the car model as the predictor and asking price as the dependent variable. We found significant between-group variance ($F(414, 519{,}775) = 2{,}151$, $p < .001$). Second, we tested a hypothetical null model with no fixed effects and the car model as a random effect. The random effect of the car model explained 97% of the intercept's variance ($\gamma_{00} = 34{,}992$, $SE_{\gamma 00} = 2{,}568$). Both indicators suggested that a mixed-effects approach was warranted. Therefore, we specified the mixed-effects model in Equation 2 with fixed effects for the car specifications, car sale circumstances, and the car model median asking price, as well as a random effect of the car model on the intercept, where u_{0j} is the car model-specific error term and ε_{ij} is the car listing error term (see below).

(2) $$\text{Asking Price}_{ij} = \gamma_{00} + \gamma_{10}\,\text{Color Uniqueness}_{ij} + \gamma_{20\text{-}110}\,\text{Car Color Dummies (Beige}_{ij} - \text{Yellow}_{ij}) + \gamma_{120}\,\text{Power}_{ij} + \gamma_{130\text{-}140}\,\text{Fuel Dummies (Diesel}_{ij}, \text{Other Fuel}_{ij}) + \gamma_{150}\,\text{Transmission Dummy (Manual}_{ij}) + \gamma_{160}\,\text{Seller Type Dummy (Professional Seller}_{ij}) + \gamma_{170}\,\text{Mileage}_{ij} + \gamma_{180}\,\text{Age in Days}_{ij} + \gamma_{01}\,\text{Median Asking Price}_{j} + u_{0j} + \varepsilon_{ij}$$

Results

The effect of color uniqueness on asking price. We used the R package "lme4" (Bates et al. 2015) to estimate our mixed-effects model (see Model 1 in Table 2 for details). Most importantly, we found support for our primary hypothesis, namely, the higher the car's color uniqueness, the *lower* its asking price on the second-hand market (γ = -572.26, t = -6.59, $p < .001$). Given the large-scale data set, we find it useful to further report the following effects with regard to our control variables (most of which were as expected and consistent with the practitioner literature): First, we find that professional sellers generally ask for a lower asking price (γ = -157.39, t = -6.21, $p < .001$) compared to individual sellers. Second, a car's horsepower is positively related to its asking price (γ = 67.21, t = 222.27, $p < .001$); third, a diesel engine (γ = 738.90, t = 33.74, $p < .001$) or any other type of engine (γ = 3,421.62, t = 42.29, $p < .001$) is associated with a higher asking price compared to a car that runs on gasoline; fourth, a manual transmission is associated with a lower asking price compared to an automatic one (γ = -2,077.61, t = -96.00, $p < .001$); fifth, mileage (in km) is negatively related to the car's asking price (γ = -.05, t = -226.45, $p < .001$); sixth, the older the car, the lower its asking price (γ = -3.52, t = -348.40, $p < .001$); seventh, we find a significantly positive effect of the car model's median asking price (γ = .88, t = 93.38, $p < .001$).

Color uniqueness × seller type interaction. We next tested for a potential uniqueness × seller type interaction (we did so by appending "+ γ_{190} Color Uniqueness$_{ij}$ × Professional Seller$_{ij}$" to Equation 2). We found a significant interaction effect (γ = -4,925.07, t = -30.26, $p < .001$; see Table 2). As predicted, when a professional seller listed the car, we found that color uniqueness significantly and substantially *reduced* its asking price (γ = -1,530.07, t = -16.57, $p < .001$). However, when an individual seller listed the car, color uniqueness *increased* its asking price (γ = 3,395.01, t = 21.60, $p < .001$). We visualize this interaction in Figure 1.

Discussion

Study 2 provides further evidence in support of our uniqueness-hurts-resale hypothesis. In particular, using a large-scale data set, we find that the uniqueness of a car's color is negatively related to its asking price on the second-hand market. This effect unfolds even after controlling for a host of significant predictors regarding a car's asking price. In addition, our analysis reveals that the effect of uniqueness on asking price depends on the type of seller. While the negative effect is particularly pronounced in cases involving a professional seller, the effect reverses and turns positive for individual sellers. Although professional sellers account for most listings in our data set (86%), and according to follow-up analyses generally set more accurate asking prices (see Web Appendix B), we wanted to further explore the individual seller finding.

Specifically, we first used propensity score matching to assess the possibility that car owners choose the sales channel strategically.[26] Findings indicate that any related selection concerns are unwarranted in explaining the focal interaction. Second, we replicate robustness checks in similar analyses of the second-hand market for cars (Lacetera, Pope, and Sydnor 2012), which call into question the interpretation that individual sellers might be merely targeting a possible subset of buyers who are willing to pay more for uniquely colored cars (see Web Appendix B for a more detailed reporting of these analyses).

In conclusion, we reason that the different pattern of effects found for individual sellers is likely due to a variety of factors tied to their lack of experience and expertise in selling cars. Compared to professionals, it seems that individual sellers' asking prices for their cars might more closely resemble their own original WTP for their unique configurations, rather than

[26] The effects of Professional Seller$_{ij}$ on Asking Price$_{ij}$ might be biased by any factors that predict Professional Seller$_{ij}$. Using propensity score matching, we attempted to control for these biases by making the groups comparable with respect to the control variables captured in our model (see Web Appendix B for details).

second-hand market customers' WTP.[27] We follow-up on this finding and interpretation in Study 4. One limitation of the first two studies is that we only obtained asking prices, and not actual transaction prices. Arguably, it is unclear why a potential difference between these two price points would systematically differ as a function of uniqueness. Nonetheless, we seek to address this limitation in Study 3.

STUDY 3: ACTUAL TRANSACTION PRICES OF USED CARS

In Study 3, we aim to test our uniqueness-hurts-resale hypothesis using actual transaction data.

Methods

Sample. We were able to obtain a data set from a large German car fleet manager. The data set contains recent transaction data on cars of various brands and models at wholesale car auctions (n = 2,633). The fleet manager's cars are self-customized by customers. The cars are then ordered according to these specifications, registered by the fleet manager, and leased to customers. Upon expiration of the lease, the fleet manager recovers the cars and sells them at wholesale car auctions. The transaction data set contains the actual sale prices of these cars, and most of the variables controlled for in Study 2. The variables not included in the transaction data set are the car's power in horsepower ($power_{ij}$), the car's transmission type ($manual_{ij}$), and seller type ($professional\ seller_{ij}$; as the fleet manager *is* a professional seller).

Procedure. We again used the R package "lme4" (Bates et al. 2015) to estimate a mixed-effects model according to Equation 2, excluding the variables we had no information for. To estimate the impact of color uniqueness on the car's actual transaction price, we matched the cars in the auction data set with the $color\ uniqueness_{ij}$ and $median\ asking\ price_j$ information we had

[27] Note that contrary to Study 2, we could not credibly approximate sellers' expertise via seller type in Study 1. While professional eBay sellers might not necessarily be experts in reselling (custom) Nike sneakers (because they regularly sell other products), there might be individual sneaker sellers with profound market knowledge.

calculated for Study 2. There were several cars in the transaction data set for which we did not have the respective information, because they were not covered in the scraping effort for Study 2 (n = 416). This resulted in a smaller data set (n = 2,217). As in the previous studies, we used the MAD method to identify and truncate extreme values (68 observations; 3.07%).[28]

Results and Discussion

We found that the uniqueness of a car's color significantly reduces its actual transaction price (γ = -2,427.99, t = -2.45, p = .01; see Web Appendix C for the full model results). Thus, Study 3 provides further evidence in support of our uniqueness-hurts-resale hypothesis. While the first two studies find that uniqueness is negatively related to the products' asking prices, Study 3 replicates these findings using actual transaction prices as dependent variable. We next present a series of experiments intended to corroborate and extend the findings reported thus far.

STUDY 4: A SNEAKERS EXPERIMENT

Study 4 features an experiment aimed at testing our uniqueness-hurts-resale hypothesis in a more controlled setting. In terms of independent variable, we capture the uniqueness of self-customized products as perceived by consumer-designers.[29] In terms of dependent variable, we ask consumer-designers to either indicate their WTP or, alternatively, their WTA for their self-customized product. Furthermore, we present the products self-customized by consumer-designers to a sample of other consumers; their respective WTP indications provide the second-hand market valuation of the self-customized products. If our theorizing is correct, we should observe a significantly negative relationship between the self-customized products' uniqueness

[28] Results are similar if we do not truncate actual transaction prices (see Web Appendix C).

[29] Consistent with our theoretical framework, we ask consumer-designers (vs. potential second-hand market customers) to assess the uniqueness of their configurations. In a later experiment (Study 6), we ask potential second-hand market customers to assess the preference fit of a given set of self-customized products to assess mediation (uniqueness should negatively affect the potential fit of a self-customized product to the second-hand market).

and second-hand market WTP. Like in Study 1, the product context employed for this study is sneakers.

Methods

Consumer-designers. For the first part of the experiment, we recruited 502 US consumers (M_{age} = 36 years, 59% female, Amazon Mechanical Turk) in exchange for a nominal payment. We opted for this sample size in order to obtain enough variance regarding self-customized products' uniqueness; given that this was our first experiment, we also opted for a relatively big sample to ensure our ability to reliably detect the focal effect. Participants were randomly assigned to either a WTP or WTA condition. Participants in both conditions were asked to self-customize a pair of sneakers for themselves, using a self-customization interface specifically created for this study. This interface allowed us to automatically store participants' creations in the survey flow; the interface was a simpler version of the "Nike By You" toolkit. The sneakers in question were the "Nike Blazer Mid" (a unisex shoe), and participants could customize them by selecting one of 22 colors for each of five customizable features of the shoe (main color, swoosh color, backtab color, sole color, and lace color). The selected colors were instantly rendered graphically on the participants' screens to facilitate effective self-design (Von Hippel and Katz 2002).

Next, participants were asked to indicate their WTP (WTP condition) or, alternately, their WTA (WTA condition) for their self-customized sneakers. In the WTP condition, we asked: "What's the maximum amount of money (in US $) you would be willing to pay for the pair of sneakers you designed?" (The average retail price for a new pair of sneakers of this type is circa 100 US $.) Participants could select a value on a $0 to $151 scale, in $1 increments (0 = "I'm not willing to pay anything.", 151 = "More than 150 US $."). We ensured that these and all subsequent slider scales were easy-to-use and intuitive, despite the large number of selectable

values. Web Appendix D contains screenshots of the slider scales used in this study.

In the WTA condition, we asked: "Imagine you purchased the pair of sneakers you designed. After some time (i.e., a few weeks), and without having used the sneakers much, you decide to sell them on the second-hand market. What is the minimum amount of money (in US $) that you would be willing to accept in order to actually sell the sneakers?" (Assume that the sneakers are in excellent condition and appear to be almost new; the average retail price for a new pair of sneakers of this type is circa 100 US $.) Participants could select a value on a $0 to $151 scale in $1 increments (0 = "I'm willing to give them away for free.", 151 = "I'm not willing to sell them for 150 US $ or less.").

Participants were further asked to assess the uniqueness of their creations. We employed the following three-item scale: (1) "My sneaker design is unique," (2) "My sneaker design is special," and (3) "My sneaker design is one-of-a-kind" (where 1 = "Strongly Disagree" and 7 = "Strongly Agree", $\alpha = .93$; adapted from Franke and Schreier 2008). Lastly, participants indicated their gender and age.

Second-hand market customers. To assess the second-hand market appeal of the self-customized products, we recruited an independent sample of 1,230 US consumers ($M_{age} = 37$ years, 46% female, Amazon Mechanical Turk) to evaluate five pairs of sneakers in exchange for a nominal payment (we explain the rationale underlying the chosen sample size below). Participants first indicated their demographic (age, gender) and shoe size. We then matched their revealed gender to the gender of the consumer-designers. This was done to avoid noise stemming from gender mismatches (although the shoe model used was unisex, design preferences likely differ between men and women). Next, we presented each participant with five pairs of self-customized sneakers supposedly available in their indicated size and for sale on the second-hand

market, and asked them to indicate their WTP for each pair.[30] To measure second-hand market customers' WTP, we asked: "What's the maximum amount of money (in US $) you would be willing to pay for these sneakers?" (The average retail price for a new pair of sneakers of this type is circa 100 US $.) Participants could select a value on a $0 to $151 scale in $1 increments (0 = "I'm not willing to pay anything", 151 = "More than 150 US $").

The five designs were randomly drawn from the 298 (204) pairs of sneakers customized by our female (male) consumer-designers, and were presented in random sequence on the same page. In total, we had 1,230 participants indicating their WTP for five pairs of sneakers each, resulting in 6,150 total WTP data points. Put differently, we sought to collect at least ten data points for each self-customized pair of sneakers.

As in the previous studies, we used the MAD method to identify and truncate extreme values (9 observations; .15%). Results are similar if we do not truncate these values.

Results

Consumer-designers. We first regressed consumer-designers' WTP on their uniqueness perceptions of their self-customized sneakers. Replicating prior research in this area (Franke and Schreier 2008), we found a significantly positive effect ($b = 5.88$, $t(268) = 5.69$, $p < .001$). Second, we also found a *positive* and significant relationship between uniqueness and consumer-designers' WTA ($b = 2.93$, $t(230) = 2.80$, $p < .01$). This highlights that consumer-designers would like to charge higher prices for products perceived as unique—a finding in line with the one obtained for individual sellers in Study 2. While both slopes are positive and significant, the WTP-slope is somewhat steeper than the WTA-slope (see Figure 2). To investigate this more formally, we tested whether the effect of uniqueness on USD amount interacted with the type of

[30] Importantly, second-hand market customers were not exposed to consumer-designers' valuations or asking prices; thus, they cannot be influenced by these figures in their own WTP assessments.

dependent variable (i.e., consumer-designers' WTP vs. WTA). We found a significant interaction effect (b = 2.95, t(498) = 1.97, $p < .05$). Thus, findings suggest that product uniqueness perceptions do affect WTP more positively than WTA, but, importantly, the WTA slope remains positive and significant. Thus, it is unlikely that the negative effect found previously can be attributed to processes centered around consumer-designers (e.g., that they simply ask for lower prices in case of unique product configurations).

Second-hand market customers. To analyze the data with regard to second-hand market WTP, we estimated a linear mixed-effects model with second-hand market WTP as dependent variable. We used product uniqueness (as perceived by the consumer-designer) and four dummy variables for the designs' position in the survey (a given pair of sneakers could appear in five different positions in a given survey, with the reference being position 1) as fixed effects, with a design-identifier and a second-hand market participant-identifier as random effects on the intercept. The random effects were introduced as the sneaker designs were rated more than once, and participants rated five configurations each. Therefore, some of the variance in the dependent variable could be ascribed to the specific sneaker design or second-hand market participant using the random effects. The corresponding regression for the second-hand market WTP of participant *i* for configuration *j* is stipulated in Equation 3, where u_{0j} is the design-specific error term and r_{i0} is the participant-specific error term.

(3) $$\text{Second-hand Market WTP}_{ij} = \gamma_{00} + \gamma_{01}\,\text{Uniqueness}_j + \gamma_{02\text{-}05}\,\text{Configuration Position}_j + u_{0j} + r_{i0} + \varepsilon_{ij}$$

Consistent with our theorizing—and replicating our empirical findings—we found a significantly *negative* relationship between product uniqueness and second-hand market WTP ($\gamma = -.62$, t = -3.87, $p < .001$; Figure 2). Thus, the higher the rated uniqueness of the self-

customized product, the lower its appeal to potential customers on the second-hand market.

Although implied by the results, we formally tested whether the second-hand market WTP slope was significantly different from the consumer-designer WTA slope. To assess this, we estimated a second mixed-effects model. This model featured the two focal treatment conditions (i.e., consumer-designer WTA and second-hand market WTP), the sneakers' uniqueness, and the respective interaction (treatment condition x perceived uniqueness) as fixed effects. The model again featured a design identifier and a participant identifier as random effects on the intercept. However, unlike the previous model, we could not feature the sneakers' position as a covariate, as this information did not apply to the consumer-designer WTA condition. As anticipated, we found that the interaction between uniqueness and the focal treatment condition was significant ($\gamma = 3.53$, $t = 2.22$, $p = .03$). We calculated the Johnson-Neyman interval for this interaction and found that the slopes were significantly different above a uniqueness value of 3.55. As this value was markedly below the mean uniqueness of all sneakers in the sample ($M = 4.65$, $SD = 1.69$), this implies that for 74% of the 502 self-customized sneakers, on average, second-hand market WTP is significantly lower than consumer-designers' WTA.

Taking limited supply and demand into account. So far, we have used established statistical procedures to provide support for the postulated effect in this experiment. However, in the case of second-hand markets, one might argue that consumer-designers sell only one product. Therefore, we ran an auction simulation in which we randomly ordered the second-hand market customers, and then assigned their bids to the respective sneakers.[31] To elucidate, the first customer in our simulation received their most-liked sneakers (i.e., highest WTP); per

[31] We thank an anonymous reviewer for the rationale for this follow-up analysis.

consequence, these sneakers were removed for subsequent customers. If the next customer's highest bid was for sneakers that were no longer available, they were assigned the sneakers for which they bid the second-highest amount, and so on. One could imagine this simulation as a type of flea market, where second-hand market customers enter the market one after another. Customers buy the pair of sneakers they like best and that are still available. We ran this auction simulation 1,000 times and created random orders of second-hand market customers for each simulation. We analyzed the results of these simulations in three ways, all of which supported our main findings. First, we found that uniqueness negatively impacted the bid height in this analysis ($\gamma = -.62$, $t = -45.12$, $p < .001$). Second, when focusing on the sneakers created in the WTA condition, we found that an average of only 48% of all sneakers would have been "sold" (WTP > WTA). As predicted, we found that uniqueness was negatively associated with the probability of selling a given pair of sneakers ($\gamma = -.41$, $z = -47.95$, $p < .001$). Lastly, when looking at "transaction prices" only (i.e., taking WTP for all "sold" sneakers and taking 0 for all "unsold" sneakers), we found a significantly negative effect of uniqueness ($\gamma = -2.78$, $t = -60.63$, $p < .001$).

Discussion

Study 4 replicates and extends our prior findings in a test setting characterized by high internal validity. In particular, we find that consumer-designers' WTP for their self-customized sneakers is *positively* affected by the extent to which they perceive their products as unique. A similar—although less positive—relationship is found for WTA, suggesting that consumer-designers *want to pay and be paid more for more unique creations*; this finding mimics the slope of individual sellers' asking prices found in Study 2. However, in stark contrast to consumer-designers' responses, and consistent with our uniqueness-hurts-resale hypothesis, we find that second-hand

market WTP is *negatively* affected by a product's uniqueness; this finding mimics the slope of professional seller's asking prices in Study 2 (and the main effects found in Studies 1 through 3). Thus, the higher the consumer-designer rated the uniqueness of their self-customized product, the less it appealed to potential customers on the second-hand market.

STUDY 5: INCENTIVE-COMPATIBLE REPLICATION AND MEDIATION

In Study 5, we first aim to increase generalizability by switching the context to furniture (i.e., consumer-designers self-customize a couch). Second, we aim to investigate the process of the focal effect by testing for mediation. In addition to running a first (consumer-designers; n = 202) and second wave (second-hand market customers; n = 303) as in Study 4, we added a third wave in which we ask another independent sample of participants (second-hand market customers; n = 299) to rate the preference fit of a given number of couches shown to them. If our theorizing is correct, we should find that the uniqueness of self-customized couches (Wave 1) negatively affects second-hand market customers' WTP (Wave 2) because the more unique a given configuration (horizontal differentiation), the lower the likelihood that the design will meet their taste preferences (Wave 3).[32]

Moreover, we measure consumer-designers' WTA and second-hand market customers' WTP using an incentive-compatible elicitation method (i.e., we employed a dual-lottery BDM procedure, e.g., Fuchs, Schreier, and Van Osselaer 2015).[33] This method provides an incentive-compatible measure of what the product is worth to participants at a given point in time (no extreme values were identified based on the MAD method in this study). The exact mechanism,

[32] We believe it is a strength to rely on three distinct data sources to test for mediation (e.g., common method bias is kept at a minimum); see Landwehr, Labroo, and Herrmann (2011) and Boh, Huang, and Wu (2020) for a similar approach.

[33] Compared to Study 4, we did not measure consumer-designers' WTP in this and the subsequent experiments.

our predictions, and our analysis plan were preregistered.[34] Otherwise, the study utilized a similar paradigm as Study 4. Hence, we only report the setup of the third wave here. We refer to Web Appendix E for a more detailed reporting of the first and second wave.

Methods

Wave 3. In order to assess to what extent a given couch design meets second-hand market customers' taste preferences, we recruited an independent sample of 299 US consumers (M_{age} = 36 years, 58% female, Prolific) in exchange for a nominal payment. We asked them to indicate their preference fit for ten couches each, randomly drawn from the couch designs self-customized in Wave 1. The couches were presented in random sequence on the same page. Thus, we generated a total of 2,990 preference fit data points. Put differently (and parallel to Study 4), we sought to collect at least ten data points for each self-customized couch.

We employed the following two-item scale to measure preference fit: (1) "I like the design of the couch" and (2) "The couch design comes close to my idea of a perfect design" (where 1 = "Strongly Disagree" and 7 = "Strongly Agree", α = .92; adapted from Franke, Schreier, and Kaiser 2010; Randall, Terwiesch, and Ulrich 2007). Lastly, participants indicated their gender and age.

Results

First, we once again found a positive and significant relationship between uniqueness and consumer-designers' WTA (b = 25.79, t(200) = 4.92, $p < .001$). To analyze the data with regard to second-hand market customers' WTP, we estimated a linear mixed-effects model similar to the one used in Study 4 (see Equation 3). As predicted, we found a significantly negative uniqueness effect (γ = -13.08, t = -10.39, $p < .001$). Thus, replicating Study 4 results using an

[34] Waves 1 and 2: https://aspredicted.org/vj2gc.pdf; Wave 3: https://aspredicted.org/vw2sb.pdf.

incentive-compatible WTA/WTP elicitation method, perceived uniqueness *increased* consumer-designers' WTA, but *decreased* second-hand market customers' WTP. Figure 3 displays this relationship, and highlights where on the uniqueness continuum consumer-designers' WTA is greater (smaller) than second-hand market customers' WTP.[35]

We next estimated a linear mixed-effects model with our mediator (preference fit) as dependent variable. As predicted, we found that the more unique a consumer-designer's couch design, the lower second-hand market customers' preference fit assessments (γ = -.29, t = -11.23, p < .001). In order to test for mediation, we averaged all second-hand market customers' WTP and preference fit measurements for each couch design, respectively. Results are summarized in Figure 4. In short, we found support for mediation: the indirect effect of uniqueness (Wave 1) on second-hand market customers' WTP (Wave 2) via preference fit (Wave 3) was significant (95% CI = -11.65, -6.72, p < .001). Indeed, once preference fit was accounted for, the uniqueness effect on WTP turned insignificant.

Discussion

Study 5 replicates the findings of Study 4 in a different product context (furniture), using an incentive-compatible WTA/WTP elicitation method; specifically, we find that while perceived uniqueness *increases* consumer-designers' WTA, it *decreases* second-hand market customers' WTP. In addition, we demonstrate that preference fit mediates the negative uniqueness effect. That is, the more unique a given configuration (horizontal differentiation), the lower the likelihood that said design will meet the taste preferences of the second-hand market.

[35] We further analyzed the data as a fictional first come, first served auction. Like in Study 4, the simulation revealed that uniqueness decreased a couch's probability of being sold (γ = -1.38, z = -369.67, p < .001). Uniqueness was also related to lower bids (γ = -36.36, t = -693.42, p < .001) and lower "transaction prices" (γ = -45.37, t = -684.67, p < .001).

STUDY 6: ADDRESSING CAUSALITY

The aim of Study 6 is to assess the causality of the uniqueness-hurts-resale hypothesis. We do so by randomly assigning consumer-designers to conditions wherein they are instructed to self-customize a product they like, featuring either a unique or common design. As in the prior experiments, we present the resulting self-customized products to an independent sample of second-hand market customers. Both parts of the study were preregistered.[36] The central prediction is that self-customized products in the "unique design" (vs. "common design") condition will result in lower WTP among second-hand market customers.

Methods

Consumer-designers. For the first part of the experiment, 299 business students at a European university (M_{age} = 21 years, 54% female) participated in the study in exchange for course credit. Participants were randomly assigned to either the "unique design" or "common design" condition. As in the previous experiments, participants in both conditions were asked to self-customize a couch for themselves. Participants in the "unique design" condition were invited to self-customize a *unique* couch design to their liking. We also provided a definition of a unique design (i.e., "A unique design is one that is distinct from other designs. For example, a given color combination is unique if it only exists once." See Web Appendix F). Alternately, participants in the "common design" condition were invited to self-customize a *common* couch design to their liking. Again, we provided a definition of a common design (i.e., "A common design is one that is similar to other designs. For example, a given color combination is common if it exists very often.").

Participants were then asked to indicate their WTA for their self-customized couch:

[36] Consumer-designers: https://aspredicted.org/r2d4b.pdf; second-hand market customers: https://aspredicted.org/jg3rb.pdf.

"What is the minimum amount of money (in US $) that you would be willing to accept in order to actually sell the couch?" They could select a value on a $1 to $1,501 scale in $1 increments (1,501 = "I'm not willing to sell the couch."). Participants were further asked to assess the uniqueness of their creations in the same way as before (α = .88).

Second-hand market customers. To assess the second-hand market appeal of the self-customized products, we recruited an independent sample of 300 US consumers (M_{age} = 25 years, 86% female, Prolific) in exchange for a nominal payment (the rationale underlying the chosen sample size is explained below). Specifically, each respondent was asked to evaluate ten self-customized couches supposedly for sale on the second-hand market. They were asked to indicate their WTP for each couch: "What's the maximum amount of money (in US $) you would be willing to pay for this couch?" Respondents could select a value on a $0 to $1,501 scale in $1 increments (0 = "I'm not willing to pay anything", 1,501 = "More than 1,500 US $").

The ten presented designs consisted of two times five randomly drawn, self-customized couches from each condition ("unique design" vs. "common design"). These couches were presented in random and unmarked order. In total, we had 300 participants indicate their WTP for ten couches each, resulting in a total of 3,000 second-hand market WTP data points. That is to say (and parallel to the previous studies), we sought to collect at least ten data points for each self-customized couch, in order to obtain a valid second-hand market assessment of the various designs tested.

We again applied the MAD method to identify and truncate 41 extreme values (1.24%). Results are similar if we do not truncate values.

Results

We first conducted an ANOVA on consumer-designers' uniqueness perceptions of their self-customized couches. Consistent with our manipulations, we found higher uniqueness scores in the "unique design" (M = 3.96, SD = 1.73) compared to the "common design" condition (M = 3.13, SD = 1.59, F(1, 297) = 18.84, $p < .001$). In line with the prior studies, we also found that these uniqueness perceptions were positively related to WTA (b = 30.99, t(297) = 3.72, $p < .001$). Interestingly, this pattern of effects did not translate into an effect of the treatment on the dependent variable. That is, our manipulations were not significantly related to consumer-designers' WTA for their self-customized couches (M_{unique} = 749.47, SD = 262.37, M_{common} = 748.89, SD = 237.23, F(1, 297) = .00, $p = .98$). It seems that participants in the "common design" condition gained some value from their self-customized products that participants in the "unique design" condition did not, hence compensating for the loss of perceived uniqueness.

We then analyzed the second-hand market data in a similar way as before (i.e., we estimated a linear mixed-effects model). As predicted, second-hand market customers' WTP was significantly higher for couches created by consumer-designers in the "common design" ($\tilde{M}$ = 495.36, SE = 18.19) versus "unique design" condition ($\tilde{M}$ = 452.42, SE = 18.29, γ = -42.94, t = -4.04, $p < .001$). Thus, inviting consumer-designers to create a common design to their liking during self-customization increased second-hand market WTP for their creations by 9% or $42.94 (see Figure 5). Also, if we interpret second-hand market customers' highest WTP as an indication of the couch they would most like to purchase, they chose a "common design" (χ^2 (1,

300) = 7.05, $p < .01$) significantly more often.[37]

Discussion

Study 6 provided further evidence in support of our uniqueness-hurts-resale hypothesis by demonstrating that uniqueness is indeed a causal factor underlying the negative effect presented in this research. In particular, we show that asking the consumer-designer to create a "common design" (vs. "unique design") significantly reduces the negative effect of self-customization on the underlying product's appeal to the second-hand market. Interestingly, consumer-designers in both conditions set their WTA equally high. In sum, what they perceive as unique is actually detrimental to the second-hand market, whereas aiming to create a "common design" seems to be an effective way to overcome the focal uniqueness dilemma.

GENERAL DISCUSSION

A diverse set of six studies comprising both large-scale secondary data and controlled experiments support our uniqueness-hurts-resale hypothesis in the context of aesthetic self-customization: the higher the self-customized product's uniqueness, the *lower* its appeal to the second-hand market. Our findings offer a number of theoretical contributions and practical implications.

Theoretical Contributions and Practical Implications

First and foremost, we caution the interested reader regarding the predominantly favorable picture drawn by the extant literature on uniqueness and mass customization. Instead, our findings point to a tension that exists between maximizing utility at first purchase and

[37] As in previous studies, we analyzed the data as a fictional first come, first served auction. Being self-customized in the "common design" (vs. "unique design") condition increased a couch's probability of being sold in these simulations ($\gamma_{\text{unique design}} = -1.20$, z = -125.65, $p < .001$). Couches designed in the "common design" (vs. "unique design") condition also received higher bids, on average (+ \$85 on average, $\gamma_{\text{unique design}} = -85.21$, t = -212.40, $p < .001$) and higher "transaction prices" ($\gamma_{\text{unique design}} = -44.87$, t = -102.58, $p < .001$).

minimizing the related cost of aesthetic customization at resale. For consumers, our findings imply that what might be gratifying in the short term (i.e., when purchasing and using the product) could become a liability at the time of resale. While it is hard to speculate about any net utility effects (i.e., taking all types of benefits at different points in time into account), the economic implications uncovered by our research tell a straightforward story. For example, Study 1 suggests that selling self-customized (vs. off-the-shelf) Nike sneakers turns a 23% price premium at purchase into a 32% lower asking price at resale. Similarly, Study 3 highlights that a uniquely colored car might lose more than EUR 2,000 at resale, which approximately corresponds to a 15% reduction compared to the average price of a used car in Germany—and these figures do not even account for the incremental costs of self-customizing a car with a unique color at the time of first purchase. We believe that making consumers aware of these effects might help them make more informed decisions when encountering the next self-customization opportunity.

Although our car expert survey suggested that consumer-designers neglect resale considerations at first purchase, we believe these effects might matter at the time of resale. Unsurprisingly, the experts agreed that achieving a high price on the second-hand market is an important goal for consumers during the resale stage.[38] In addition, learning ex post that their color choices have actually lowered the eventual resale price per se is largely disconcerting to the individual consumer-designer.[39] While to some consumers the positive effects of uniqueness might still outweigh other factors, economically savvy consumers might opt for design variations that appeal to both themselves and the broader market of potential second-hand market

[38] M = 5.38, SD = 1.61, $p < .001$, two-tailed one-sample t-test [test value = 4], where 1 = "very unimportant" and 7 = "very important."

[39] M = 4.68, SD = 1.44, $p < .001$, two-tailed one-sample t-test [test value = 4], where 1 = "does not bother them at all" and 7 = "bothers them a lot."

customers. Our last study (Study 6) suggests that aiming at a "common" (vs. "unique") design is a promising strategy to this end. An additional follow-up study (see Web Appendix G for details) explored another such strategy: to simply recommend considering the second-hand market while engaged in the process of self-customization. The corresponding findings are encouraging: self-customized couches resulting from an "optimize resale value" condition yielded significantly higher WTP among an independent sample of second-hand market customers compared to an "express uniqueness" condition, the default framing of self-customization in practice. Interestingly, and not unlike our Study 6 findings, we find that consumer-designer's valuations do not differ significantly as a function of our manipulations. It appears that finding a design that one likes *and* potentially appeals to others might increase consumer-designers' happiness at purchase, perhaps due to some general "I designed it myself" feelings (Franke, Schreier, and Kaiser 2010) or their subsequent confidence regarding maximum value at resale (Turunen and Pöyry 2019). Further research in this direction is needed, however, to claim—or refute—this reasoning with more certainty.

Our findings also have implications for the marketing of self-customization. As indicated, self-customization frequently reinforces consumers' quest for uniqueness. At first sight, the corresponding consumer advice as discussed (e.g., "think twice before purchasing a unique product") seems disadvantageous for the company; that is, the firm might lose the incremental revenues related to uniqueness. This is especially true for firms seeking to impede the resale of their products (e.g., textbook publishers). At second glance, however, companies might also be interested in keeping customers happy in the long run by supporting them as co-producers of goods for the second-hand market (Dellaert 2019).

For example, IKEA has started to buy back used furniture from its customers for resale in

its stores.[40] Similarly, Apple offers a popular used-device trade-in program to incentivize new device sales in wealthy markets. In turn, it sells the traded-in devices in emerging markets to compete at lower price points.[41] Lastly, Nike offers a 60-day return policy on all self-customized sneakers.[42] Against this backdrop, it seems that brands like IKEA, Apple, and Nike could also benefit from their customers self-customizing furniture, consumer electronics, and sneakers with common (vs. unique) aesthetic designs, because such products will be easier (and more profitable) to resell on the second-hand market.[43] These considerations, of course, need to be juxtaposed with the benefits that arise from catering to consumer-designer's need for uniqueness.

A related question of practical importance is whether the costs of uniqueness are similarly robust along the entire uniqueness continuum. To explore this question, we revisited our large-scale car data set (Study 2) and looked at curvilinearity in the impact of color uniqueness on asking price. As detailed in Web Appendix B, we find that the effect of increased levels of uniqueness is negative in both the first and second half of the curve. Thus, from a resale perspective, aesthetic uniqueness seems consistently detrimental. Moreover, we find that the magnitude of the negative effect increases in strength as said uniqueness increases.

On a more theoretical level, our work further contributes to the literature on the endowment effect (Thaler 1980). While our experiments generally replicate the basic endowment effect (WTA > WTP), they also show that it interacts with uniqueness: while consumer-designers ask for higher prices as the uniqueness of their self-customized products increases, the opposite applies to second-hand market customers (i.e., their WTP decreases as a function of uniqueness).

[40] https://www.ikea.com/ch/en/this-is-ikea/sustainable-everyday/from-pre-loved-to-re-loved-were-giving-ikea-furniture-a-second-life-pub9e5d35e0. Retrieved September 6, 2021.
[41] https://www.nasdaq.com/articles/analyst%3A-used-iphones-will-significantly-expand-apples-share-in-emerging-markets-2020-08. Retrieved October 1, 2021.
[42] https://www.nike.com/help/a/nike-by-you-return. Retrieved October 1, 2021.
[43] It is interesting to consider Tesla in this context, which is known to restrict self-customization possibilities relative to other car manufacturers and, concurrently, has a known ability to sell cars that benefit from high resale values.

Interestingly, in Study 5 we even find a reversal of the endowment effect for very low levels of uniqueness (WTP > WTA; see Figure 3). Relatedly, extant research has shown that the endowment effect is less pronounced if the seller has more experience in selling (List 2003). These findings resonate with our Study 2 results with regard to seller type; first, individual (vs. professional) sellers generally asked for higher prices, and second, they asked for more (vs. less) in the case of a uniquely colored car. A similar pattern of effects was found in our experiments: While consumer-designers' valuation (WTP and WTA, respectively) resembled individual sellers' asking prices (positive effect of uniqueness), second-hand market customers' WTP resembled professional sellers' asking prices in Study 2 (negative effect of uniqueness). At the same time, however, Study 1 yielded an overall negative uniqueness effect despite indications that many Nike sneakers on eBay are offered by individual sellers. Although many products on eBay are also sold via professional sellers, it appears possible that individual sellers in this case are more expert and hence better able to anticipate the products' attractiveness to the second-hand market. It might be interesting for future research to more systematically explore under what conditions individual sellers align with versus diverge from professional sellers' valuations.

More broadly, we also contribute to and hopefully stimulate further research beyond the domain of mass customization. Most often, marketing researchers have sought to maximize consumers' WTP at the point of first purchase, instead of trying to maximize long-term resale value across the entire product life cycle (Buechel and Townsend 2018; Cherrier, Türe, and Özçağlar-Toulouse 2018). Recent trends including the rise of the sharing economy, the diffusion of online peer-to-peer platforms selling second-hand products, and increased consumer sensitivity regarding sustainability have all combined to fuel the quest for more holistic research in this space. Our work shows that applying a different perspective to a given topic might

potentially yield different conclusions and recommendations. While most marketers would see uniqueness as a positive product feature, our research highlights the related cost (vs. benefit) of said feature once we move to the second-hand market.

Limitations, Further Explorations, and Future Research

Our theorizing and findings are limited to aesthetic design aspects. We reasoned that because aesthetics are a matter of taste (Spiller and Belogolova 2017), uniqueness implies a form of horizontal differentiation justifying the uniqueness-hurts-resale hypothesis. To what extent does the focal effect change, however, when the spotlight shifts toward functional design aspects, which might be considered a matter of quality and hence a form of vertical differentiation? In order to start exploring this question, we revisited our Study 2 data set to see whether certain customizable *functional* elements, such as horsepower, might be *positively* related to the cars' asking price. Indeed, we find that including the variable "deviation of horsepower from the minimum horsepower of the car model"[44] to our statistical models in Study 2 yields a *positive* effect on the listing's asking price ($\gamma = 46.32$, $t = 12.67$, $p < .001$; see Web Appendix B for details). If we additionally consider "power uniqueness" (i.e., the uniqueness of the number of horsepower of a given car vis-à-vis all other cars of that given model; calculated analogously to color uniqueness), we first find that this measure is positively related to horsepower deviation ($\gamma = 24.66$, $t = 97.54$, $p < .001$); that is, more powerful means unique. Second, we find that power uniqueness is indeed *positively* related to asking price ($\gamma = 811.53$, $t = 14.43$, $p < .001$). Thus, findings are consistent with our theorizing such that *functional* customization, as a form of vertical differentiation, might actually be *advantageous* for resale. However, the exact net effect

[44] Cars usually have the least powerful engine included as the default, and any additional horsepower must be added by the consumer-designer during the self-customization process.

has yet to be investigated by future research because the related customizations may also increase the price at first purchase, which remains unobserved in our data.

Recall that for aesthetic customization, we found a negative uniqueness effect because the more unique a given configuration (horizontal differentiation), the lower the likelihood of that design meeting second-hand market customers' taste preferences (Study 5). Against this backdrop, we further explore whether the negative uniqueness effect might depend on a given car's age (Study 2). Specifically, we argue that color uniqueness might become less important for older cars because second-hand market customers of said cars potentially care less about aesthetics. In support of this reasoning, we indeed found such an interaction ($\gamma = 3.93$ $t = 87.27$, $p < .001$, see Web Appendix B for details). At first sight, this finding implies that sellers should consider withholding uniquely colored cars to avoid the related cost documented in this research. At a second glance, however, this is not advisable given the negative effect of age per se by far outweighs the attenuated uniqueness effect. Future research could dig deeper into why and how a product's age moderates the negative uniqueness effect.

Another interesting avenue for further research might be the identification of more nuanced psychological processes contributing to the phenomenon. While Study 5 demonstrated that preference fit mediates the negative uniqueness effect, future research might ask whether the fact that a product is offered on the second-hand market makes a difference per se or whether the effect similarly unfolds when a given product is presented as off-the-shelf. Relatedly, does it matter who created a given product's design (e.g., a brand vs. an individual consumer-designer)? Research by D'Angelo, Diehl, and Cavanaugh (2019) suggest so; they find that consumers often attribute unique user-designs to a uniqueness motive of the respective consumer-designers, which in turn causes the observer to distance themselves from that focal design. Put differently,

if a consumer-designer purchased a BMW 1 Series in Sunset Orange to express their uniqueness, another customer would hardly be able to express *their* personal uniqueness by buying this consumer-designer's car. Relatedly, knowing that a previous customer had enjoyed the experience of customization (and formed an emotional connection with the product) might entail negative effects.

In addition, it might be interesting to explore whether an outward demonstration of customization plays a role in the effect's strength (and sign). For example, it seems possible that a uniquely colored outer (vs. inner) engine hood will have a stronger negative effect on second-hand market customers' WTP. With regard to the consumer-designer, one could further ask whether the creator's status influences how a given design is interpreted. For example, a pair of sneakers with a unique aesthetic design might be perceived as more attractive when the creator is a high-status celebrity or even a well-known artist. Product and brand type might be other moderators to consider (Moreau et al. 2020).

Looking forward, future research might also ask more broadly which type of design is more likely to succeed on the second-hand market. For example, Buechel and Townsend (2018) found that products featuring loud colors, complex patterns, and bold designs provide an unexpectedly long-term hedonic value to their users. However, what happens when such designs are offered on the second-hand market? Furthermore, our findings are limited to situations, in which consumer-designers are able and motivated to sell their self-customized products. Obviously, self-customized services and experiences, an important domain of customization (Pine 1993), have no second-hand market. Similarly, some consumers might have a hard time parting with special items— such as their custom Rolex watch. An interesting question to pursue in this regard is whether gift-giving to close others—as opposed to selling to strangers on the

second-hand market—might trigger different effects. It seems possible, for example, that handing down a unique item within one's family might create positive (rather than negative) effects. We hope that future research will build on this initial inquiry to clarify when there is—and when there is not—tension between maximizing utility at first purchase and creating value for the future owners of one's products.

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TABLES AND FIGURES

TABLE 1:
SUMMARY OF RESULTS ACROSS STUDIES

Study	Data	IV	DV	N	Key Test Results	Key Findings
1	Secondary data set: Nike sneakers offered on eBay (buy it now ads).	Customized vs. off-the-shelf[1]	Truncated asking prices	1,761 (all sneakers)	γ = -47.97*** (8.05)	There is a negative effect of self-customization on the asking prices for Nike sneakers.
		Uniqueness (rated by independent coders)[2]		246 (self-customized sneakers only)	γ = -4.09^{+} (2.12)	There is a negative effect of uniqueness on the asking prices for self-customized Nike sneakers.
2	Secondary data set: used cars offered on a German online car resale platform.	Uniqueness (objective rating based on color)[3]	Truncated asking prices	520,190	γ = -572.26*** (86.82)	There is a negative effect of uniqueness on the asking prices for cars.
		Professional vs. individual seller[4] × uniqueness			γ = -4,925.07*** (162.74)	Seller type moderates the uniqueness effect: while professional sellers (86% of the sample) demonstrate a negative effect, the effect is reversed for individual sellers.
3	Secondary data set: used cars sold at auctions by large car fleet manager.	Uniqueness (objective rating based on color)[3]	Truncated transaction prices	2,217	γ = -2,427.99* (992.73)	There is a negative effect of uniqueness on the cars' transaction prices.
4	Experiment: one sample of consumers self-customized Nike sneakers for themselves (consumer-designers). Another sample of consumers evaluated the resulting products (second-hand market).	Uniqueness (rated by consumer-designers)[5]	Truncated WTP (consumer-designers)	270	b = 5.88*** (1.03)	There is a positive effect of uniqueness on WTP among consumer-designers.
			Truncated WTA (consumer-designers)	232	b = 2.93** (1.05)	There is a positive effect of uniqueness on WTA among consumer-designers.
			Truncated WTP (second-hand market)	1,230 (6,150 data points)	γ = -.62*** (.16)	There is a negative effect of uniqueness on WTP among potential second-hand market customers.
5	Incentive-compatible experiment: one sample of consumers self-customized couches for themselves (consumer-designers). Two further	Uniqueness (rated by consumer-designers)[5]	Truncated WTA (consumer-designers)	202	b = 25.79*** (5.24)	There is a positive effect of uniqueness on WTA among consumer-designers.
			Truncated WTP (second-hand market 1)	303 (3,030 data points)	γ = -13.08*** (1.26)	There is a negative effect of uniqueness on WTP among potential second-hand market customers.

	samples of consumers evaluated the resulting products WTP and Preference Fit, respectively (second-hand market 1 and 2).		Preference Fit (second-hand market 2)[6]	299 (2,990 data points)	γ = -.29*** (.03)	There is a negative effect of uniqueness on preference fit among potential second-hand market customers (and preference fit mediates the uniqueness effect on WTP).
6	Experiment: one sample of consumers self-customized couches, randomly assigned to a "common" or "unique design" condition (consumer-designers). Another sample of consumers evaluated the resulting products (second-hand market).	"Common design" versus "unique design" (experimental condition consumer-designers)	Truncated WTA (consumer-designers)	N_{common} = 157, N_{unique}= 142	M_{common} = 748.89 (237.23), M_{unique} = 749.47 (262.37), p = .98	There is no effect of the "common" (vs. "unique") design condition on WTA among consumer-designers.
			Truncated WTP (second-hand market)	299 (2,990 Data Points)	M_{common} = 495.36 (18.19), M_{unique} = 452.42 (18.29), p < .001	There is a positive effect of the "common" (vs. "unique") design condition on WTP among potential second-hand market customers.
Follow-Up	Experiment: one sample of consumers self-customized couches, randomly assigned to a "optimize resale value" or "express uniqueness" condition (consumer-designers). Another sample of consumers evaluated the resulting products (second-hand market).	"Optimize resale value" versus "express uniqueness" (experimental condition consumer-designers)	Truncated WTP (consumer-designers)	N_{resale} = 104, N_{unique}= 98	M_{resale} = 677.34 (298.72), M_{unique} = 690.40 (328.13), p = .77	There is no effect of the "optimize resale value" (vs. "express uniqueness") condition on WTP among consumer-designers.
			Truncated WTP (second-hand market)	405 (2,025 Data Points)	M_{resale} = 435.19 (16.10), M_{unique} = 403.63 (16.30), p < .02	There is a positive effect of the "optimize resale value" (vs. "express uniqueness") condition on WTP among potential second-hand market customers.

Notes. WTA: willingness to accept, WTP: willingness to pay, $^{+}$ p = .05, * p < .05, ** p < .01, *** p < .001,[1] where 1 = self-customized and 0 = off-the-shelf; [2] 1-5 scale, where 1 = "Not Unique at All" and 5 = "Very Unique", rated by independent coders; [3] 0-1 scale, calculation of the uniqueness of the car's color compared to the color of other cars of the same model and vintage; [4] where 0 = individual seller and 1 = professional seller; [5] 1-7 average of three-item scale, completed by the consumer-designer of the self-customized product: (1) "My <*product*> design is unique," (2) "My <*product*> design is special," and (3) "My <*product*> design is one-of-a-kind" (where 1 = "Strongly Disagree" and 7 = "Strongly Agree"); [6] 1-7 average of three-item scale, completed by the second-hand market sample: (1) "I like the design of the couch" and (2) "The couch design comes close to my idea of a perfect design" (where 1 = "Strongly Disagree" and 7 = "Strongly Agree"); standard errors (regression coefficients, estimated means) or standard deviations (means) in parentheses.

TABLE 2:
STUDY 2: MIXED-EFFECTS MODEL PREDICTING USED CARS' ASKING PRICES.

Fixed Effects	**Model 1** the effect of color uniqueness on asking price	**Model 2** the effect of the interaction of color uniqueness and seller type on asking price
Focal Effects		
Color Uniqueness (0-1 Scale)	-572.26*** (86.82)	3,395.01*** (157.19)
Professional Seller (0, 1)	-157.39*** (25.36)	3,586.17*** (126.27)
Color Uniqueness × Professional Seller		-4,925.07*** (162.47)
Car Specifications		
Car Color (0, 1)	See Web Appendix B for the full model results.	
Power (HP)	67.21*** (.30)	67.16*** (.30)
Diesel (0, 1)	738.90*** (21.90)	728.52*** (21.88)
Fuel Other (0, 1)	3,421.62*** (80.91)	3,421.38*** (80.84)
Manual Transmission (0, 1)	-2,077.61*** (21.64)	-2,076.31*** (21.62)
Car Sale Circumstances		
Mileage (KM)	-.05*** (.00)	-.05*** (.00)
Age (Days)	-3.52*** (.01)	-3.53*** (.01)
Median Asking Price		
Median Asking Price (EUR)	.88*** (.01)	.88*** (.01)
Intercept		
Intercept	-526.77 (550.46)	-3,545.05*** (563.32)
Observations	520,190	520,190
Log Likelihood	-5,238,151	-5,237,688
Akaike Inf. Crit.	10,476,353	10,475,427
Bayesian Inf. Crit.	10,476,632	10,475,718

Notes. *** $p < .001$; Values are unstandardized coefficients, with standard errors in parentheses.

FIGURE 1:
STUDY 2: THE PARTIAL INTERACTION EFFECT OF COLOR UNIQUENESS AND TYPE OF SELLER ON ASKING PRICE.

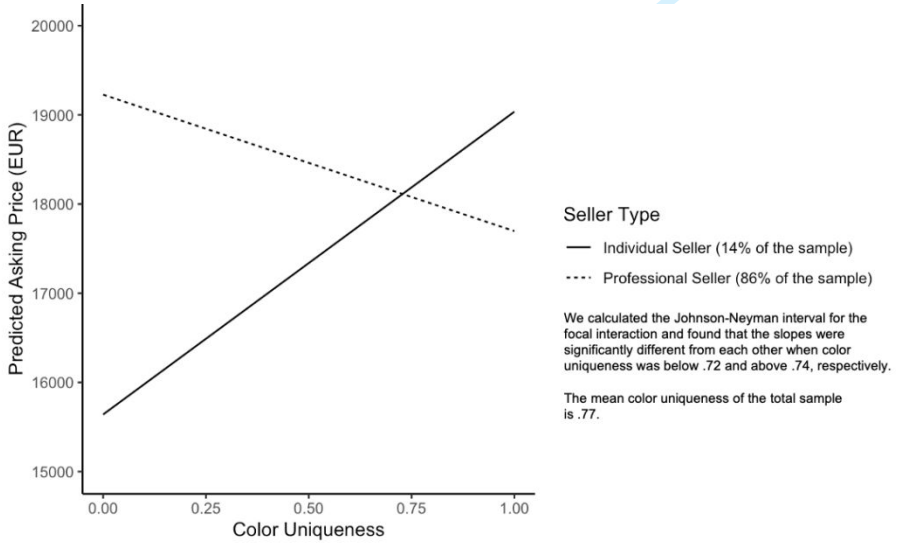


FIGURE 2:
STUDY 4: THE EFFECT OF UNIQUENESS ON CONSUMER-DESIGNERS' WTP, WTA, AND ON SECOND-HAND MARKET CUSTOMERS' WTP.

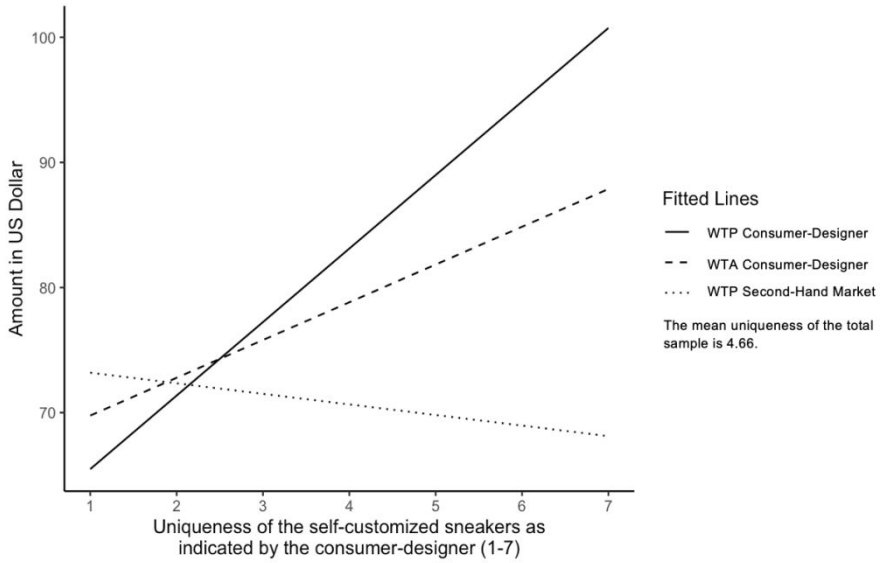


FIGURE 3:
STUDY 5: THE EFFECT OF UNIQUENESS ON CONSUMER-DESIGNERS' WTA AND SECOND-HAND MARKET CUSTOMERS' WTP (WITH VALUATIONS CAPTURED USING AN INCENTIVE-COMPATIBLE ELICITATION METHOD).

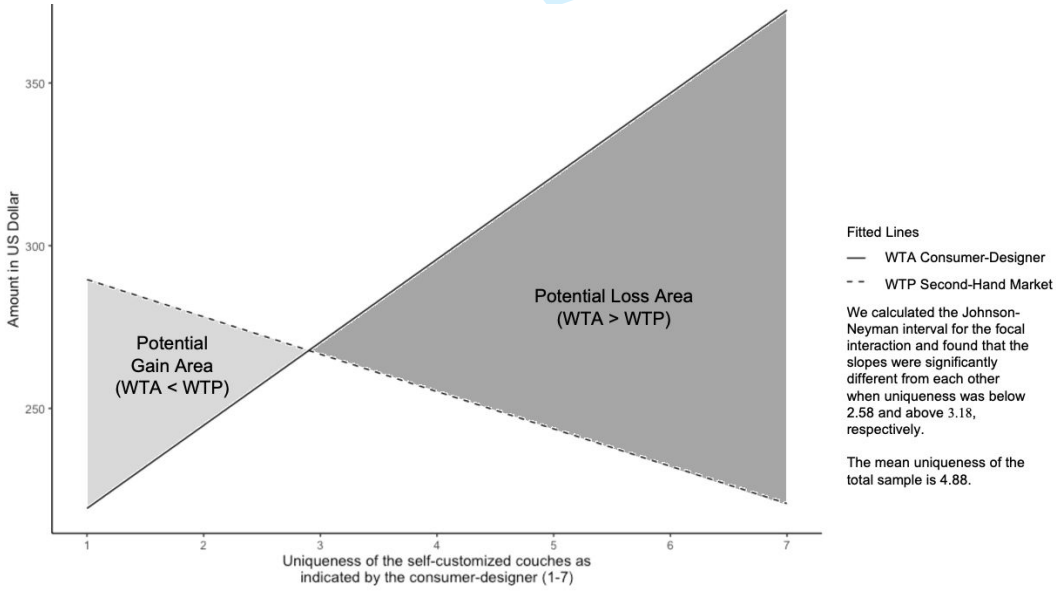


FIGURE 4:
STUDY 5: THE TOTAL, DIRECT, AND INDIRECT EFFECTS OF UNIQUENESS ON

SECOND-HAND MARKET WTP (VIA PREFERENCE FIT).

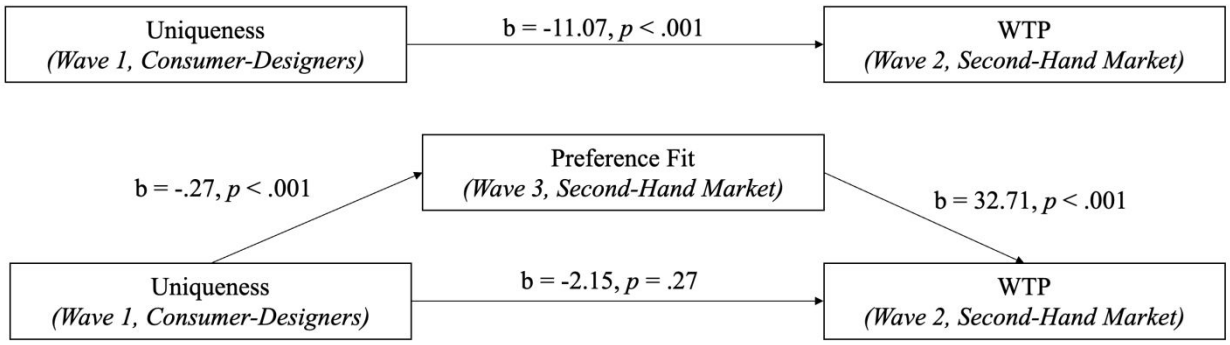
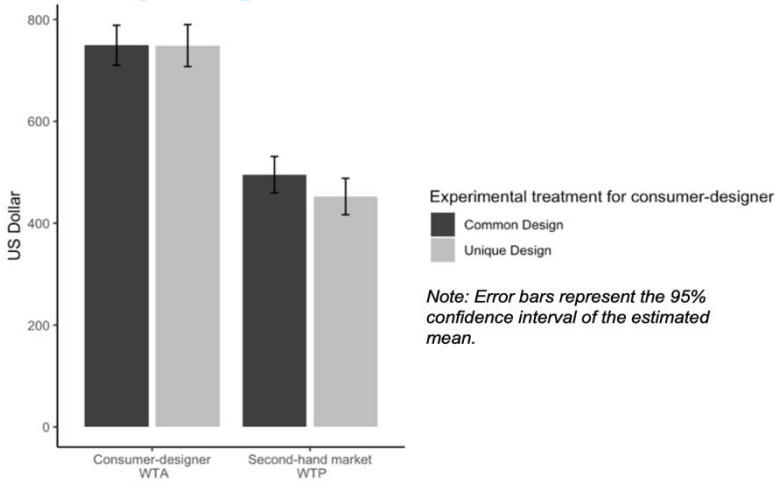


FIGURE 5:
STUDY 6: ESTIMATED CONSUMER-DESIGNERS' WTA AND SECOND-HAND MARKET CUSTOMERS' WTP AS A FUNCTION OF "COMMON DESIGN" VERSUS "UNIQUE DESIGN" FOCUS AMONG CONSUMER-DESIGNERS.



WEB APPENDIX

Paying Twice for Aesthetic Customization?

The Negative Effect of Uniqueness on a Product's Resale Value

Matthias Fuchs

Assistant Professor of Marketing

EHL Hospitality Business School, HES-SO University of Applied Sciences and Arts Western Switzerland, Route de Cojonnex 18, 1000 Lausanne, Switzerland.

matthias.fuchs@ehl.ch

Martin Schreier

Professor of Marketing

Department of Marketing, WU Vienna University of Economics and Business, Welthandelsplatz 1, 1020 Vienna, Austria.

martin.schreier@wu.ac.at

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Explanation

- [Red text indicates page breaks.]
- [Blue text indicates differences between conditions.]
- <Purple text indicates placeholders for dynamic text (i.e., represents programming code) and/or further information on the intention of the presented content.>

WEB APPENDIX A – STUDY 1: NIKE SNEAKERS ON EBAY

Web Scraping Procedure and Data Preparation

We built a web scraper using the Python programming language to extract the values of interest from the website. A web scraper accesses a pre-defined or dynamically generated list of web addresses (URLs), retrieves the served website (HTML data files), and extracts, cleans, and organizes the data into a formal data set (cf. Boeing and Waddell 2017; Mitchell 2015). As a first step, our scraper requested the HTML data file for the specified URL. This file was then parsed by the Beautiful Soup package (Richardson 2022) to make individual pieces of the received HTML data file accessible to the scraper. Our scraper then extracted, cleaned, and organized the selected variables into a CSV file saved to the computer's permanent storage. To avoid straining the webserver sending the HTML data files, we built intentional pauses into the scraper, significantly slowing the process. The CSV file could then be analyzed using popular statistical software packages.[1]

We limited the maximum number of retrieved search results pages to five. The website limited the number of served listings on each search result page to 192. To prepare the data for analysis, we removed duplicate entries. As self-customized sneakers could potentially appear in our search queries for non-self-customized sneakers (e.g., the search term "Nike Dunk By You" is nested within "Nike Dunk"), several duplicates of self-customized sneakers were removed. The retrieved data set contains the original set of sneakers sales ads (sneakers; see Table W1). We then cleaned and filtered the data as follows: First, we removed duplicate entries. The unique dataset excludes duplicates, i.e., sneakers that were scraped twice as the "By You" search terms were nested within the other search terms. The price truncated data set constitutes the data set after correcting for price outliers. An asterisk (*) implies that values were calculated by only taking available values and dropping entries with unavailable entries during the calculation. or when the same search query was scraped twice by the scraper (which can happen when the scraper is paused and restarted).

[1] Discussions of web scraping raise questions regarding its legality. However, we ensured that our process of data scraping was in adherence with German laws and jurisdiction (specifically Bundesgerichtshof 2014 and 2016).

TABLE W1:
DESCRIPTIVE STATISTICS FOR THE DATA SET AT SUCCESSIVE STEPS OF PROCESSING.

	Retrieved Data Set	**Unique Data Set**	**Price-Truncated Data Set**
Count of sneaker models	279	279	279
Count of sneakers listings	1,800	1,761	1,761
Median price	149.00 EUR*	149.90 EUR	149.90 EUR
SD price	620.82 EUR*	627.05 EUR	135.58 EUR
Median European shoe size	42	42	42

Notes. An asterisk (*) implies that values were calculated by only taking available values and dropping entries with unavailable entries during the calculation.

TABLE W2:
FULL RESULTS FOR THE MODEL CONFIGURATIONS DESCRIBED IN STUDY 1 PREDICTING SNEAKERS' ASKING PRICES.

Fixed Effects	Truncated Asking Prices (reported in the main body of the manuscript)		Non-Truncated Asking Prices	
	Model 1	Model 2	Model 1	Model 2
	All sneakers	Self-customized sneakers	All sneakers	Self-customized sneakers
Focal Effects				
Self-Customized (0, 1; Ref. Off-The-Shelf)	-47.97*** (8.05)		-112.82* (49.10)	
Uniqueness (1-5 Scale)		-4.09^{+} (2.12)		-8.29 (7.52)
Shoe Specifications				
Segment Men's (0, 1; Ref. None)	21.67 (15.98)	32.99 (35.26)	60.07 (90.00)	34.09 (122.75)
Segment Women's (0, 1; Ref. None)	-1.84 (18.29)	1.32 (34.95)	-18.38 (106.19)	-25.43 (121.72)
Segment Unisex (0, 1; Ref. None)	12.51 (18.87)	65.16 (36.74)	34.53 (110.10)	38.79 (127.92)
Segment Kids (0, 1; Ref. None)	-50.23 (35.58)		-68.01 (223.48)	
Segment Infants (0, 1; Ref. None)	-22.70 (69.05)		14.89 (443.93)	
Size (European Shoe Size)	.71*** (.15)	.18 (.21)	2.55** (.92)	.23 (.74)
Shoe Sale Circumstances				

Condition New With Box (0, 1; Ref. Used)	48.00*** (6.92)	55.5*** (11.35)	86.67* (43.31)	62.17 (40.89)
Condition New Without Box (0, 1; Ref. Used)	37.98** (12.01)	30.96* (13.35)	255.51*** (75.02)	24.17 (47.49)
Condition New With Factory Defects (0, 1; Ref. Used)	111.98** (40.59)	45.53 (36.15)	244.55 (253.96)	53.49 (129.74)
Condition New (0, 1; Ref. Used)	59.06 (73.60)		127.35 (446.35)	
Seller Ratings (Integer)	.00 (.00)	-.00** (.00)	.00 (.00)	.00 (.00)
Percentage Seller Positive Ratings (0-1 Scale)	-.11 (.12)	.03 (.11)	-.32 (.78)	-.15 (.38)
Intercept				
Intercept	74.08*** (21.02)	79.13* (37.75)	31.07 (123.58)	112.99 (132.29)
Observations	1,761	246	1,761	246
Log Likelihood	-10,578	-1,192	-13,744	-1,491
Akaike Inf. Crit.	21,188	2,411	27,520	3,007
Bayesian Inf. Crit.	21,276	2,456	27,607	3,053

Notes. $^{+}p = .05$, * $p < .05$, ** $p < .01$, *** $p < .001$; Values are unstandardized coefficients, with standard errors in parentheses.

WEB APPENDIX B – STUDY 2: >500,000 CARS OFFERED ON THE SECOND-HAND MARKET

Web Scraping Procedure and Data Preparation

We built a web scraper using the Python programming language to extract the values of interest from the website. We followed the same procedure as for Study 1.

We then cleaned and filtered the data as follows: First, we removed duplicate entries. Duplicates might occur when sellers post the cars such that they appear under several different search queries or when the same search query was scraped twice by the scraper (which can happen when the scraper is paused and restarted). Second, we cleaned the data set, that is, we made sure that key variables were available for each entry. This included ensuring that every car was a "used" car (some dealers also posted "new" cars), as well as filtering out dummy entries (several dealers had posted "test" versions). The cleaned data set contained n = 520,190 car listings. Descriptive statistics of the different versions of the data set (retrieved, unique, cleaned, and truncated) are summarized in Table W3.

TABLE W3:
DESCRIPTIVE STATISTICS FOR THE DATA SET AT SUCCESSIVE STEPS OF PROCESSING.

	Retrieved Data Set	**Unique Data Set**	**Cleaned Data Set**	**Price Truncated Data Set**
Count of brands	15	15	15	15
Count of car listings	529,038	526,731	520,190	520,190
Median price	17,870 EUR*	17,850 EUR*	17,850 EUR	17,800 EUR
SD price	33,096 EUR*	32,959 EUR*	22,734 EUR	15,182 EUR
Median initial registration year	2017*	2017*	2017	2017
Median mileage	33,037 km*	33,000 km*	33,000 km	33,000 km
Median power	140 HP*	140 HP*	140 HP	140 HP

Notes. The retrieved data set contains the original set of car listings. The unique dataset excludes duplicates (i.e., cars that were entered in a way to appear in several search queries or accidentally scraped twice during the scraping process). The cleaned data set excludes records that lack entries for key variables (Price, Age, etc.). The truncated data set constitutes the data set after correcting for asking price outliers. An asterisk (*) implies that values were calculated by only taking available values and dropping entries with unavailable entries during the calculation.

Full and Alternative Model Configurations

TABLE W4:
THE PREDICTORS OF ASKING PRICES OF USED CARS.

Fixed Effects	Linear mixed-effects models									OLS	
	Model 1	Model 2	Model 1a	Model 2a	Model 1b	Model 2b	Model 2c	Model 1d	Model 2d	Model 1e	Model 2e
	models reported in the main body of the manuscript		brands included as covariates		non-truncated asking prices as dependent variable		propensity score matched	including previous owners as covariate		excluding random effects	
Focal Effects											
Color Uniqueness *(0-1 Scale)*	-572.26*** (86.82)	3,395.01*** (157.19)	-571.69*** (86.82)	3,396.00*** (157.19)	-685.18* (268.91)	5,323.88*** (487.50)	3,699.61*** (175.34)	-714.41*** (95.33)	3098.57*** (181.62)	-1,333.17*** (89.40)	3,245.37*** (171.82)
Professional Seller *(0,1; Ref. Individual)*	-157.39*** (25.36)	3,586.17*** (126.27)	-157.21*** (25.36)	3,586.76*** (126.27)	-343.64*** (78.7)	5,327.95*** (391.81)	9,583.77*** (204.46)	-305.81*** (28.84)	3209.20*** (145.44)	-149.13*** (28.17)	4,119.92*** (139.73)
Professional Seller × Color Uniqueness		-4,925.07*** (162.74)		-4,925.62*** (162.74)		-7,462.18*** (505.01)	-8,644.06*** (245.58)		-4606.04*** (186.80)		-5,621.10*** (180.21)
Car Specifications											
Color Beige *(0,1; Ref. Black)*	250.79** (85.10)	271.04** (85.03)	250.48** (85.10)	270.74** (85.03)	-252.14 (264.08)	-283.4 (264.04)	-46.55 (144.41)	266.79** (93.92)	285.06** (93.86)	-254.30** (93.92)	-234.00* (93.83)
Color Blue *(0,1; Ref. Black)*	679.09*** (32.52)	682.16*** (32.49)	678.79*** (32.52)	681.86*** (32.49)	496.14 (262.97)	469.87 (262.92)	91.01 (56.65)	655.42*** (35.35)	659.51*** (35.33)	515.88*** (35.72)	511.57*** (35.68)
Color Bronze *(0,1; Ref. Black)*	-272.9 (205.61)	-600.51** (205.71)	-273.28 (205.61)	-600.91** (205.71)	-588.26 (679.12)	-1,115.42 (679.92)	-1,579.57*** (285.74)	-230.80 (236.09)	-448.20 (236.09)	-317.14 (229.15)	-701.92** (229.27)
Color Brown *(0,1; Ref. Black)*	-404.85*** (56.34)	-397.15*** (56.29)	-405.27*** (56.34)	-397.56*** (56.29)	-699.55* (294.85)	-718.70* (294.79)	-912.64*** (111.35)	-315.15*** (60.97)	-312.04*** (60.93)	-423.45*** (62.10)	-426.75*** (62.04)
Color Gold *(0,1; Ref. Black)*	735.13*** (174.08)	620.32*** (173.96)	734.46*** (174.08)	619.64*** (173.96)	682.97 (589.27)	478.19 (589.31)	-710.01* (317.45)	726.78*** (190.66)	632.09*** (190.56)	773.72*** (190.97)	633.75*** (190.85)
Color Green *(0,1; Ref. Black)*	1,266.71*** (83.10)	1,271.85*** (83.03)	1,265.52*** (83.10)	1,270.68*** (83.03)	1,064.65** (349.15)	1,041.68** (349.08)	648.98*** (148.80)	1221.51*** (89.85)	1226.60*** (89.79)	1,136.68*** (91.65)	1,129.34*** (91.57)
Color Grey *(0,1; Ref. Black)*	495.61*** (25.03)	461.26*** (25.03)	495.49*** (25.03)	461.13*** (25.03)	282.78 (260.92)	199.64 (260.93)	-196.35*** (45.84)	491.22*** (27.06)	463.76*** (27.06)	319.54*** (27.69)	276.38*** (27.70)
Color Orange *(0,1; Ref. Black)*	703.07*** (95.83)	752.10*** (95.76)	702.24*** (95.83)	751.29*** (95.76)	544.91 (380.51)	588.38 (380.44)	68.70 (142.68)	632.67*** (103.06)	675.23*** (103.00)	-187.39 (105.24)	-140.39 (105.15)
Color Purple *(0,1; Ref. Black)*	1,477.72*** (179.86)	1,410.15*** (179.72)	1,477.02*** (179.86)	1,409.46*** (179.72)	3,244.68*** (605.52)	3,111.49*** (605.46)	759.52*** (292.65)	1565.51*** (199.43)	1497.10*** (199.31)	528.07** (199.75)	432.43* (199.58)
Color Red *(0,1; Ref. Black)*	447.52*** (37.85)	454.25*** (37.81)	446.89*** (37.85)	453.63*** (37.81)	601.19* (269.77)	580.47* (269.72)	-237.41*** (66.98)	450.81*** (41.40)	457.81*** (41.37)	53.95 (41.18)	53.23 (41.14)
Color Silver *(0,1; Ref. Black)*	116.70*** (31.36)	136.23*** (31.34)	116.55*** (31.36)	136.09*** (31.34)	-92.24 (263.21)	-93.51 (263.16)	-286.85*** (54.24)	125.24*** (34.20)	142.73*** (34.18)	267.56*** (34.43)	282.47*** (34.40)
Color White *(0,1; Ref. Black)*	101.87*** (25.27)	59.13* (25.29)	101.64*** (25.27)	58.91* (25.29)	-120.5 (261.74)	-216.26 (261.76)	-394.21*** (50.82)	160.55*** (27.26)	128.22*** (27.27)	-122.11*** (27.68)	-178.38*** (27.71)
Color Yellow *(0,1; Ref. Black)*	1,182.90*** (107.15)	1,192.35*** (107.06)	1,182.39*** (107.15)	1,191.84*** (107.06)	980.90* (409.94)	964.40* (409.85)	816.36*** (192.98)	1115.56*** (114.83)	1124.57*** (114.75)	1,330.50*** (117.83)	1,329.35*** (117.72)
Brand BMW *(0,1; Ref. Audi)*			1,739.78 (1,873.83)	1,778.72 (1,888.76)							
Brand Fiat *(0,1; Ref. Audi)*			7,112.08* (3,098.62)	7,156.08* (3,123.22)							
Brand Ford *(0,1; Ref. Audi)*			4,492.78 (2,715.15)	4,508.29 (2,736.83)							

Fixed Effects	Linear mixed-effects models									OLS	
	Model 1	Model 2	Model 1a	Model 2a	Model 1b	Model 2b	Model 2c	Model 1d	Model 2d	Model 1e	Model 2e
	models reported in the main body of the manuscript		brands included as covariates		non-truncated asking prices as dependent variable		propensity score matched	including previous owners as covariate		excluding random effects	
Brand Hyundai *(0,1; Ref. Audi)*			4,675.05 (3,666.35)	4,747.87 (3,695.67)							
Brand Kia *(0,1; Ref. Audi)*			3,708.52 (2,907.75)	3,752.29 (2,930.99)							
Brand Mazda *(0,1; Ref. Audi)*			5,773.50 (3,665.80)	5,792.53 (3,695.11)							
Brand Mercedes *(0,1; Ref. Audi)*			4,124.46* (1,787.27)	4,132.25* (1,801.51)							
Brand Mini *(0,1; Ref. Audi)*			9,062.55*** (2,112.61)	9,138.14*** (2,129.31)							
Brand Opel *(0,1; Ref. Audi)*			7,625.54* (2,993.84)	7,665.19* (3,017.75)							
Brand Renault *(0,1; Ref. Audi)*			6,877.99* (2,912.79)	6,888.92* (2,936.04)							
Brand Seat *(0,1; Ref. Audi)*			5,248.88 (3,664.92)	5,299.70 (3,694.23)							
Brand Skoda *(0,1; Ref. Audi)*			4,433.26 (3,664.20)	4,480.99 (3,693.50)							
Brand Toyota *(0,1; Ref. Audi)*			3,996.31 (3,193.09)	4,015.31 (3,218.59)							
Brand VW *(0,1; Ref. Audi)*			9,549.69*** (2,440.81)	9,684.27*** (2,460.26)							
Power *(HP)*	67.21*** (.30)	67.16*** (.30)	67.25*** (.30)	67.20*** (.30)	71.50*** (.93)	71.42*** (.93)	61.94*** (.60)	72.53*** (.34)	72.47*** (.34)	57.32*** (.20)	57.41*** (.20)
Engine Diesel *(0,1; Ref. Gasoline)*	738.90*** (21.90)	728.52*** (21.88)	739.29*** (21.90)	728.91*** (21.88)	681.75*** (67.91)	665.88*** (67.91)	809.51*** (41.12)	823.47*** (23.69)	815.34*** (23.67)	1,564.31*** (20.85)	1,551.34*** (20.83)
Engine Other Fuel *(0,1; Ref. Gasoline)*	3,421.62*** (80.91)	3,421.38*** (80.84)	3,422.18*** (80.91)	3,421.94*** (80.84)	3,957.97*** (250.24)	3,957.74*** (250.19)	3,112.97*** (137.19)	3468.60*** (87.81)	3467.09*** (87.75)	786.90*** (67.00)	773.05*** (66.94)
Transmission Manual *(0,1; Ref. Automatic)*	-2,077.61*** (21.64)	-2,076.31*** (21.62)	-2,077.85*** (21.64)	-2,076.56*** (21.62)	-2,030.40*** (67.13)	-2,028.43*** (67.12)	-1,955.44*** (38.13)	-2049.94*** (23.51)	-2048.93*** (23.50)	-2,551.75*** (22.06)	-2,553.78*** (22.04)
Car Sale Circumstances											
Mileage *(KM)*	-.05*** (.00)	-.05*** (.00)	-.05*** (.00)	-.05*** (.00)	-.04*** (.00)	-.04*** (.00)	-.03*** (.00)	-.05*** (.00)	-.05*** (.00)	-.05*** (.00)	-.05*** (.00)
Age *(Days since first registration)*	-3.52*** (.01)	-3.53*** (.01)	-3.52*** (.01)	-3.53*** (.01)	-3.78*** (.03)	-3.79*** (.03)	-3.34*** (.02)	-3.32*** (.01)	-3.33*** (.01)	-2.95*** (.01)	-2.96*** (.01)
Previous Owners								-479.54*** (18.67)	-477.42*** (18.66)		
Median Asking Price of Car Model											
Median Asking Price *(EUR)*	.88*** (.01)	.88*** (.01)	.89*** (.01)	.89*** (.01)	.84*** (.01)	.84*** (.01)	.92*** (.01)	.88*** (.01)	.88*** (.01)	.64*** (.00)	.64*** (.00)
Intercept											
Intercept	-526.77 (550.46)	-3,545.05*** (563.32)	-5,355.93** (1,669.27)	-8,412.00*** (1,685.38)	918.95 (768.44)	-3,559.91*** (826.8)	-6,357.48*** (717.80)	-563.38 (574.83)	-3476.47*** (590.36)	8,246.54*** (82.14)	4,825.25*** (136.98)
Observations	520,190	520,190	520,190	520,190	520,190	520,190	147,000	435,161	435,161	520,190	520,190
R2										.82	.82
Adjusted R2										.82	.82
Log Likelihood	-5,238,151	-5,237,688	-5,238,011	-5,237,547	-5,826,851	-5,826,734	-1,471,634	-4,377,997	-4,377,687		

Fixed Effects	Linear mixed-effects models									OLS	
	Model 1	Model 2	Model 1a	Model 2a	Model 1b	Model 2b	Model 2c	Model 1d	Model 2d	Model 1e	Model 2e
	models reported in the main body of the manuscript		brands included as covariates		non-truncated asking prices as dependent variable		propensity score matched	including previous owners as covariate		excluding random effects	
Akaike Inf. Crit.	10,476,353	10,475,427	10,476,099	10,475,174	11,653,751	11,653,520	2,943,319	8,756,046	8,755,428		
Bayesian Inf. Crit.	10,476,632	10,475,718	10,476,535	10,475,621	11,654,030	11,653,811	2,943,576	8,756,332	8,755,725		
Residual Std. Error										6,376.16	6,370.21
F Statistic										110,613.30*** (df = 22; 520,167)	106,044.10*** (df = 23; 520,166)

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$; Values are unstandardized coefficients, with standard errors in parentheses.

Analysis of Price Ratings Provided by the Car Sales Platform

The car sales platform assigned each listing a 7-point asking price rating (where 1 = "Too Low", 4 = "Fair Price", 7 = "Too High"). If the platform could not estimate a rating of the asking price (because too few similar offers were available), it assigned an asking price rating of "Not Available" (not included in the 7-point scale). For the following analysis, we removed all offers that were assigned a "Not Available" rating (remaining n = 391,057).

We then created a dummy variable where all listings rated as either too low or too high were coded as zero and all listings rated as accurate ("Fair Price") as one. We found that professional sellers set their prices more accurately than individual sellers (b = .18, z = 20.07, $p < .001$). Moreover, the effect of seller type onto price accuracy ("Fair Price") interacted with the uniqueness of the car's color (b = .16, z = 2.39, $p = .02$). Thus, professional sellers were particularly more accurate compared to individual sellers when setting prices for uniquely colored cars.

Propensity Score Matching

One could argue that car owners choose the sales channel strategically. In order to address suchlike selection concerns, we used the R package "MatchIt" to create a propensity-score-matched subset of our data (Ho et al. 2011). The "matchit" function first runs a logistic regression using all other predictors in Equation 1 to estimate $professional\ seller_{ij}$, with the predicted value being the propensity score. The function then uses a "nearest neighbor algorithm" to match observations with similar propensity scores, and ensures that the covariates are balanced in the subset of observations (n = 147,000). We then re-ran the same mixed-effects model outlined in Equation 1. We found that the interaction effect of color uniqueness and professional seller onto asking price is again significant and even more pronounced (γ = -8,644.06 , t = -35.20, $p < .001$; Model 2c in Table W4). Thus, any related selection concerns seem unwarranted in explaining the focal interaction effect.

Robustness Check

One could surmise that individual sellers might be targeting a possible subset of buyers who are willing to pay more for uniquely colored cars. While we cannot entirely rule out this idea, we believe it is unlikely to play an important role in our data. Replicating robustness checks in similar analyses of the second-hand market for cars (Lacetera, Pope, and Sydnor 2012), we ran a series of regressions separately for the ten most popular car models in our data in terms of volume. Although there is some heterogeneity in the impact of color uniqueness on the asking price across these car models, we find significantly negative effects for *each* of them (see Table W5). If a segment of second-hand market customers were indeed to value uniqueness (justifying the positive slope among individual sellers), we believe it unlikely that this would *only* affect the car's color. On the contrary, we expect it would also impact other important variables such as brand and car model choice (in which case we would have seen a reversal of the focal effect for at least some car models).

TABLE W5:
THE IMPACT OF COLOR UNIQUENESS ON TRUNCATED ASKING PRICES BY MOST POPULAR MODELS.

Car Model	Number of Observations in Data Set	Uniqueness Coefficient *(Applying all other covariates as in Model 1 in the main manuscript except Median Asking Price [as it is constant here])*
Volkswagen Golf	16,169	-4,191.14***
Opel Astra	11,677	-8,133.13***
Audi A4	11,438	-15,260.68***
Audi A3	10,951	-5,553.45***
Volkswagen Polo	10,890	-2,452.63***
Opel Corsa	10,602	-5,168.32***
Volkswagen Tiguan	10,489	-8,610.99***
Škoda Octavia	10,322	-4,215.15***
Ford Focus	9,483	-7,129.12***
Audi A6	9,393	-5,995.89***

Notes. *** $p < .001$

Further Explorations in the General Discussion

TABLE W6:
FURTHER EXPLORATIONS OF VARIOUS EFFECTS ON THE TRUNCATED ASKING PRICES OF USED CARS.

Fixed Effects	Linear mixed-effects models			
	Curvilinearity in the impact of color uniqueness on asking price	Power Uniqueness		Age × Color Uniqueness Interaction
	Model 1	Model 2	Model 3	Model 4
Focal Effects				
Color Uniqueness *(1-2 Scale)*	30,069.37*** (1,133.11)			
Color Uniqueness Squared *(1-4 Scale)*	-9,063.71*** (334.19)			
Power Deviation *(HP)*		46.32*** (3.66)		
Power Uniqueness *(0-1 Scale)*			811.53*** (56.23)	
Age × Color Uniqueness				3.93*** (.04)
Car Specifications				
Color Uniqueness *(0-1 Scale)*		-582.82*** (86.81)	-574.5*** (86.8)	-8,909.74*** (128.67)
Color Beige *(0,1; Ref. Black)*	759.19*** (87.08)	253.55** (85.10)	233.56** (85.09)	405.93*** (84.50)
Color Blue *(0,1; Ref. Black)*	855.69*** (33.14)	679.92*** (32.52)	676.53*** (32.51)	765.15*** (32.30)
Color Bronze *(0,1; Ref. Black)*	358.73 (206.78)	-270.90 (205.61)	-273.58 (205.57)	-810.49*** (204.21)
Color Brown *(0,1; Ref. Black)*	12.17 (58.36)	-403.21*** (56.34)	-409.48*** (56.33)	-250.03*** (55.96)
Color Gold *(0,1; Ref. Black)*	1,250.73*** (174.99)	736.74*** (174.07)	728.46*** (174.04)	567.95** (172.82)
Color Green *(0,1; Ref. Black)*	1765.31*** (85.06)	1,268.21*** (83.10)	1,263.3*** (83.09)	1324.63*** (82.50)
Color Grey *(0,1; Ref. Black)*	491.97*** (25.01)	496.05*** (25.03)	496.18*** (25.02)	334.53*** (24.92)
Color Orange *(0,1; Ref. Black)*	1,173.71*** (97.32)	703.73*** (95.83)	710.03*** (95.81)	1123.41*** (95.26)
Color Purple *(0,1; Ref. Black)*	2,055.95*** (180.99)	1,479.27*** (179.86)	1,470.94*** (179.83)	1,443.16*** (178.55)
Color Red *(0,1; Ref. Black)*	684.65*** (38.82)	447.70*** (37.84)	441.4*** (37.84)	535.04*** (37.58)
Color Silver *(0,1; Ref. Black)*	250.97*** (31.73)	118.37*** (31.36)	119.15*** (31.36)	328.86*** (31.23)
Color White *(0,1; Ref. Black)*	130.99*** (25.27)	102.14*** (25.27)	97.92*** (25.27)	-68.68** (25.16)
Color Yellow *(0,1; Ref. Black)*	1,609.59*** (108.23)	1,183.56*** (107.15)	1,167.04*** (107.14)	1,407.96*** (106.41)
Power *(HP)*	67.23*** (.30)	21.09*** (3.65)	66.63*** (.31)	67.05*** (.30)
Engine Diesel *(0,1; Ref. Gasoline)*	748.8*** (21.89)	739.48*** (21.90)	719.59*** (21.94)	680.79*** (21.75)
Engine Other Fuel *(0,1; Ref. Gasoline)*	3,440.41*** (80.85)	3,416.88*** (80.89)	3,329.74*** (81.14)	3,418.36*** (80.32)
Transmission Manual *(0,1; Ref. Automatic)*	-2,076.39*** (21.63)	-2,076.52*** (21.64)	-2,071.4*** (21.64)	-2,073.46*** (21.49)
Car Sale Circumstances				
Professional Seller *(0,1; Ref. Individual)*	-169.64*** (25.35)	-156.95*** (25.36)	-154.12*** (25.36)	-178.84*** (25.18)
Mileage *(KM)*	-0.05*** (.00)	-0.05***(.00)	-0.05*** (.00)	-0.05***(.00)
Age *(Days since first registration)*	-3.52*** (.01)	-3.52*** (.01)	-3.56*** (.01)	-6.54*** (.04)
Median Asking Price of Car Model				
Median Asking Price *(EUR)*	0.88*** (.01)	0.94*** (.01)	0.88*** (.01)	0.87*** (.01)
Intercept	-25,605.13*** (1,104.81)	5,927.01*** (687.08)	-770.82 (549.71)	6,313.79*** (575.95)
Observations	520,190	520,190	520,190	520,190
Log Likelihood	-5,237,777	-5,238,080	-2,431,322	-5,234,374
Akaike Inf. Crit.	10,475,606	10,476,211	4,862,694	10,468,800
Bayesian Inf. Crit.	10,475,896	10,476,501	4,862,973	10,469,090

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$; Values are unstandardized coefficients, with standard errors in parentheses.

FIGURE W1:
THE IMPACT OF UNIQUENESS AND ITS SQUARE ON SECOND-HAND CARS' PREDICTED ASKING PRICES (BASED ON MODEL 1 IN TABLE W6).

WEB APPENDIX C – STUDY 3: ACTUAL TRANSACTION PRICES OF USED CARS

TABLE W7:
FULL RESULTS FOR THE MODEL CONFIGURATIONS DESCRIBED IN STUDY 2 PREDICTING ACTUAL TRUNCATED AND NON-TRUNCATED TRANSACTION PRICES.

Fixed Effects	Model 1 reported in the main body of the manuscript (dependent variable: truncated transaction prices)	Model 1a dependent variable: non-truncated transaction prices
Focal Effects		
Color Uniqueness (*0-1 Scale*)	-2,427.99* (992.73)	-2,236.97* (1,013.81)
Car Specifications		
Color Beige *(0,1; Ref. Black)*	804.94 (2,026.92)	307.75 (2,071.30)
Color Blue *(0,1; Ref. Black)*	-315.95 (397.81)	236.53 (406.46)
Color Bronze *(0,1; Ref. Black)*	2,350.41 (3,842.74)	2,492.88 (3,927.64)
Color Brown *(0,1; Ref. Black)*	-258.11 (702.93)	-401.18 (718.29)
Color Green *(0,1; Ref. Black)*	-42.76 (2,574.29)	-115.66 (2626.14)
Color Grey *(0,1; Ref. Black)*	888.19** (285.33)	794.78** (291.52)
Color Orange *(0,1; Ref. Black)*	1,175.95 (1,589.09)	945.83 (1,624.17)
Color Red *(0,1; Ref. Black)*	-830.46 (1,074.66)	-1,208.88 (1,097.76)
Color Silver *(0,1; Ref. Black)*	322.38 (414.48)	195.10 (423.44)
Color White *(0,1; Ref. Black)*	-157.85 (297.43)	-304.96 (303.80)
Diesel (*0, 1*)	144.63 (367.11)	238.25 (374.58)
Fuel Other (*0, 1*)	-3,976.57** (1,462.40)	-4,634.15** (1,488.85)
Car Sale Circumstances		
Mileage *(KM)*	-.07*** (.00)	-.07*** (.00)
Age *(Days)*	-2.44*** (.19)	-2.51*** (.20)
Median Asking Price of Car Model		
Median Asking Price (*EUR*)	.59*** (.04)	.58*** (.04)
Intercept		
Intercept	21,526.99*** (2,084.85)	22,654.5*** (2,108.82)
Observations	2,217	2,217
Log Likelihood	-21,438.49	-21,483.81
Akaike Inf. Crit.	42,914.99	43,005.62

Bayesian Inf. Crit.	43,023.36	43,114.00

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$; Values are unstandardized coefficients, with standard errors in parentheses. Model 1 is reported in the main document.

WEB APPENDIX D – STUDY 4: A SNEAKERS EXPERIMENT

Experimental Stimuli Used in Wave 1: Self-Customization

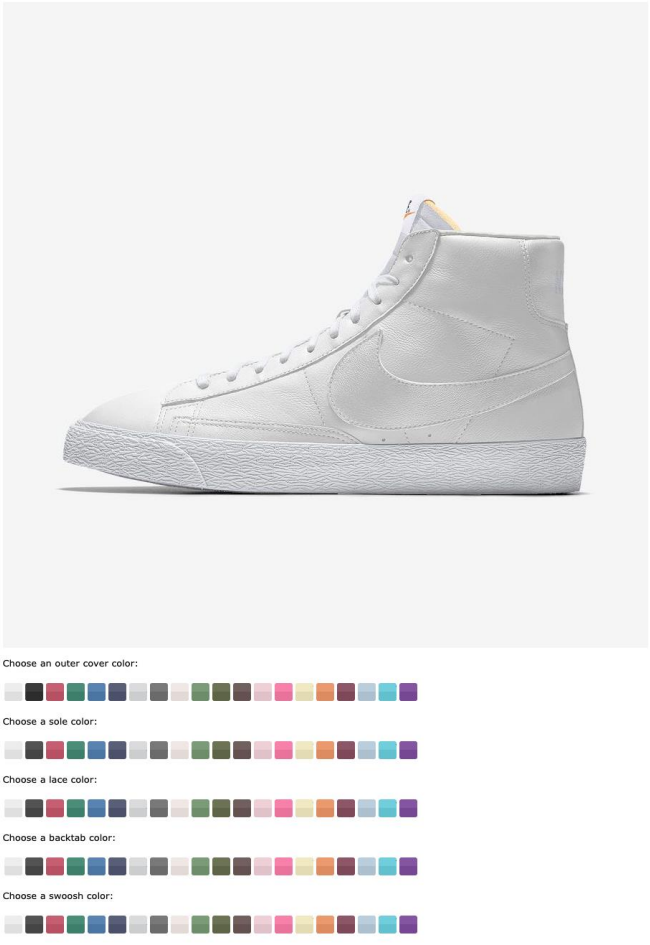
[Both Conditions]

Have it your way! Please customize the look of the sneakers you see below.

Please read the following text carefully before you start the design process!

Please think about which type of sneaker design would fit your aesthetic preferences. Most likely, you might not know "your perfect design" when starting this task but, instead, might learn about your preferences by trial-and-error. Therefore, please just try out a couple of designs and color combinations to engage in some "learning-by-doing." The goal should be that you find the design that maximizes your satisfaction within the possibilities offered!

<Screenshot of the self-customization interface.>



[Page Break]

[Both Conditions]

<Rendering of the self-customized sneakers the participant created on the previous page. Sample screenshot below. >

You have self-designed your sneakers in the following way:

Outer Cover: <chosen color>

Laces: <chosen color>

Backtab: <chosen color>

Sole: <chosen color>

Swoosh: <chosen color>

If you wish to change the design of your sneakers, please click the "back" button at the bottom of the page.

[WTP Condition]

What's the maximum amount of money (in US $) you would be willing to pay for the pair of sneakers you designed?

(The average retail price for a new pair of sneakers of this type is circa 100 US $.)

<Screenshot of the WTP selector.>

[WTA Condition]

Imagine you purchased the pair of sneakers you designed. After some time (i.e., after a few weeks), however, and without having used the sneakers much, you decide to sell them on the secondary market. What is the minimum amount of money (in US $) that you would be willing to accept in order to actually sell the sneakers?

(Assume that the sneakers are in excellent condition and appear to be almost new. The average retail price for a new pair of sneakers of this type is circa 100 US $.)

<Screenshot of the WTA selector.>

[Page Break]

[Both Conditions]

<The same rendering and description of the self-customized sneakers as on the previous page was displayed here.>

Please indicate your agreement with the below statements.

	Strongly Disagree						Strongly Agree
My sneaker design is unique.	☐	☐	☐	☐	☐	☐	☐
My sneaker design is special.	☐	☐	☐	☐	☐	☐	☐
My sneaker design is one-of-a-kind.	☐	☐	☐	☐	☐	☐	☐

With the following question we are interested in how far you believe that your preferences with regard to sneakers (i.e., what you like and what you do not like) is very similar or very different from the preferences of other consumers.

	Strongly Disagree						Strongly Agree
I think my preferences are very different from others.	☐	☐	☐	☐	☐	☐	☐
I think my preferences are very similar to others.	☐	☐	☐	☐	☐	☐	☐

[Page Break]

[Both Conditions]

Demographics

You are almost done! Thanks for answering the last three questions!

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please enter any comments you might have about this study. (This is optional.)_____

Experimental Stimuli Used in Wave 2: Second-Hand Market

Please answer the following questions so that we can identify suitable offers for you.

By indicating the information below, we will be able to find you suitable customized shoes, which are currently for sale on the secondary market.

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please select your shoe size!

<Drop-down list with the following options.>

6 - Women's
6.5 - Women's
7 - Women's
7 - Men's
7.5 - Women's
7.5 - Men's
8 - Women's
8 - Men's
8.5 - Women's
8.5 - Men's
9 - Women's
9 - Men's
9.5 - Women's
9.5 - Men's
10 - Women's
10 - Men's
10.5 - Women's
10.5 - Men's
11 - Women's
11 - Men's
11.5 - Men's

12 - Men's
13 - Men's

[Page Break]

Below are 5 pairs of sneakers that the owners had customized online before purchase ("online self-design") and that are currently for sale by the owners on the secondary market. All shoes are in your size (size: <the size selected on the previous page is displayed here>).

For each pair of sneakers, please let us know how much you would be willing to pay for them. You can see pictures and the customized aspects for each pair of self-designed sneakers. These sneakers have been purchased by their owners a few weeks ago. The owners have not used the sneakers much (they look like new) and are now selling them on the secondary market.

<Following is one sample presentation of the 5 self-customized sneakers.>

The first pair of sneakers

<Rendering of self-customized sneakers a participant created in part 1. Sample screenshot below.>

Size: <the size selected on the previous page is displayed here>

Outer Cover: <color chosen by the participant in part 1>

Laces: <color chosen by the participant in part 1>

Backtab: <color chosen by the participant in part 1>

Sole: <color chosen by the participant in part 1>

Swoosh: <color chosen by the participant in part 1>

What's the maximum amount of money (in US $) you would be willing to pay for these sneakers?

(The average retail price for a new pair of sneakers of this type is circa 100 US $.)

<Screenshot of the WTP selector>

<The participant then evaluated 4 more self-customized sneakers.>

WEB APPENDIX E – STUDY 5: INCENTIVE-COMPATIBLE REPLICATION AND MEDIATION

Full Methods Reporting for Waves 1 and 2

Wave 1: Consumer-Designers. For the first part of the experiment, we recruited 202 US consumers (M_{age} = 30 years, 49% female, Prolific) in exchange for a nominal payment (the sample size is smaller compared to Study 4 because there is only one consumer-designer condition: WTA). Participants were asked to self-customize a couch for themselves. To do so, they could use a self-customization interface specifically created for this study, which would store participants' creations in the survey flow. Participants could customize it by selecting one of 22 colors for each of seven customizable features of the couch. The selected colors were instantly rendered graphically on the participants' screens, to facilitate effective self-customization (Von Hippel and Katz 2002).

Participants were subsequently asked to assess the uniqueness of their creations, similar to Study 4. We employed the following three-item scale: (1) "My couch design is unique," (2) "My couch design is special," and (3) "My couch design is one-of-a-kind" (where 1 = "Strongly Disagree" and 7 = "Strongly Agree," α = .94).

Participants then read the instructions regarding the dual-lottery BDM procedure. Importantly, they learned that one couch (worth $599) would be raffled among study participants, and if they won the raffle, they would receive the couch they had self-customized during the study. Next, we explored their conditional WTA, which was elicited using an incentive-compatible BDM lottery. Specifically, participants were asked to indicate the WTA for their self-customized couch: "What's the minimum amount of money (in USD) at which you would be willing to sell your self-designed couch? (The average retail price for this couch is circa $599.)" They could select a value on a $1 to $600 scale in $1 increments (600 = "I'm not willing to sell the couch."). They learned that they would subsequently receive a random offer between $0 and $599 in cash. If the random offer was at or above their WTA, they would sell the couch, and receive the amount of money indicated in the random offer. If, in contrast, the random offer was below their WTA, they would not sell the couch but would keep it instead. The study participant who eventually won the couch indicated their WTA at $250; the random offer was $341. Therefore, the study participant sold the couch and received a $341 Amazon voucher.

Wave 2: Second-hand market customers' WTP. To assess the second-hand market appeal of the self-customized products, we recruited an independent sample of 303 US consumers (M_{age} = 30 years, 39% female, Prolific) in exchange for a nominal payment (we explain the rationale underlying the chosen sample size below and in the preregistration). Participants first read the instructions regarding the dual-lottery BDM procedure (see Web Appendix E for details). Importantly, they learned that we would raffle one bonus payment ($599) among study participants, and if they won their subsequently expressed WTP would be binding (we would effect payment on their behalf using the $599). Specifically, participants were asked to indicate their WTP for ten couches. They learned there would be a BDM lottery for one randomly selected couch, that is, we would draw a random price between $0 and $599. If the random price was above their WTP they would not purchase the couch, and would receive the full $599 bonus payment. If, in contrast, the random price was at or below their WTP, they would purchase the couch at the indicated price. The study participant who won the bonus payment indicated their WTP at $375 for the randomly drawn couch (couch number 1); The random price was $393. Therefore, the participant did not purchase the couch and received a $599 Amazon voucher.

The WTP question read: "What's the maximum amount of money (in US $) you would be willing to pay for this couch? (The average retail price for this couch is circa $599.)" Respondents could select a value on a $0 to $599 scale in $1 increments (0 = "I do not want to buy the couch."). In total, we had 303 participants indicate their WTP for ten couches each, resulting in a total of 3,030 second-hand market WTP data points. Put differently (and parallel to Study 4), we sought to collect at least ten data points for each self-customized couch, in order to obtain a valid second-hand market assessment of the various designs tested. As the WTA and WTP values were measured using a much larger scale than in Study 4, we applied the MAD method to values (as in Studies 1, 2, and 3). No values were identified as outliers (i.e., no values had a MAD above 2.5) and, therefore, no values were truncated.

Wave 3 (second-hand market customers' preference fit) is reported in the main body of the manuscript.

Experimental Stimuli Used in Wave 1: Self-Customization

	Your Custom Couch: Imagine you wanted to purchase a new couch. This time, it is going to be a custom couch, self-designed by you! Color shows more than your mood, it's your signal. What do you stand for? Design a couch that expresses your individuality, who you are, what you like. Please customize the look of the couch on the next page.

[Page Break]

Your task is to design a couch that expresses your individuality, who you are, what you like.

<Screenshot of the self-customization interface.>

[Page Break]

<Rendering of the self-customized couch the participant created on the previous page. Sample screenshot below. >

You have self-designed your couch in the following way:

Arms and Upper Frame Color: <chosen color>

Lower Frame Color: <chosen color>

Lower Left Cushion Color: <chosen color>

Lower Right Cushion Color: <chosen color>

Upper Left Cushion Color: <chosen color>

Upper Right Cushion Color: <chosen color>

Leg Color: <chosen color>

Please indicate your agreement with the below statements.

	Strongly Disagree						Strongly Agree
My couch design is unique.	☐	☐	☐	☐	☐	☐	☐
My couch	☐	☐	☐	☐	☐	☐	☐

design is special.							
My couch design is one-of-a-kind.	☐	☐	☐	☐	☐	☐	☐

[Page Break]

We are now interested in your willingness to accept for your self-designed couch. Imagine you already owned your self-designed couch. At what price would you be willing to sell it?

Beware: There might be real-life consequences to your answer!

We will raffle 1 couch in this study (one couch is worth $599). In case you are the winner and you get your self-designed couch, your answers about your willingness to accept on the next page will be binding. (If you do not win your self-designed couch, your willingness to accept indicated on the next page will remain without consequences.)

Further details on the procedure are provided on the next page.

[Page Break]

In case you win the couch, we will immediately make you a random offer between $0 and $599 to buy it back to sell it on the second-hand market. Indicate the minimum or lowest offer you would be willing to accept (= your willingness to accept).

In case you win, the exact procedure will be as follows:

1. You will win your self-designed couch (worth $599).

2. A random offer between $0 and $599 will be made for your self-designed couch.

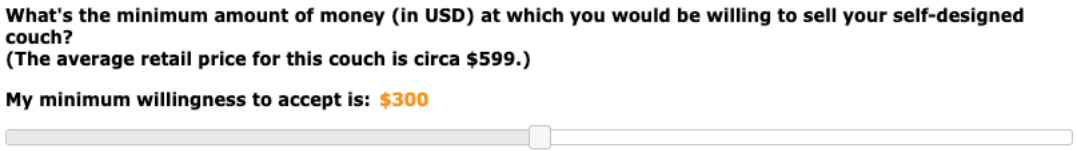
3a. If the random offer is **at or above** your willingness to accept, you will have sold the couch, and you will receive the random offer between $0 and $599 in cash.

3b. If the random offer is **below** your willingness to accept, you will **not** have sold your self-designed couch, and you will keep the couch.

➔ In short, the best strategy for you is to indicate the true minimum or lowest offer you would be willing to accept for your self-designed couch.

<The same rendering and description of the self-customized couch as on the uniqueness rating page was displayed here.>

<Screenshot of the WTA selector>



[Page Break]

Demographics

You are almost done! Thanks for answering the last three questions!

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please enter any comments you might have about this study. (This is optional.) _____

Experimental Stimuli Used in Wave 2: Second-hand Market Customers' WTP

We are now interested in your willingness to pay for the 10 couches on the next page. These are couches that the owners had customized online before purchase ("online self-design") and that are currently for sale by the owners on the second-hand market.

Beware: There might be real-life consequences to your answer!

We will raffle 1 bonus payment ($599) for a randomly selected couch and participant. In case you win the bonus payment, you will have the opportunity to purchase one of the 10 couches displayed on the next page.

In case you win, the exact procedure will be as follows:

1. You will win the $599 bonus payment.

2. Out of the 10 couches displayed on the next page, 1 couch will be randomly selected.

3. A random price between $0 and $599 will be drawn.

4a. If the random price is **above** your willingness to pay for the selected couch, you will not have bought the couch, and you will receive the $599 bonus payment in cash.

4b. If the random price is **at or below** your willingness to pay for the selected couch, you will have bought the couch, and you will receive the couch.

➔ In short, the best strategy for you is to indicate the true maximum or highest offer you would be willing to pay for each couch.

[Page Break]

Below are 10 couches that the owners had customized online before purchase ("online self-design") and that are currently for sale by the owners on the second-hand market.

For each couch, please let us know how much you would be willing to pay for it.

Below, you can see pictures and the customized aspects for each self-designed couch.

These couches have been purchased by their owners a few weeks ago. The owners have not used the couches much (they look like new) and are now selling them on the second-hand market.

Remember, you might win the $599 bonus payment, in which case your answers will be binding!

<Following is one sample presentation of the 10 self-customized couches.>

The first couch.

<Rendering of a self-customized couch a participant created in part 1. Sample screenshot below.>

Arms and Upper Frame Color: <color chosen by the participant in wave 1>

Lower Frame Color: <color chosen by the participant in wave 1>

Lower Left Cushion Color: <color chosen by the participant in wave 1>

Lower Right Cushion Color: <color chosen by the participant in wave 1>

Upper Left Cushion Color: <color chosen by the participant in wave 1>

Upper Right Cushion Color: <color chosen by the participant in wave 1>

Leg Color: <color chosen by the participant in wave 1>

<Screenshot of the WTP selector>

What's the maximum amount of money (in USD) that you would be willing to pay for this self-designed couch?
(The average retail price for this couch is circa $599.)

My maximum willingness to pay (in US $) is: **$300**

<The user then evaluated 9 more self-customized couches.>

[Page Break]

Demographics

You are almost done! Thanks for answering the last three questions!

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please enter any comments you might have about this study. (This is optional.) _____

Experimental Stimuli Used in Wave 3: Second-hand Market Customers' Preference Fit

Below are 10 couches that the owners had customized online before purchase ("online self-design") and that are currently for sale by the owners on the second-hand market.

For each couch, please let us know how much you like its design.

Below, you can see pictures and the customized aspects for each self-designed couch.

These couches have been purchased by their owners a few weeks ago. The owners have not used the couches much (they look like new) and are now selling them on the second-hand market.

<Following is one sample presentation of the 10 self-customized couches.>

The first couch.

<Rendering of a self-customized couch a participant created in part 1. Sample screenshot below.>

Arms and Upper Frame Color: <color chosen by the participant in wave 1>

Lower Frame Color: <color chosen by the participant in wave 1>

Lower Left Cushion Color: <color chosen by the participant in wave 1>

Lower Right Cushion Color: <color chosen by the participant in wave 1>

Upper Left Cushion Color: <color chosen by the participant in wave 1>

Upper Right Cushion Color: <color chosen by the participant in wave 1>

Leg Color: <color chosen by the participant in wave 1>

Please indicate your agreement with the below statements.

	Strongly Disagree						Strongly Agree
I like the design of the couch.	☐	☐	☐	☐	☐	☐	☐
The couch design comes close to my idea of a perfect design.	☐	☐	☐	☐	☐	☐	☐

<The user then evaluated 9 more self-customized couches.>

[Page Break]

Demographics

You are almost done! Thanks for answering the last three questions!

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please enter any comments you might have about this study. (This is optional.) _____

WEB APPENDIX F – STUDY 6*: ADDRESSING CAUSALITY*

Experimental Stimuli Used in Wave 1: Self-Customization

[Common Condition]

	Your Custom Couch: Imagine you wanted to purchase a new couch. This time, it is going to be a custom couch, self-designed by you! In this study, we are particularly interested in a common design that you like. A common design is one that is similar to other designs. For example, a given color combination is common if it exists very often. Your task is to self-customize a common couch design that you like.

[Unique Condition]

	Your Custom Couch: Imagine you wanted to purchase a new couch. This time, it is going to be a custom couch, self-designed by you! In this study, we are particularly interested in a unique design that you like. A unique design is one that is distinct from other designs. For example, a given color combination is unique if it only exists once. Your task is to self-customize a unique couch design that you like.

[Page Break]

[Common Condition]

Your task is to self-customize a common couch design that you like.

[Unique Condition]

Your task is to self-customize a unique couch design that you like.

[Both Conditions]

<Screenshot of the self-customization interface.>

[Page Break]

[Both Conditions]

<Rendering of the self-customized couch the participant created on the previous page. Sample screenshot below. >

You have self-designed your couch in the following way:

Arms and Upper Frame Color: <chosen color>

Lower Frame Color: <chosen color>

Lower Left Cushion Color: <chosen color>

Lower Right Cushion Color: <chosen color>

Upper Left Cushion Color: <chosen color>

Upper Right Cushion Color: <chosen color>

Leg Color: <chosen color>

<Screenshot of the WTA selector>

Imagine you purchased the couch you designed. After some time (i.e., after a few months), however, and without having used the couch too much, you decide to sell it on the second-hand market. What is the minimum amount of money (in US $) that you would be willing to accept in order to actually sell the couch?
(Assume that the couch is still in excellent condition and appears to be almost new. The average retail price for a couch of this type is circa 1,000 US $.)

My minimum willingness to accept (in US $) is: **$1000 (~820 EUR)**

[Page Break]

[Both Conditions]

<The same rendering and description of the self-customized couch as on the previous page was displayed here.>

Please indicate your agreement with the below statements.

	Strongly Disagree						Strongly Agree
My couch design is unique.	☐	☐	☐	☐	☐	☐	☐
My couch design is special.	☐	☐	☐	☐	☐	☐	☐
My couch design is one-of-a-kind.	☐	☐	☐	☐	☐	☐	☐

[Page Break]

[Both Conditions]

Demographics

You are almost done! Thanks for answering the last three questions!

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please enter any comments you might have about this study. (This is optional.) _____

Experimental Stimuli Used in Wave 2: Second-Hand Market

Below are 10 couches that the owners had customized online before purchase ("online self-design") and that are currently for sale by the owners on the secondary market.

For each couch, please let us know how much you would be willing to pay for it.

Below, you can see pictures and the customized aspects for each self-designed couch.

These couches have been purchased by their owners a few weeks ago. The owners have not used the couches much (they look like new) and are now selling them on the secondary market.

<Following is one sample presentation of the 10 self-customized couches.>

The first couch.

<Rendering of a self-customized couch a participant created in part 1. Sample screenshot below.>

Arms and Upper Frame Color: <color chosen by the participant in part 1>

Lower Frame Color: <color chosen by the participant in part 1>

Lower Left Cushion Color: <color chosen by the participant in part 1>

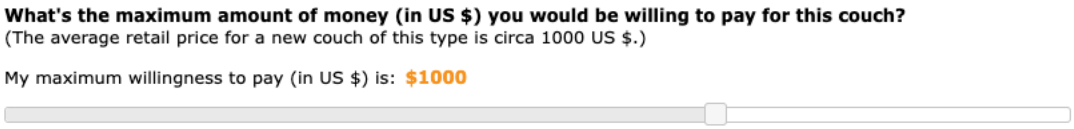
Lower Right Cushion Color: <color chosen by the participant in part 1>

Upper Left Cushion Color: <color chosen by the participant in part 1>

Upper Right Cushion Color: <color chosen by the participant in part 1>

Leg Color: <color chosen by the participant in part 1>

<Screenshot of the WTA selector>



<The user then evaluated 9 more self-customized couches.>

[Page Break]

Demographics

You are almost done! Thanks for answering the last three questions!

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please enter any comments you might have about this study. (This is optional.) _____

WEB APPENDIX G – FOLLOW-UP STUDY: RESALE VERSUS UNIQUENESS FOCUS

Full Study Reporting

In this follow-up study, we aim to assess whether consumer-designers are able to optimize their self-customized products in such a way that the second-hand market values their efforts. In particular, we ask whether making the consumer-designer aware of the second-hand market at the time of self-customization will attenuate the negative effect identified. The idea is that while consumer-designers might still be able to find an appealing product for themselves, they might also increase their products' resale value by proactively considering the preferences of others during their self-customization activities. If indeed the case, this finding would further corroborate the idea that consumer-designers normally neglect any resale considerations at the point of self-customization and first purchase. We experimentally contrast the common business practice of inviting consumer-designers to "express their uniqueness" to a condition, in which customers are invited to consider "optimizing the resale value" of their prospective self-customized product. We employ a similar paradigm as utilized in Study 6. Our primary prediction is that self-customized products generated in the "optimize resale value" (vs. "express your uniqueness") condition will yield more favorable second-hand market valuations.

Methods: consumer-designers. For the first part of the experiment, we recruited 202 US consumers (Mage = 38 years, 40% female, Amazon Mechanical Turk) in exchange for a nominal payment. Our reasoning was that 100 participants per condition would be adequate to capture enough variety in terms of aesthetic designs of the self-customized products. Participants were randomly assigned to either the "express uniqueness" or "optimize resale value" condition. Participants in both conditions were asked to self-customize a couch for themselves. To do so, they could use a self-customization interface specifically created for this study, which would store participants' creations in the survey flow. Participants in the "express uniqueness" condition were invited to self-customize the couch according to their own preferences, and also to make it highly unique (e.g., "the couch design should express your uniqueness"). Alternately, participants in the "optimize resale value" condition were invited to self-customize the couch to their own preferences, but were also instructed to keep the resale value high (e.g., "the couch

design should be also appealing to other customers"). The self-customizable couch was the same couch as in Study 5 and 6.

Participants were then asked to indicate the WTP for their self-customized couch: "What's the maximum amount of money (in US $) you would be willing to pay for the couch you designed?" (The average retail price for a new couch of this type is circa 1,000 US $.) They could select a value on a $0 to $1,501 scale in $1 increments (0 = "I'm not willing to pay anything.", 1,501 = "More than 1,500 US $."). We did not ask for WTA in this study because we wanted to keep the experiment parsimonious. We have chosen to ask for consumer-designers' WTP (vs. WTA) because we were particularly interested in understanding whether the "optimize resale value" focus would affect the value created by self-customization to the individual consumer-designer (one could plausibly argue for both a null effect or a negative effect). Participants were further asked to assess the uniqueness of their creations in the same way as in Studies 5 and 6.

Methods: second-hand market customers. In order to assess the second-hand market appeal of the self-customized products, we recruited an independent sample of 405 US consumers (M_{age} = 42 years, 49% female, Amazon Mechanical Turk) in exchange for a nominal payment (we explain the rationale underlying the chosen sample size below). Specifically, each respondent was asked to evaluate five self-customized couches supposedly for sale on the second-hand market. Participants were presented with the five customized couches, and asked to indicate their WTP for each couch: "What's the maximum amount of money (in US $) you would be willing to pay for this couch?" (The average retail price for a new couch of this type is circa 1,000 US $.) Respondents could select a value on a $0 to $1,501 scale in $1 increments (0 = "I'm not willing to pay anything.", 1,501 = "More than 1,500 US $.").

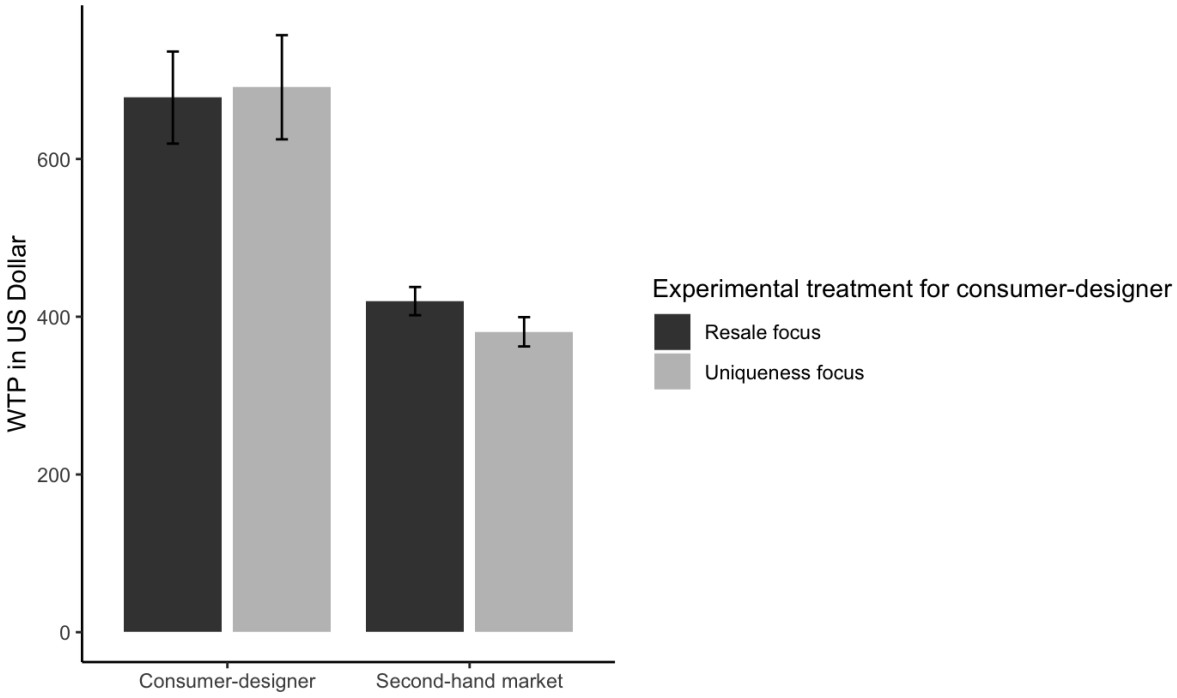
The five presented designs were randomly drawn from the 202 self-customized couches created in the first part of the experiment by the consumer-designers from both experimental conditions (i.e., "express uniqueness" and "optimize resale value"). The five designs were presented in random sequence on the same page. In total, we had 405 participants indicate their WTP for five couches each, resulting in a total of 2,025 second-hand market WTP data points. Put differently (and parallel to Study 2), we sought to collect at least ten data points for each self-customized couch, with a goal to get a valid second-hand market assessment of the various designs tested.

As in the previous studies, we used the MAD method to identify and truncate extreme values (76 observations; 3.41%). Results are similar if we do not truncate values.

Results. We first conducted an ANOVA on consumer-designer uniqueness perceptions of their self-customized couches. Consistent with our manipulations, we found higher uniqueness scores in the "express uniqueness" condition (M = 5.17, SD = 1.42) compared to the "optimize resale value" condition (M = 4.31, SD = 1.75, F(1, 200) = 14.56, $p < .001$). Conceptually replicating the results of Study 6, however, this pattern of effects did not translate into a main effect of the treatment on the dependent variable. That is, our manipulations were not significantly related to the consumer-designers' WTP for their self-customized couches ($M_{uniqueness}$ = 690.40, SD = 328.13, M_{resale} = 677.34, SD = 298.72, F(1, 200) = .09, $p = .77$). It seems that participants in the "optimize resale value" condition were getting some value from their self-customized products that participants in the "express uniqueness" condition were not, hence compensating for the loss of perceived uniqueness.

In order to analyze the data with regard to second-hand market WTP, we estimated a linear mixed-effects model similar to the one used in Study 6. Specifically, the model included second-hand market WTP as dependent variable, one dummy variable indicating the treatment condition (0 for "optimize resale value" and 1 for "express uniqueness"), four dummy variables for the self-customized couch's position as fixed effects, as well as a design-identifier and second-hand market participant-identifier as random effects on the intercept. As predicted, the second-hand market WTP was significantly higher for designs created by consumer-designers in the "optimize resale value" condition ($\hat{M}$ = 435.19, SE = 16.10), as compared to those created by consumer-designers in the "express uniqueness" condition ($\hat{M}$ = 403.63, SE = 16.30, γ = -31.55, t = -2.42, $p = .02$). Thus, inviting consumer-designers to be cognizant of second-hand market preferences while self-customizing significantly increased second-hand market WTP for their creations by 7.69% or $31.55 (see Figure W2).

FIGURE W2:
FOLLOW-UP STUDY: ESTIMATED CONSUMER-DESIGNERS' AND SECOND-HAND MARKET CUSTOMERS' WTP AS A FUNCTION OF UNIQUENESS- VERSUS RESALE-FOCUS AMONG CONSUMER-DESIGNERS.



Notes. Error bars signify the 95% confidence interval of the estimated mean.

Discussion. In this follow-up study, we asked whether consumer-designers are able to optimize their self-customized products such that the second-hand market would more strongly value their efforts. In particular, we show that making the consumer-designer aware of the second-hand market at the time of self-customization attenuates the negative effect identified in the previous studies. Interestingly, customers in the "optimize resale value" condition were able to find a similarly appealing product for themselves compared to benchmark participants in the "express uniqueness" condition (their WTP did not differ significantly). Second, we find that second-hand market customers' WTP was significantly higher for designs stemming from the "optimize resale value" versus the "express uniqueness" condition. That is, what consumer-designers perceive to be unique, special, and one-of-a-kind is detrimental to the second-hand market, but thinking about second-hand market customers at the time of self-customization is an effective way to overcome the focal uniqueness dilemma. Put differently, this study further corroborates the

notion that in absence of any intervention consumer-designers tend to neglect any resale considerations at the point of self-customization and first purchase.

Experimental Stimuli Used in Wave 1: Self-Customization

[Resale Condition]

	Your Custom Couch: Imagine you wanted to purchase a new couch. This time, it's going to be a custom couch, self-designed by you! Please customize the look of the couch on the next page with the following goal in mind: You should really like the design, and, at the same time, you want to keep the resale value high (that is, the couch design should be also appealing to other customers).

[Uniqueness Condition]

	Your Custom Couch: Imagine you wanted to purchase a new couch. This time, it's going to be a custom couch, self-designed by you! Please customize the look of the couch on the next page with the following goal in mind: You should really like the design, and you want it to be highly unique (that is, the couch design should express your uniqueness).

[Page Break]

[Resale Condition]

Have it your way! But don't sacrifice the couch's resale value!

[Uniqueness Condition]

Have it your way! And express your uniqueness!

[Both Conditions]

<Screenshot of the self-customization interface>

[Page Break]

[Both Conditions]

<Rendering of the self-customized couch the participant created on the previous page. Sample screenshot below. >

You have self-designed your couch in the following way:

Arms and Upper Frame Color: <chosen color>

Lower Frame Color: <chosen color>

Lower Left Cushion Color: <chosen color>

Lower Right Cushion Color: <chosen color>

Upper Left Cushion Color: <chosen color>

Upper Right Cushion Color: <chosen color>

Leg Color: <chosen color>

If you wish to change the design of your couch, please click the "back" button at the bottom of the page.

What's the maximum amount of money (in US $) you would be willing to pay for the couch you designed? (The average retail price for this couch is circa 1000 US $.)

<Screenshot of the WTP selector>

My maximum willingness to pay (in US $) is: **$1000**

[Page Break]

[Both Conditions]

<The same rendering and description of the self-customized couch as on the previous page was displayed here.>

Please indicate your agreement with the below statements.

	Strongly Disagree						Strongly Agree
My couch design is unique.	☐	☐	☐	☐	☐	☐	☐
My couch design is special.	☐	☐	☐	☐	☐	☐	☐
My couch design is one-of-a-kind.	☐	☐	☐	☐	☐	☐	☐

[Page Break]

[Both Conditions]

Demographics

You are almost done! Thanks for answering the last three questions!

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please enter any comments you might have about this study. (This is optional.) _____

Experimental Stimuli Used in Wave 2: Second-Hand Market

Below are 5 couches that the owners had customized online before purchase ("online self-design") and that are currently for sale by the owners on the secondary market.

For each couch, please let us know how much you would be willing to pay for it.

You can see pictures and the customized aspects for each self-designed couch. These couches have been purchased by their owners a few weeks ago. The owners have not used the couches much (they look like new) and are now selling them on the secondary market.

<Following is one sample presentation of the 5 self-customized couches.>

The first couch.

<Rendering of a self-customized couch a participant created in part 1. Sample screenshot below.>

Arms and Upper Frame Color: <color chosen by the participant in part 1>

Lower Frame Color: <color chosen by the participant in part 1>

Lower Left Cushion Color: <color chosen by the participant in part 1>

Lower Right Cushion Color: <color chosen by the participant in part 1>

Upper Left Cushion Color: <color chosen by the participant in part 1>

Upper Right Cushion Color: <color chosen by the participant in part 1>

Leg Color: <color chosen by the participant in part 1>

What's the maximum amount of money (in US $) you would be willing to pay for this couch?

(The average retail price for a new couch of this type is circa 1000 US $.)

<The user then evaluated 4 more self-customized couches.>

[Page Break]

Demographics

You are almost done! Thanks for answering the last three questions!

Please indicate your gender. ☐ male ☐ female

Please indicate your age. _____

Please enter any comments you might have about this study. (This is optional.) _____

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