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Paying Twice for Aesthetic Customization? The Negative Effect of Uniqueness on a Product's Resale Value

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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 secondhand market, particularly in the context of aesthetic (vs. functional) customization. Results of three distinct data sets (including an analysis of more than 500,000 preowned 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 although consumer-designers' valuations are *positively* affected by uniqueness, uniqueness indeed *negatively* affects secondhand-market customers' willingness to pay. This is because the more unique a given configuration is to a given consumer-designer, the lower the likelihood that said design will meet secondhand-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, secondhand market

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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 do-it-yourself or postpurchase 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 (i.e., customers of self-customized products) might be paying twice to have it their way—once when purchasing the unique product, and again when selling it on the secondhand market. We

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reason that our focal uniqueness-hurts-resale hypothesis—the higher the self-customized product's uniqueness, the *lower* its appeal to the secondhand market—is particularly relevant for situations wherein self-customization is difficult (and expensive) to change after purchase. Our theorizing further focuses on aesthetic customization (e.g., changing a car's color, changing 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" (BMW Group 2019). 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 secondhand 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.[1]

Although this hypothesis has not been previously raised, it seems an important one. Selling and buying products in secondhand markets is becoming increasingly popular (Huang and Fishbach 2021); for example, more than 53% of U.S. consumers reportedly bought used apparel, footwear, or accessories in 2021.[2] In some cases, secondhand markets are even bigger than the markets for the respective new products. For instance, in 2019, the U.S. secondhand car market was more than twice the size of the new car market (42.4 million used cars vs. 16.7 million new cars).[3] Moreover, while used car sales increased by 13.7% between 2015 and 2019, new car sales decreased by 4.6%. Another example is the global secondhand furniture market, which is forecast to grow to $16.6 billion in 2025, up 66% from $10 billion in 2017 (Business Wire 2018).

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 secondhand-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 secondhand market.

Our work cautions the interested reader with regard to the 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 secondhand 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 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 secondhand products (OfferUp 2020), 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 codesigners, 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] systems not only allows more effective adaptation to the customer's aesthetic and

[1] 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.

[2] https://www.thredup.com/resale/ (accessed September 4, 2022).

[3] https://www.statista.com/statistics/183713/value-of-us-passenger-cas-sales-and-leases-since-1990/ (accessed December 6, 2022).

functional preferences, but also facilitates enhanced differentiation from other customers and their belongings by means of a truly unique product."[4]

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 thus 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 mentioned previously, 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."[5] 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?"[6]

One reason 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.[7] An expert survey conducted with 160 German automotive industry 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.[8] 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 thus 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 secondhand 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 secondhand-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 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 postpurchase 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, changing the aesthetic design of a pair of sneakers). Aesthetics are a matter of taste and thus 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 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, thus, appreciated by broader parts of the market.[9]

To visualize the potential cost of horizontal differentiation facilitated by aesthetic self-customization, consider Franke and Piller's (2004) study on wristwatches. In support of the promise of by-attribute self-customization, they find that a manufacturer that wants to fully satisfy the revealed aesthetic preferences of 165 students must offer 159 different watches.

[4] In practice, toolkits differ in the solution space offered to the consumer-designer (Von Hippel and Katz 2002). Whereas 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 firm produces the product 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).

[5] https://www.nike.com/nike-by-you (accessed September 11, 2020).

[6] https://converse.com/c/colors (accessed September 18, 2020).

[7] https://configure.bmw.de (accessed September 18, 2020).

[8] 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 to this expert survey at several places throughout the article. The survey was originally conducted in German.

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

Although 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 featuring a unique (vs. common) color.[10] 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) secondhand-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 secondhand market: the higher the self-customized product's uniqueness, the *lower* its appeal to the secondhand market.[11]

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 secondhand 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 secondhand market.[12]

Types of Valuation, Empirical Approach, and Overview of Studies

Our focal uniqueness-hurts-resale hypothesis predicts a *negative* relationship between a product's aesthetic uniqueness and its appeal to potential customers on the secondhand 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). Although 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.[13] At the core of our theorizing is secondhand-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 directly observe neither secondhand-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 secondhand 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 secondhand 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 enables us to effectively test for a potential seller type interaction; in particular, we argue that professional sellers, because of their experience and expertise in selling cars, should be better able to assess a given car's market value and thus identify the maximum prospective price on the secondhand 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 secondhand-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 nonowners (Thaler 1980). They might also be willing to wait and hope for a customer who shares their own preferences and is thus 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 with professional sellers of cars, it is thus unclear whether individual sellers'

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

[11] Note that from a conceptual perspective, the focal prediction need not be centered on self-customization facilitated by firms. As mentioned 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.

[12] We acknowledge that there might be other processes cocontributing to the phenomenon, which we discuss in more detail in the "General Discussion" section.

[13] 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).

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 versus off-the-shelf[a]	Truncated asking prices	1,761 (all sneakers)	$\gamma = -47.97^{***}$ (8.05)	There is a negative effect of self-customization on the asking prices for Nike sneakers.
		Uniqueness (rated by independent coders)[b]		246 (self-customized sneakers only)	$\gamma = -4.09^{\dagger}$ (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)[c]	Truncated asking prices	520,190	$\gamma = -572.26^{***}$ (86.82)	There is a negative effect of uniqueness on the asking prices for cars.
		Professional versus individual seller[d] × uniqueness[c]			$\gamma = -4{,}925.07^{***}$ (162.74)	Seller type moderates the uniqueness effect: whereas 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)[c]	Truncated transaction prices	2,217	$\gamma = -2{,}427.99^{*}$ (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 (secondhand market).	Uniqueness (rated by consumer-designers)[e]	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 (secondhand market)	1,230 (6,150 data points)	$\gamma = -.62^{***}$ (.16)	There is a negative effect of uniqueness on WTP among potential secondhand-market customers.
5	Incentive-compatible experiment: one sample of consumers self-customized couches for themselves (consumer-designers). Two further samples of consumers evaluated the resulting products' WTP and preference fit, respectively (secondhand market 1 and 2).	Uniqueness (rated by consumer-designers)[e]	Truncated WTA (consumer-designers)	202	$b = 25.79^{***}$ (5.24)	There is a positive effect of uniqueness on WTA among consumer-designers.
			Truncated WTP (secondhand market 1)	303 (3,030 data points)	$\gamma = -13.08^{***}$ (1.26)	There is a negative effect of uniqueness on WTP among potential secondhand-market customers.
			Preference fit (secondhand market 2)[f]	299 (2,990 data points)	$\gamma = -.29^{***}$ (.03)	There is a negative effect of uniqueness on preference fit among potential secondhand-market customers (and preference fit mediates the uniqueness effect on WTP).

(continued)

Table 1. (continued)

Study	Data	IV	DV	N	Key Test Results	Key Findings
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 (secondhand 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 (secondhand market)	299 (2,990 data points)	$\hat{M}_{common} = 495.36$ (18.19), $\hat{M}_{unique} = 452.42$ (18.29), $p < .001$	There is a positive effect of the "common" (vs. "unique") design condition on WTP among potential secondhand-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 (secondhand 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 (secondhand market)	405 (2,025 data points)	$\hat{M}_{resale} = 435.19$ (16.10), $\hat{M}_{unique} = 403.63$ (16.30); $p = .02$	There is a positive effect of the "optimize resale value" (vs. "express uniqueness") condition on WTP among potential secondhand-market customers.

†$p = .05$, *$p < .05$, **$p < .01$, ***$p < .001$.

[a]1 = self-customized, and 0 = off-the-shelf.

[b]Rated by independent coders (1 = "Not Unique at All," and 5 = "Very Unique").

[c]0–1 scale, calculation of the uniqueness of the car's color compared with the color of other cars of the same model and vintage.

[d]0 = individual seller, and 1 = professional seller.

[e]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" (1 = "Strongly Disagree," and 7 = "Strongly Agree").

[f]1–7 average of three-item scale, completed by the secondhand-market sample: (1) "I like the design of the couch" and (2) "The couch design comes close to my idea of a perfect design" (1 = "Strongly Disagree," and 7 = "Strongly Agree").

Notes: Standard errors (regression coefficients, estimated means) or standard deviations (means) in parentheses.

asking prices more closely resemble secondhand-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 secondhand 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 secondhand-market customer, and a subsequent valuation of the respective products. In Study 4 (sneakers), consumer-designers indicate either their WTP or willingness to accept (WTA)[14] for their self-customized product, and secondhand-market customers indicate their WTP for a select number of these products. Thus, the experiment enables us to directly test whether secondhand-market customers' WTP is indeed negatively affected by the uniqueness of the focal product. In addition, the consumer-designers' WTA data help 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 secondhand market (secondhand market WTP).

In the subsequent preregistered Study 5, we utilize an incentive-compatible WTA (consumer-designer) and WTP (secondhand 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 allow us to differentiate between self-customized and standard, off-the-shelf sneakers. In addition, we code the uniqueness of the self-customized sneakers 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 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.[15]

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., nonauction 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 (97.5^{th} 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), which 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 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 data set. 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.[16]

Independent variables. We used two focal independent variables for our analysis. First, we created the dummy variable $\text{self-customized}_{ij}$ 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

[14] WTA refers to the "minimum compensation demanded" 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.

[15] 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. Conversely, we also verified that only self-customized sneakers were included in the "By You" sneakers.

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

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 thus 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 thus included five dummy variables (i.e., $men's_{ij}$, $women's_{ij}$, $unisex_{ij}$, $kids'_{ij}$, and $infants'_{ij}$), with the 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., U.S., U.K., 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 thus 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 analysis of variance (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.

$$\begin{aligned}\text{Asking Price}_{ij} = {} & \gamma_{00} + \gamma_{10}\text{Customized}_{ij}\ \text{(Model 1)}/\gamma_{10}\text{Uniqueness}_{ij}\ \text{(Model 2)} \\ & + \gamma_{20-60}\text{Segment Dummies (Men's}_{ij},\ \text{Women's}_{ij},\ \text{Unisex}_{ij},\ \text{Kids'}_{ij}\text{, and Infants'}_{ij}\text{)} \\ & + \gamma_{70}\text{Size}_{ij} + \gamma_{80-110}\text{Condition Dummies (New With Box}_{ij},\ \text{New Without Box}_{ij}, \\ & \quad \text{New With Factory Defects}_{ij}\text{, and New}_{ij}\text{)} \\ & + \gamma_{130}\text{Seller Ratings}_{ij} + \gamma_{140}\text{Percentage Seller Positive Ratings}_{ij} + u_{0j} + \epsilon_{ij}. \end{aligned} \quad (1)$$

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 ($\gamma = -47.97$, $t = -5.96$, $p < .001$). 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.[17] 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 ($\gamma = -4.09$, $t = -2.11$, $p = .05$). 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 (vs. off-the-shelf) sneakers featured *lower* asking prices on the secondhand market. Moreover,

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

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 Secondhand 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,[18] 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,[19] 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).[20] 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 enable us to differentiate between professional and individual sellers; we can thus test whether sellers' expertise affects the focal uniqueness effect. As indicated, while professional car sellers' asking prices appear to be a good proxy for the products' potential value to the secondhand market, the signal sent from individual sellers is less clear a priori.

Methods

Sample. We collected data from more than 500,000 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[21] 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.[22]

Independent variable. The uniqueness of the advertised car's color served as our independent variable. Practitioner literature suggests 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" models, 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 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. Although 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 secondhand 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 thus included 11 dummy variables (i.e., beige_{ij} through 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,

[18] This seems particularly true for the German car market, where, as we have noted, self-customization is omnipresent and where recoloring after purchase is relatively uncommon. Naturally, a common, nonunique color could also have been self-customized. The focal hypothesis, however, is that unique (vs. common) product configurations fare less well on the secondhand market.

[19] 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."

[20] 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."

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

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

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. 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 secondhand-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$_{ij}$). Finally, 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.

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

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*** (162.74)
Car Specifications		
Car color (0, 1)	See Web Appendix B for the full model results.	
Power (horsepower)	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 (kilometers)	−.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 information criterion	10,476,353	10,475,427
Bayesian information criterion	10,476,632	10,475,718

***$p < .001$.

Notes: Values are unstandardized coefficients, with standard errors in parentheses.

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 secondhand market ($\gamma = -572.26$, $t = -6.59$, $p < .001$). 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 ($\gamma = -157.39$, $t = -6.21$, $p < .001$) compared with individual sellers. Second, a car's horsepower is positively related to its asking price ($\gamma = 67.21$, $t = 222.27$, $p < .001$); third, a diesel engine ($\gamma = 738.90$, $t = 33.74$, $p < .001$) or any other type of engine ($\gamma = 3{,}421.62$, $t = 42.29$, $p < .001$) is associated with a higher asking price compared with a car that runs on gasoline; fourth, a manual transmission is associated with a lower asking price compared with an automatic one ($\gamma = -2{,}077.61$, $t = -96.00$, $p < .001$); fifth, mileage (in kilometers) is negatively related to the car's asking price ($\gamma = -.05$, $t = -226.45$, $p < .001$); sixth, the older the car, the lower its asking price ($\gamma = -3.52$, $t = -348.40$, $p < .001$); seventh, we find a significantly positive effect of the car model's median asking price ($\gamma = .88$, $t = 93.38$, $p < .001$).

Color uniqueness × seller type interaction. We next tested for a potential uniqueness × seller type interaction (we did so by appending "$+ \gamma_{190}$ Color Uniqueness$_{ij}$ × Professional Seller$_{ij}$" to Equation 2). We found a significant interaction effect ($\gamma = -4{,}925.07$, $t = -30.26$, $p < .001$; see Table 2). As predicted,

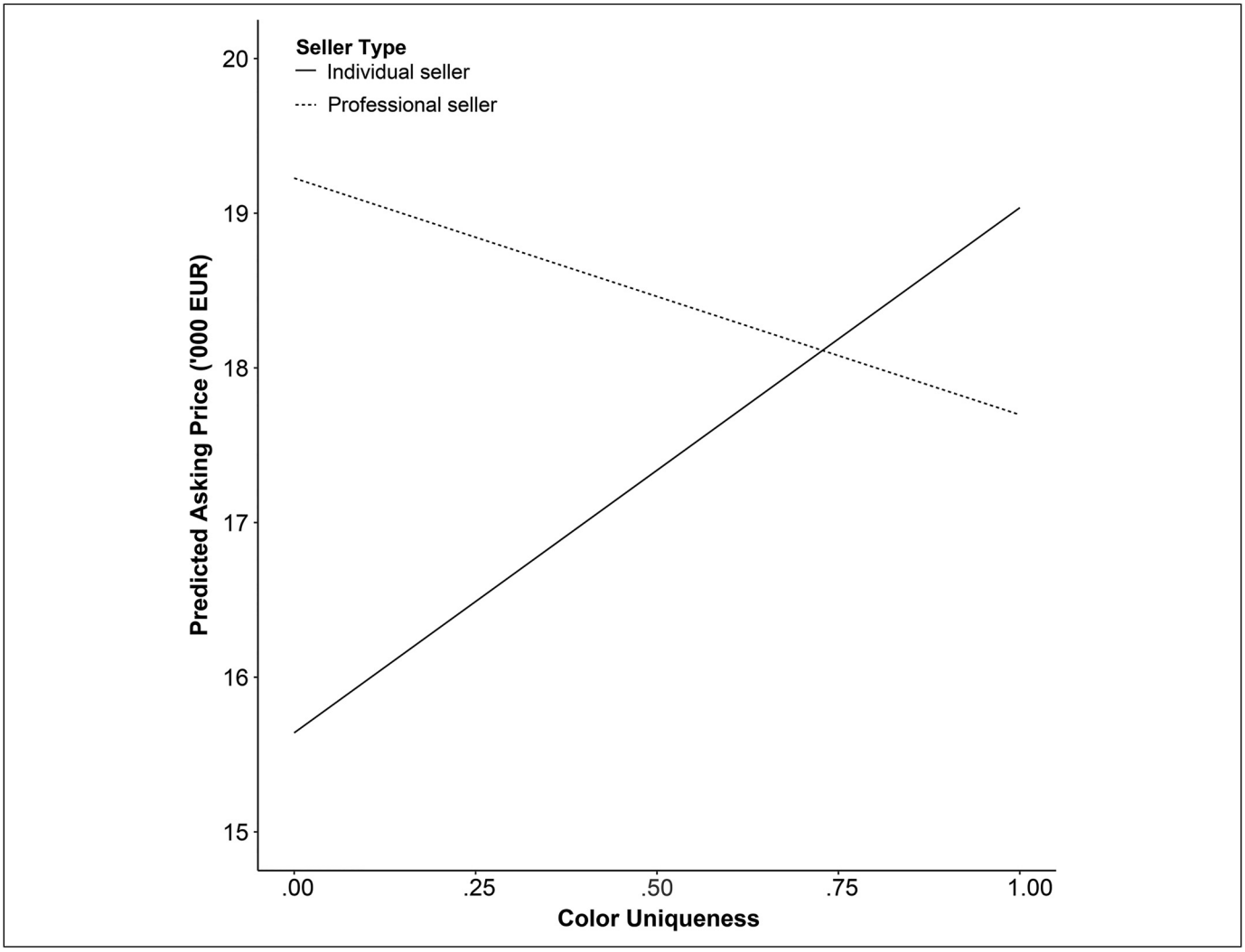

Figure 1. Study 2: The Partial Interaction Effect of Color Uniqueness and Type of Seller on Asking Price.
Notes: On the x-axis, 0 is low color uniqueness and 1 is high color uniqueness. The y-axis origin is 15,000 EUR. Individual seller = 14% of the sample; professional seller = 86% of the sample. We calculated the Johnson–Neyman interval for the focal interaction and found that the slopes were significantly different from each other when color uniqueness was below .72 and above .74, respectively. The mean color uniqueness of the total sample is .77.

when a professional seller listed the car, we found that color uniqueness significantly and substantially *reduced* its asking price ($\gamma = -1{,}530.07$, $t = -16.57$, $p < .001$). However, when an individual seller listed the car, color uniqueness *increased* its asking price ($\gamma = 3{,}395.01$, $t = 21.60$, $p < .001$). 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 secondhand 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.[23] Findings indicate that any related selection concerns are unwarranted in explaining the focal interaction. Second, we replicate robustness checks in similar analyses of the secondhand 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 with 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 secondhand-market customers' WTP.[24] 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 aim 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 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%).[25]

Results and Discussion

We found that the uniqueness of a car's color significantly reduces its actual transaction price ($\gamma = -2{,}427.99$, $t = -2.45$, $p = .01$; see Web Appendix C for the full model results). Thus, Study 3 provides further evidence in support of our uniqueness-hurts-resale hypothesis. Although Studies 1 and 2 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.

[23] 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).

[24] 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 be experts in reselling (custom) Nike sneakers (because they regularly sell other products), there might be individual sneaker sellers with profound market knowledge.

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

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.[26] 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 secondhand 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 and secondhand market WTP. As 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 U.S. consumers ($M_{age} = 36$ years; 59% female; Amazon Mechanical Turk) in exchange for a nominal payment. We opted for this sample size 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," and $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 secondhand 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," and $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" (1 = "Strongly Disagree," and 7 = "Strongly Agree"; $\alpha = .93$; adapted from Franke and Schreier [2008]). Lastly, participants indicated their gender and age.

Secondhand-market customers. To assess the secondhand market appeal of the self-customized products, we recruited an independent sample of 1,230 U.S. 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 subsequently). Participants first indicated their demographic (age, gender) and shoe size. We then matched their revealed gender to the gender of the consumer-designers 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 secondhand market, and asked them to indicate their WTP for each pair.[27] To measure secondhand-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," and $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.

[26] Consistent with our theoretical framework, we ask consumer-designers (vs. potential secondhand-market customers) to assess the uniqueness of their configurations. In a later experiment (Study 6), we ask potential secondhand-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 secondhand market).

[27] Importantly, secondhand-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.

As in the previous studies, we used the MAD method to identify and truncate extreme values (nine 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 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).

Secondhand-market customers. To analyze the data with regard to secondhand-market WTP, we estimated a linear mixed-effects model with secondhand-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 secondhand-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 secondhand-market participant using the

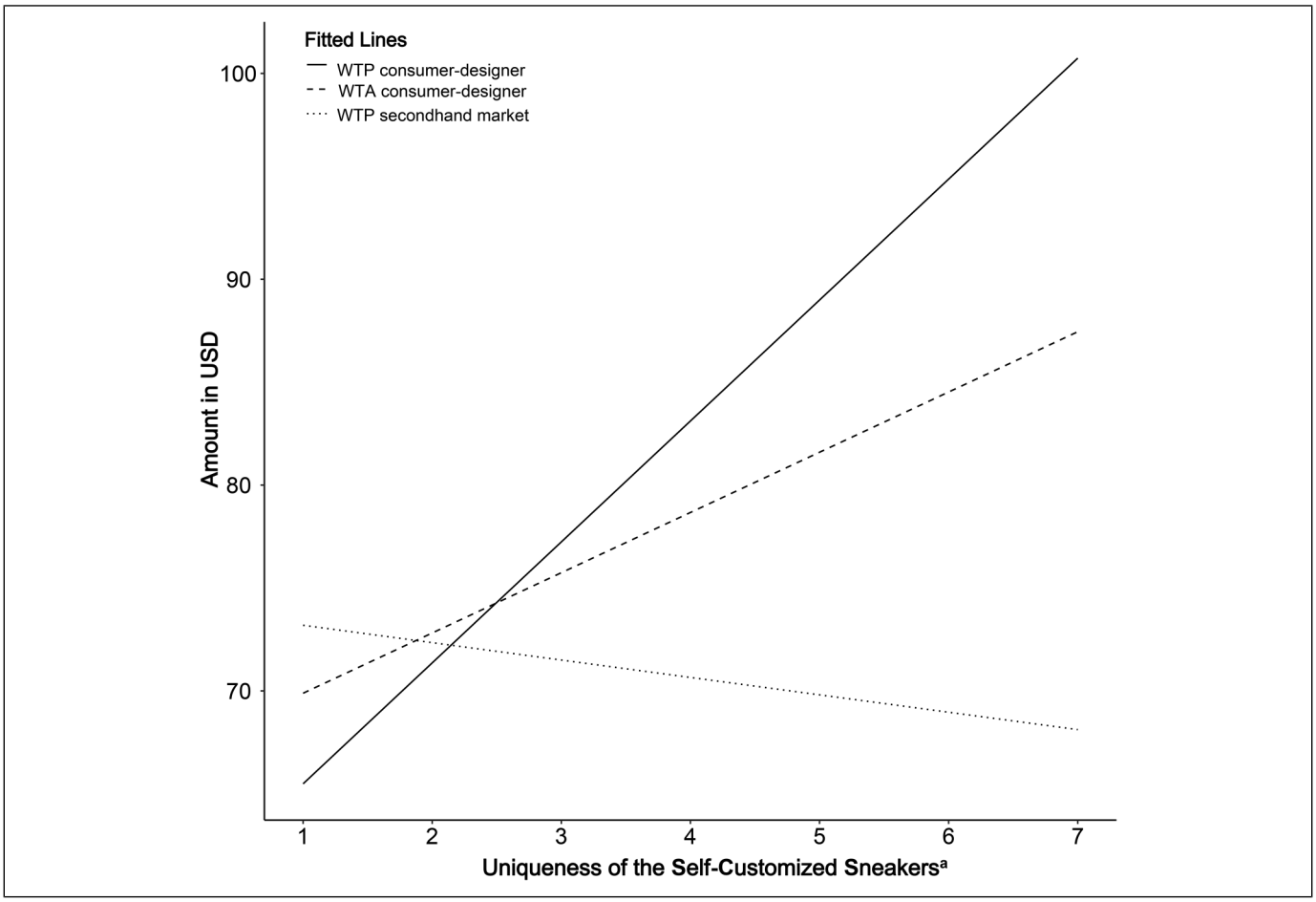

Figure 2. Study 4: The Effect of Uniqueness on Consumer-Designers' WTP and WTA and on Secondhand-Market Customers' WTP.
[a]As indicated by the consumer-designer (1–7).
Notes: The mean uniqueness of the total sample is 4.66.

random effects. The corresponding regression for the secondhand-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.

$$\begin{aligned}\text{Secondhand-Market WTP}_{ij} = {} & \gamma_{00} + \gamma_{01}\text{Uniqueness}_j \\ & + \gamma_{02-05}\text{Configuration Position}_j \\ & + u_{0j} + r_{i0} + \varepsilon_{ij}.\end{aligned} \tag{3}$$

Consistent with our theorizing—and replicating our empirical findings—we found a significantly *negative* relationship between product uniqueness and secondhand-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 secondhand market.

Although implied by the results, we formally tested whether the secondhand-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 secondhand-market WTP), the sneakers' uniqueness, and the respective interaction (treatment condition × 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, secondhand-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 secondhand markets, one might argue that consumer-designers sell only one product. Therefore, we ran an auction simulation in which we randomly ordered the secondhand-market customers and then assigned their bids to the respective sneakers.[28] To elucidate, the first customer in our simulation received their most-liked sneakers (i.e., highest WTP); 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 secondhand-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 secondhand-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—albeit 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 secondhand-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 secondhand 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 (secondhand-market customers; $n = 303$) wave as in Study 4, we added a third wave in which we ask another independent sample of participants (secondhand-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 secondhand-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).[29]

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

[29] 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,

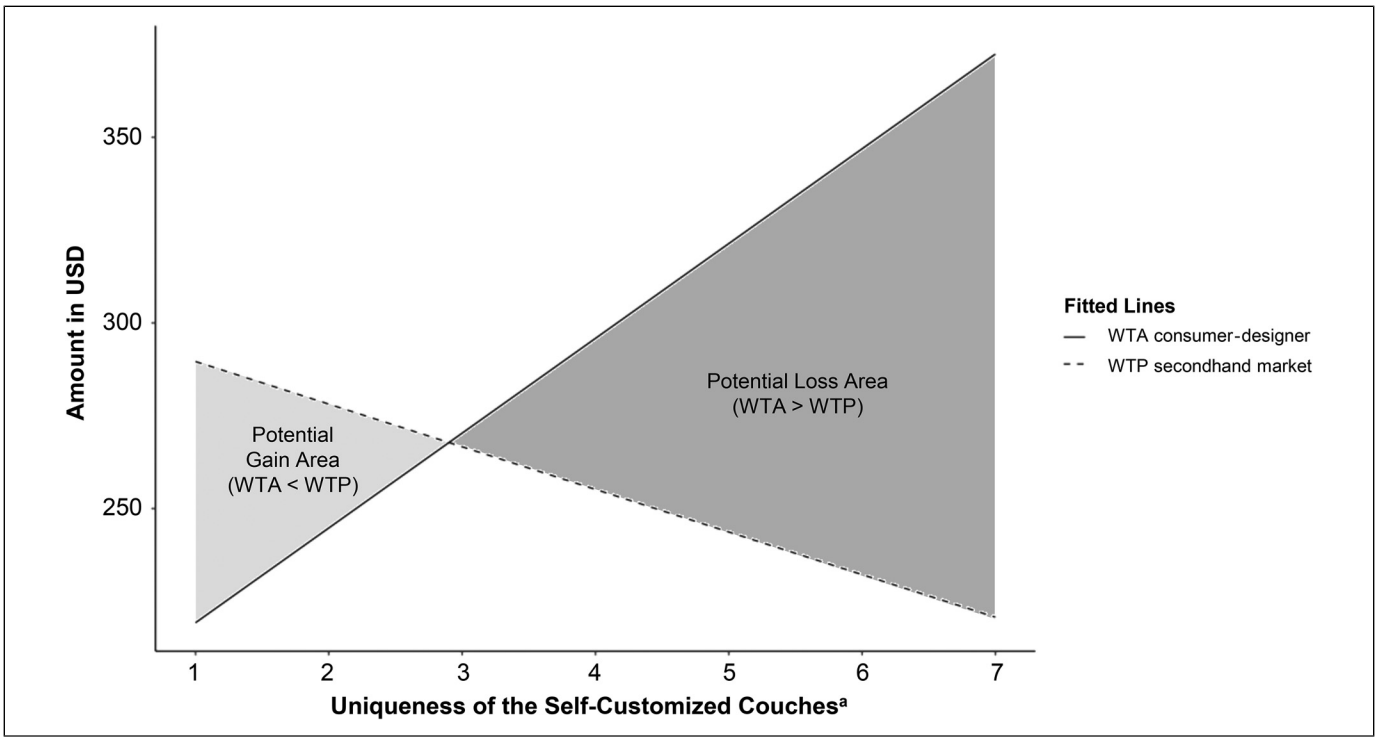

Figure 3. Study 5: The Effect of Uniqueness on Consumer-Designers' WTA and Secondhand-Market Customers' WTP.
[a]As indicated by the consumer-designer (1–7).
Notes: Valuations were captured using an incentive-compatible elicitation method. We calculated the Johnson–Neyman interval for the focal interaction and found that the slopes were significantly different from each other when uniqueness was below 2.58 and above 3.18, respectively. The mean uniqueness of the total sample is 4.88.

Moreover, we measure consumer-designers' WTA and secondhand-market customers' WTP using an incentive-compatible elicitation method (i.e., we employed a dual-lottery Becker–DeGroot–Marschak procedure; e.g., Fuchs, Schreier, and Van Osselaer 2015).[30] 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, our predictions, and our analysis plan were preregistered.[31] Otherwise, the study utilized a similar paradigm as Study 4. Thus, 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

To assess to what extent a given couch design meets secondhand-market customers' taste preferences for Wave 3, we recruited an independent sample of 299 U.S. 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 aimed 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" (1 = "Strongly Disagree," and 7 = "Strongly Agree"; $\alpha = .92$; adapted from Franke, Schreier, and Kaiser [2010] and Randall, Terwiesch, and Ulrich [2007]). Lastly, participants indicated their gender and age.

Results

First, we 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 secondhand-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 ($\gamma = -13.08$, $t = -10.39$, $p < .001$). Thus, replicating Study 4 results using an incentive-compatible

Labroo, and Herrmann (2011) and Boh, Huang, and Wu (2020) for a similar approach.
[30] In contrast to Study 4, we did not measure consumer-designers' WTP in this and the subsequent experiments.
[31] Waves 1 and 2: https://aspredicted.org/vj2gc.pdf; Wave 3: https://aspredicted.org/vw2sb.pdf.

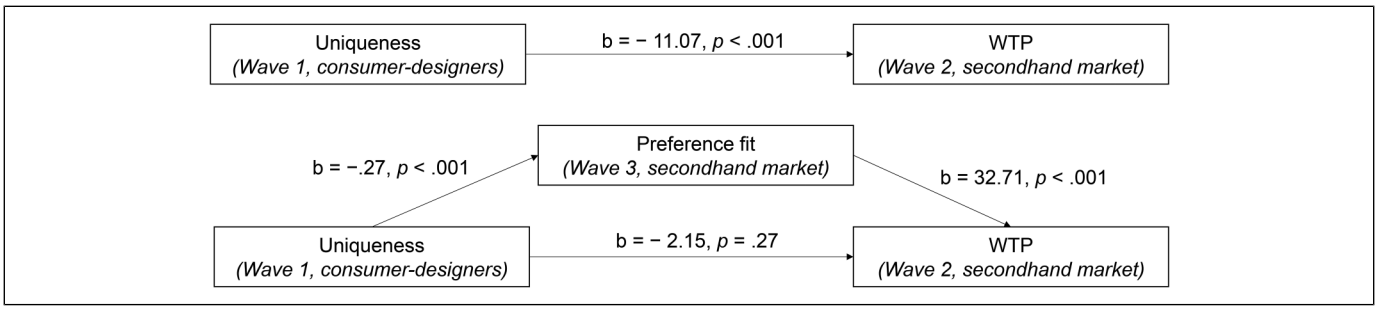

Figure 4. Study 5: The Total, Direct, and Indirect Effects of Uniqueness on Secondhand-Market WTP (via Preference Fit).

WTA/WTP elicitation method, perceived uniqueness *increased* consumer-designers' WTA but *decreased* secondhand-market customers' WTP. Figure 3 displays this relationship and highlights where on the uniqueness continuum consumer-designers' WTA is greater (smaller) than secondhand-market customers' WTP.[32]

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 secondhand-market customers' preference fit assessments ($\gamma = -.29$, $t = -11.23$, $p < .001$). To test for mediation, we averaged all secondhand-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 secondhand-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 became 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 whereas perceived uniqueness *increases* consumer-designers' WTA, it *decreases* secondhand-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 secondhand market.

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 secondhand-market customers. Both parts of the study were preregistered.[33] The central prediction is that self-customized products in the "unique design" (vs. "common design") condition will result in lower WTP among secondhand-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: "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 ($1,501 = "I'm not willing to sell the couch"). Participants were further asked to assess the uniqueness of their creations in the same way as before ($\alpha = .88$).

[32] 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 ($\gamma = -1.38$, $z = -369.67$, $p < .001$). Uniqueness was also related to lower bids ($\gamma = -36.36$, $t = -693.42$, $p < .001$) and lower "transaction prices" ($\gamma = -45.37$, $t = -684.67$, $p < .001$).

[33] Consumer-designers: https://aspredicted.org/r2d4b.pdf; secondhand-market customers: https://aspredicted.org/jg3rb.pdf.

Secondhand-market customers. To assess the secondhand market appeal of the self-customized products, we recruited an independent sample of 300 U.S. consumers ($M_{age} = 25$ years; 86% female; Prolific) in exchange for a nominal payment (the rationale underlying the chosen sample size is explained subsequently). Specifically, each respondent was asked to evaluate ten self-customized couches supposedly for sale on the secondhand 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," and $1,501 = "More than 1,500 US $").

The ten presented designs consisted of 2 × 5 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 secondhand market WTP data points. That is to say (and parallel to the previous studies), we aimed to collect at least ten data points for each self-customized couch, to obtain a valid secondhand 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 with 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, thus compensating for the loss of perceived uniqueness.

We then analyzed the secondhand-market data in a similar way as before (i.e., we estimated a linear mixed-effects model). As predicted, secondhand-market customers' WTP was significantly higher for couches created by consumer-designers in the "common design" ($\hat{M} = 495.36$, $SE = 18.19$) versus "unique design" ($\hat{M} = 452.42$, $SE = 18.29$, $\gamma = -42.94$, $t = -4.04$, $p < .001$) condition. Thus, inviting consumer-designers to create a common design to their liking during self-customization increased secondhand-market WTP for their creations by 9% or $42.94 (see Figure 5). Furthermore, if we interpret secondhand-market customers" highest WTP as an indication of the couch they would most like to purchase, they chose a "common design" ($\chi^2(1, 300) = 7.05$, $p < .01$) significantly more often.[34]

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 secondhand market. Interestingly, consumer-designers in both conditions set their WTA equally high. In summary, what they perceive as unique is actually detrimental to the secondhand 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 secondhand market. Our findings offer several 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 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 24% 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 with the average price of a used car in Germany—and these figures do not even account for

[34] 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 ($\gamma_{unique\ design} = -1.20$, $z = -125.65$, $p < .001$). Couches designed in the "common design" (vs. "unique design") condition also received higher bids, on average (+$85 on average, $\gamma_{unique\ design} = -85.21$, $t = -212.40$, $p < .001$) and higher "transaction prices" ($\gamma_{unique\ design} = -44.87$, $t = -102.58$, $p < .001$).

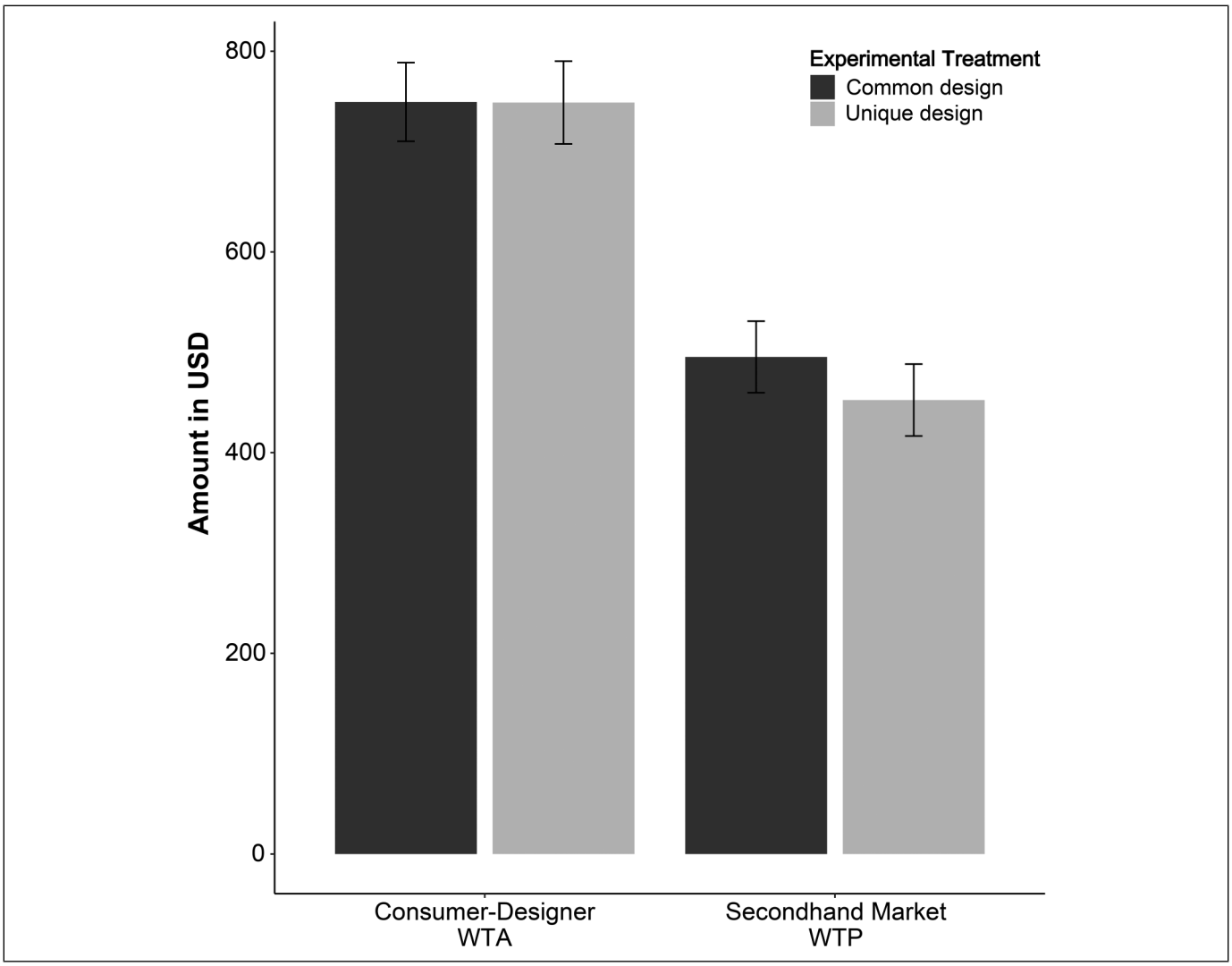

Figure 5. Study 6: Consumer-Designers' Estimated WTA and Secondhand-Market Customers' Estimated WTP as a Function of "Common Design" Versus "Unique Design" Focus Among Consumer-Designers.
Notes: Error bars represent the 95% confidence interval of the estimated mean.

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 secondhand market is an important goal for consumers during the resale stage.[35] 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.[36] 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 secondhand-market 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 secondhand 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 secondhand-market customers compared with an "express uniqueness" condition, the default framing of self-customization in practice. Interestingly, and not unlike our

[35] 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."

[36] 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."

Study 6 findings, we find that consumer-designers' 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 coproducers of goods for the secondhand market (Dellaert 2019).

For example, IKEA has started to buy back used furniture from its customers for resale in its stores.[37] 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 (Duprey 2020). Lastly, Nike offers a 60-day return policy on all self-customized sneakers.[38] 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 secondhand market.[39] These considerations, of course, need to be juxtaposed with the benefits that arise from catering to consumer-designers' 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: whereas consumer-designers ask for higher prices as the uniqueness of their self-customized products increases, the opposite applies to secondhand-market customers (i.e., their WTP decreases as a function of uniqueness). 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. We found a similar pattern of effects in our experiments: Whereas consumer-designers' valuation (WTP and WTA, respectively) resembled individual sellers' asking prices (positive effect of uniqueness), secondhand-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 seems possible that individual sellers in this case are more expert and thus better able to anticipate the products' attractiveness to the secondhand 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 aimed 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 secondhand 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 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 secondhand 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

[37] 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 (accessed September 6, 2021).

[38] https://www.nike.com/help/a/nike-by-you-return (accessed October 1, 2021).

[39] 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.

change, however, when the spotlight shifts toward functional design aspects, which might be considered a matter of quality and thus a form of vertical differentiation? 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"[40] 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 also consider "power uniqueness" (i.e., the uniqueness of the number of horsepower of a given car relative to 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 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 secondhand-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 secondhand-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 secondhand 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) suggests 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 secondhand-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 secondhand 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 secondhand 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 secondhand 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 secondhand 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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[40] 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.

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