# Personalizing the Customization Experience:

# A Matching Theory of Mass Customization Interfaces and Cultural Information Processing

Emanuel de Bellis

Christian Hildebrand

Kenichi Ito

Andreas Herrmann

Bernd Schmitt

Emanuel de Bellis is Assistant Professor of Marketing, Institute for Customer Insight, University of St. Gallen (email: emanuel.debellis@unisg.ch). Christian Hildebrand is Professor of Marketing Analytics, Institute of Marketing, University of St. Gallen (email: christian.hildebrand@unisg.ch). Kenichi Ito is Assistant Professor of Psychology, School of Social Sciences, Nanyang Technological University (email: kito@ntu.edu.sg). Andreas Herrmann is Professor of Marketing, Institute for Customer Insight, University of St. Gallen (email: andreas.herrmann@unisg.ch). Bernd Schmitt is Robert D. Calkins Professor of International Business, Marketing Division, Columbia Business School (email: bhs1@gsb.columbia.edu).

Acknowledgments:

The authors thank the *JMR* review team for their feedback throughout the review process, Laura Graf, Liman Man Wai Li, and Tobias Schlager for their comments on an earlier version of the manuscript, and the car manufacturer for providing the field data.

*ABSTRACT*

Mass customization interfaces typically guide consumers through the configuration process in a sequential manner, focusing on one product attribute after the other. What if this standardized customization experience was in fact personalized for consumers based on how they process information? A series of large-scale field and experimental studies, conducted with Western and Asian consumers, shows that matching the interface to consumers' culture-specific processing style enhances the effectiveness of mass customization. Specifically, presenting the same information isolated (by-attribute) to Western consumers but contextualized (by-alternative) to Asian consumers increases satisfaction with and likelihood to purchase the configured product, along with the amount of money spent on the product. These positive consumer responses emerge because of an increase in "interface fluency"—consumers' subjective experience of ease when using the interface. The authors advise firms to personalize the customization experience by employing "processing-congruent interfaces" across consumer markets.

*Keywords:* mass customization, analytic processing, holistic processing, personalization, fluency, cross-cultural marketing, user interface, choice architecture, field experiment

Firms have praised mass customization (MC) as a panacea for competitive market pressures, shrinking profit margins, and diluted selling propositions. Indeed, enabling consumers to tailor products to their specific needs can yield numerous benefits for consumers and firms, including greater product satisfaction and higher purchase likelihood (Kaiser, Schreier, and Janiszewski 2017; Moreau and Herd 2010; Valenzuela, Dhar, and Zettelmeyer 2009). Not surprisingly, customizing products based on a menu of options has become a global trend (Economist Intelligence Unit 2016).

To leverage this trend efficiently, many companies have implemented identical MC interfaces around the globe. For example, the country-specific websites of car manufacturer Audi pursue the same configuration process across Europe, North America, and Asia. Prospective car buyers must first select a car model and then choose among a range of paints, followed by their preferred wheels, several interior features, and add-on options. The piecemeal presentation of product attributes, one at a time, naturally shifts consumers' focus from the overall product to individual attributes. Originally developed in the West, this by-attribute interface is widespread across markets and industries, including food (e.g., Subway), apparel (e.g., Nike ID), and consumer electronics (e.g., Lenovo; see configurator-database.com).

We argue that the current approach to MC is suboptimal. Whereas by-attribute interfaces correspond to the processing style of Western consumers who process information in an isolated and more analytic way, these interfaces are at odds with the processing style of Asian consumers who process information in a contextualized and more holistic way (Nisbett and Masuda 2003). We draw from cross-cultural research on information processing (Nisbett et al. 2001), consumer research on matching and persuasion (Thompson and Hamilton 2006), and research on human-computer interaction (Salonen and Karjaluoto 2016) to argue that matching the MC interface to

consumers' culture-specific processing style—that is, a "processing-congruent interface"—is more effective.

A series of six studies shows that processing-congruent interfaces lead to a greater subjective experience of ease when using the interface, which in turn generates positive consumer responses such as enhanced product satisfaction and higher purchase likelihood. We demonstrate the practical relevance of these effects in large-scale field studies yielding increased conversion and more money spent. The findings integrate two central one-to-one marketing concepts—customization and personalization—that both foster tailor-made consumption. We advise firms to personalize the customization experience by employing processing-congruent interfaces across markets.

## *THEORETICAL BACKGROUND*

### *Two Types of Mass Customization*

Mass customization can occur in two ways: by attribute and by alternative. The by-attribute interface employs a sequential configuration process whereby consumers choose each product attribute individually (Hildebrand, Häubl, and Herrmann 2014). Car manufacturer Ford, for example, offers a range of attributes on its U.S. website, including type of paint, engine, transmission, wheels, tires, exterior options (e.g., sensing system), and an additional six interior attributes and accessories. Prospective car buyers decide on their preferred option among each of these attributes, one after another, before the system assembles the fully configured car in a bottom-up process. Similarly, apparel manufacturer Nike lets consumers self-design their own shoes by sequentially selecting their preferred color, sole, and lace, and chocolatier Lindt even introduced custom-made chocolate by having consumers select their type of chocolate,

ingredients, and packaging. By-attribute interfaces are the predominant type of MC (Valenzuela et al. 2009; see also configurator-database.com) for two important reasons. First, the sequential configuration process focusing on individual attributes relates well to intuitive marketing thinking as well as formalized marketing models, such as attribute and benefit segmentation, conjoint analysis, and choice models (Botschen, Thelen, and Pieters 1999; Dellaert et al. 2001; Inman, Park, and Sinha 2008). Second, by-attribute interfaces mimic the inherent production sequence of mass-customized products—a bottom-up assembly of individual components (Fogliatto, da Silveira, and Borenstein 2012).

By contrast, the by-alternative interface employs a top-down process. Rather than making a series of sequential within-attribute trade-offs, consumers customize by selecting their preferred product from a set of fully assembled alternatives (Broniarczyk and Griffin 2014; Huffman and Kahn 1998; Valenzuela et al. 2009). Car manufacturer Volkswagen, for example, presents pre-specified cars to its U.S. customers, with up to several hundred different alternatives available for the Golf model. Similarly, technology company HP Inc. offers its U.S. customers a wide range of pre-specified business laptops consisting of six main attributes (system software, processor, screen size, memory and hard drive, graphics card, and warranty), with some alternatives differing by only one attribute. By-alternative interfaces are a "naive method of customization" (Valenzuela et al. 2009, p. 755) because they may offer the complete set of attributes and options with all possible attribute combinations.

Importantly, the two types of MC interfaces impose different processing demands on consumers. When using the by-attribute interface, consumers must sequentially focus on each respective attribute (e.g., car paint), with the aim of choosing the option that best fits their preferences (e.g., silver). By contrast, the by-alternative interface requires one large, non-

compensatory choice while emphasizing the overall product (including all pre-specified attributes; e.g., a silver Ford Focus with aluminum wheels and leather-trimmed sport seats). Because of these different processing demands, we expect that by-attribute (vs. by-alternative) interfaces are better suited for consumers with a more analytic (vs. holistic) processing style.

*Cultural Information Processing*

Research in cross-cultural psychology has shown that individuals engage either in holistic or analytic styles of information processing depending on their cultural background (Choi, Koo, and Choi 2007). As such, individuals focus their attention either on the relationship among information or objects (holistic processing) or on individual pieces of information or objects (analytic processing; see also Choi et al.'s dimension "locus of attention"). Individuals from Eastern cultures (i.e., East, Southeast, and South Asians) tend to process information holistically, combining salient information with contextual information, because they consider all objects in the environment to be equally important and inherently connected (Nisbett et al. 2001; Nisbett and Masuda 2003). By contrast, individuals from Western cultures (i.e., Europeans and North Americans) tend to focus on salient information, without weighing contextual or peripheral information as heavily. They process information analytically because they believe that objects in the environment possess unique, independent attributes (Nisbett and Masuda 2003). These cultural differences have been traced back to people's religious practices (Colzato et al. 2010) and their livelihoods (Varnum et al. 2010), and are robust across a wide range of samples using Eastern and Western participants (Morling and Masuda 2012).

The distinct characteristics of holistic versus analytic processing between the East and West have been shown to affect consumer judgments (Lalwani and Shavitt 2013), memory (Masuda and Nisbett 2001), categorization (Ji, Zhang, and Nisbett 2004), and even brain activity

(Goh et al. 2007). These differences also manifest themselves in consumer preferences for specific advertising content. In a study on ad effectiveness, 77% of Chinese ads, but only 53% of U.S. ads, contained contextual information, such as the social setting where a product is typically consumed (Liang, Runyan, and Fu 2011). An analysis of websites showed that Eastern websites tend to be more information-rich and longer as they include more words and links than their Western counterparts (Wang et al. 2012). Eastern (vs. Western) consumers are also less likely to invoke compensatory decision processes, which require an assessment of trade-offs among attributes (Chu, Spires, and Sueyoshi 1999). Finally, Eastern consumers tend to rely more on intuitive decision strategies in deductive reasoning situations and categorization tasks than Western consumers who rely more on formal decision strategies (Norenzayan et al. 2002).

*A Matching Theory of Mass Customization Interfaces and Cultural Information Processing*

Consumer research has shown that matching a stimulus to consumer characteristics can lead to enhanced persuasion. For example, messages or products that match consumers' self-schemata, such as highlighting a product's social benefits for extroverts or a product's detailed features for those high in need for cognition, are viewed more favorably (Wheeler, Petty, and Bizer 2005). Moreover, matching an ad format to consumers' mode of information processing made ads more persuasive (Thompson and Hamilton 2006). Specifically, comparative (vs. non-comparative) ads that presented explicit comparisons between two or more brands were more effective when consumers used analytical (vs. imagery) processing. Further support for the effects of matching on persuasion comes from social psychology: Matching source or message features with individuals' tendency to monitor their self-presentations (DeBono and Harnish 1988; Lavine and Snyder 1996) or their situational regulatory focus can lead to greater persuasion effectiveness (Cesario, Grant, and Higgins 2004).

Whereas the discussed work focuses on matching messages and consumer characteristics, research in human-computer interaction suggests that tailoring information systems to consumer characteristics can produce beneficial effects as well (Salonen and Karjaluoto 2016). Adapting interfaces to users or their context—such as their cultural background—has been shown to increase user satisfaction (Herington and Weaven 2009) and to generally improve the user experience (Reinecke and Bernstein 2013). These findings mirror related work in marketing showing an increase in sales when website content was adjusted to a user's cognitive style (e.g., impulsive vs. deliberative) based on clickstream data (Hauser et al. 2009).

Based on the reviewed research on cultural information processing, matching and persuasion, and human-computer interaction we expect beneficial outcomes when matching the MC interface to consumers' culture-specific processing style (i.e., by-alternative in the East and by-attribute in the West). Specifically, we hypothesize that processing-congruent (vs. incongruent) interfaces generate more positive consumer responses toward the configured product in terms of conversion, product satisfaction, purchase likelihood, and money spent.

Why should matching an MC interface to consumers' culture-specific processing style evoke more positive consumer responses? A mechanism intimately related to the experience of matching is the notion of processing fluency, that is, the ease with which individuals process information (Alter and Oppenheimer 2008; Schwarz 2004). For example, research on stimulus integration in visual perception suggests that matching pictorial and textual elements of a web design causes greater perceptions of processing fluency (van Rompay, de Vries, and van Venrooij 2010). Similar effects occurred by matching the abstractness of a political message with its temporal distance (Kim, Rao, and Lee 2009), matching prior knowledge with the presentation of product information (Hong and Sternthal 2010), matching scents with product offerings

(Herrmann et al. 2013), and matching firms with a cause in the context of cause-related marketing (Kuo and Rice 2015). In fact, matching represents the most frequently used means to manipulate processing fluency (Graf, Mayer, and Landwehr 2018).

Most importantly, initial evidence suggests that processing fluency effects may also arise when matching a stimulus to distinct consumer characteristics. For example, appeals (gain vs. loss frames) and construal levels (high vs. low) that are compatible with a momentary regulatory focus (promotion vs. prevention) lead to greater processing fluency, which triggers a "feeling right" experience (Lee and Aaker 2004). Ads that match consumers' processing mode (imagery vs. analytical) are more effective because of a shift in "information processability" (Thompson and Hamilton 2006). Increased processing fluency, in turn, has been shown to drive a series of positive consumer responses, from greater aesthetic interest and higher valuation judgments to more money spent while shopping (Alter and Oppenheimer 2008; Graf and Landwehr 2015; Herrmann et al. 2013).

In an MC context, matching the interface to consumers' culture-specific processing style should lead to a subjective experience of ease when using the interface. We coin this construct "interface fluency" to highlight that the interface, instead of the product or its properties, drives the experience of ease. We hypothesize that processing-congruent (vs. incongruent) interfaces lead to greater interface fluency, which in turn causes more positive consumer responses toward the configured product.

In what follows, we present five experiments that test the proposed matching theory of MC interfaces and cultural information processing along with the underlying process of interface fluency, while addressing alternative explanations and examining boundary conditions. We begin

with a short field demonstration to illustrate the business drawback of processing-*incongruent* interfaces.

## *PILOT STUDY*

We conducted a large-scale pilot study in cooperation with a European car manufacturer offering exclusively a by-attribute interface (i.e., the predominantly used MC interface across industries and markets) to prospective car buyers worldwide. The dataset comprised 31,830,440 unique page visitors who configured their car using the company's online MC interface. We analyzed data over a four-year time span (from January 1, 2013 to December 31, 2016) across the largest economies in Europe and North America (Germany, the U.K., France, Italy, Canada, Spain, the Netherlands, Switzerland, Sweden, and Poland; data were not available for the U.S.) and East, Southeast, and South Asia (China, Japan, India, South Korea, Taiwan, Hong Kong, and Singapore). Note that Asian markets loom large in the automotive industry, with China being the world's largest automotive market and the company's largest sales market. The key dependent variable was prospective customers' conversion rate, defined as a completed car configuration (out of all configurations started) until the generation of an electronic ID, which is used at car dealerships where the automobile is purchased.

Results showed that conversion was substantially smaller in Asia. Specifically, conversion rates in Eastern markets were less than half compared to those in Western markets ($M_{East}$ = 3.11%, $M_{West}$ = 6.62%; $t(15) = 3.20$, $p = .006$), an effect that was robust when using a non-parametric test (Mann-Whitney $U = 6$, $p = .003$). In fact, the seven most effective markets in terms of the highest conversion rates were exclusively Western markets whereas four Eastern markets produced the lowest conversion rates (see Figure 1). Comparing two markets in which

the company launched its MC interface simultaneously and relatively recently (South Korea and Poland) confirmed that conversion rates were significantly lower in the East relative to the West ($M_{East}$ = 2.30%, $M_{West}$ = 5.91%; $\chi^2$ = 3555.5, $p < .001$). We conducted further robustness checks involving secondary data on economic status (operationalized by GDP per capita), car ownership (motor vehicles per 1,000 inhabitants), and interface familiarity (when the interface was launched). A linear model revealed that market (0 = West, 1 = East) was a significant predictor of conversion rates (b = −.06, SE = .02, t = 2.76, $p$ = .02), even after controlling for economic status (b = .00, SE = .00, t = .86, $p$ = .41), car ownership (b = −.00, SE = .00, t = 1.34, $p$ = .21), and interface familiarity (b = −.00, SE = .00, t = .90, $p$ = .38).

--- Insert Figure 1 about here ---

These findings indicate the direction and magnitude of the detrimental effects of processing-incongruent interfaces based on a large-scale dataset of 30 million prospective car buyers across 17 markets. However, the pilot study was correlational in nature and the data were available only at the aggregate level. Moreover, we could only partially test our hypotheses as the company follows the global default of employing exclusively by-attribute interfaces across markets. We thus conducted a series of cross-cultural experiments to test our theory along with the proposed psychological process and boundary conditions.

## *OVERVIEW OF EXPERIMENTS*

Experiment 1 tests whether processing-congruent interfaces (by-alternative in the East and by-attribute in the West) increase consumers' satisfaction with the configured product relative to processing-incongruent interfaces (by-attribute in the East and by-alternative in the

West). Experiment 2 examines the psychological process underlying the effect of processing-congruent interfaces and provides evidence for the mediating role of interface fluency. Experiment 3 directly manipulates interface fluency and tests whether the effect prevails when interface fluency is experimentally reduced. Experiment 4 explores the effect in a natural setting with a real-world behavioral measure. Finally, Experiment 5 examines whether processing-congruent interfaces generate greater conversion based on a large-scale field experiment.

In comparing Eastern and Western consumers, we draw on Singaporean and German samples (Experiments 1 and 2), Indian and U.S. samples (Experiment 3), and multiple Eastern and Western samples (Experiments 4 and 5). We test our theorizing across a broad range of samples (from car buyers and international visitors to Facebook users) and product domains (custom-made cars, chocolate, and headphones). We also employ different study designs (large-scale field studies, field experiments, and tightly controlled experiments) and types of variables (self-reported and real-world behavioral measures), and address various alternative explanations (such as interface familiarity and brand trust). Table 1 provides a summary of employed methods and results. Web Appendix A provides details on sample characteristics.

--- Insert Table 1 about here ---

## *EXPERIMENT 1*

### *Method*

*Participants.* In collaboration with market research agencies in Singapore and Germany, we recruited 180 prospective car buyers ($M_{age}$ = 37; 50% females) to participate in this study for monetary compensation. Five participants were excluded from further analyses due to missing

data. All participants of the Eastern sample lived in an Eastern country, and all participants of the Western sample lived in a Western country, for at least the previous five years.

*Design and procedure.* To test our hypotheses, we employed a 2 (type of interface: by-attribute vs. by-alternative) × 2 (market: East vs. West) between-subjects design. Participants first completed a "perception task," which allowed us to examine their processing style using a Kimchi similarity task (see Measures section for details). Next, participants were randomly assigned to either the by-attribute ($N_{East}$ = 38, $N_{West}$ = 43) or the by-alternative condition ($N_{East}$ = 47, $N_{West}$ = 47) and given the opportunity to configure their own car by means of an MC interface that controls for the overall number of attribute combinations (i.e., we kept the attribute space constant; see Web Appendix B). Participants in both conditions could configure the exact same car; the only difference is whether they chose among attributes sequentially or from pre-specified alternatives simultaneously (Valenzuela et al. 2009). In the by-attribute condition, participants configured their car by selecting an option (e.g., black) for each of three attributes (e.g., paint). In the by-alternative condition, participants configured their car by means of twelve pre-specified alternatives. We presented all alternatives in a fixed order to avoid any inadvertent effects of a randomized product display on consumers' experience of fluency (Deng et al. 2016). After the car configuration and before completing consumer demographics, participants responded to scales assessing their product satisfaction and domain knowledge.

*Measures.* We used a Kimchi similarity task (Kimchi and Palmer 1982), a well-established behavioral measure, to assess consumers' processing style. In this task, participants decide repeatedly which of two objects (e.g., a square made of triangles and a triangle made of squares) are more similar to a target object (e.g., a triangle made of triangles). This procedure was used to compute an individual-level score of participants' holistic (vs. analytic) processing

style, with higher scores indicating more holistic processing (M = 4.36, SD = 1.85, min = 0, max = 6). Consumers' satisfaction with their configured product was measured with four items ("All in all, I am satisfied with my choice of car," "The choice of my car corresponds to what I want," "If I had to decide among the same alternatives once again, I would decide the same way," and "I feel good about having made that decision") on 7-point Likert scales (α = .89; Hildebrand et al. 2014). Consumers' knowledge in the domain of cars was measured using Chang's (2004) four-item scale (α = .85).

*Results*

*Manipulation check and preliminary analyses.* In line with prior research, we found that Eastern consumers processed information more holistically than Western consumers ($M_{East}$ = 4.82, $M_{West}$ = 3.92; t(173) = 3.32, $p$ = .001), as indicated by the Kimchi similarity task. Note that consumers from both markets score above the midpoint of the scale, in line with Navon's (1977) finding that holistic (vs. analytic) aspects of a scene are processed more rapidly. Furthermore, Eastern and Western consumers did not differ in terms of their domain knowledge ($M_{East}$ = 4.29, $M_{West}$ = 4.05; t(173) = 1.24, $p$ = .22). To analyze the focal effects, we used both standardized (within-culture) and non-standardized measures. As the results did not differ between the two methods, we will report non-standardized effects throughout our studies. To assess measurement invariance, we computed a multisample confirmatory factor analysis (Steenkamp and Baumgartner 1998) using the lavaan package in R (Rosseel 2012). The results confirmed full configural, metric, and scalar invariance as indicated by different fit indices (all $\chi^2$ $p$ > .14; all ΔCFI < .005; all RMSEA < .063).

*Main analyses.* In line with our theorizing, prospective car buyers were more satisfied with their configured car when exposed to a processing-congruent (vs. incongruent) interface. A

two-way ANOVA with product satisfaction as dependent variable and interface type and market as factors yielded the predicted interaction of the two factors ($F(1, 171) = 9.41$, $p = .003$). Planned contrasts confirmed that Eastern consumers were more satisfied when using the by-alternative interface ($M_{attrib} = 4.10$, $M_{altern} = 4.53$; $F(1, 171) = 4.53$, $p = .03$), whereas Western consumers were more satisfied when using the by-attribute interface ($M_{attrib} = 4.52$, $M_{altern} = 4.07$; $F(1, 171) = 5.03$, $p = .03$; see Figure 2). We found no significant main effect of interface type ($F(1, 171) = .02$, $p = .89$) and market ($F(1, 171) = .15$, $p = .70$). Estimating an ANCOVA with the same variables but controlling for domain knowledge also produced the predicted interaction of interface type and market ($F(1, 170) = 8.22$, $p = .005$).

--- Insert Figure 2 about here ---

*Posttest*

In Experiment 1, we measured processing styles prior to the experimental manipulation and thus before consumers configured their car. In light of research arguing that situational variables can trigger and change predominant processing styles (Monga and Williams 2016), we conducted a posttest to examine whether using either of the two MC interfaces may have induced a specific processing style. We employed the same study design as well as the same population ($N_{East} = 75$, $N_{West} = 75$; $M_{age} = 37$; 54% females) as in the main study but measured consumers' processing style *after* they configured their car. A two-way ANOVA with processing style as dependent variable and interface type and market as factors revealed the expected effect for market that is consistent with the manipulation check of the main study ($F(1, 146) = 10.74$, $p = .001$). Importantly, we found neither a significant main effect of interface type ($F(1, 146) = .53$, $p = .47$) nor a significant interaction of the two factors ($M_{East,attrib} = 4.81$, $M_{East,altern} = 4.92$,

$M_{West,attrib}$ = 4.18, $M_{West,altern}$ = 3.62; F(1, 146) = 1.31, $p$ = .25). These results suggest that the type of MC interface does not inadvertently affect consumers' processing style.

*Discussion*

Experiment 1 corroborates the pilot study's findings that conventional by-attribute interfaces have detrimental effects for Eastern consumers whereas by-alternative interfaces have detrimental effects for Western consumers. In other words, prospective car buyers were more satisfied when exposed to a processing-congruent (vs. incongruent) interface, even when accounting for consumers' varying domain knowledge (Hong and Sternthal 2010).

## *EXPERIMENT 2*

This study tests the proposed psychological process via interface fluency and explores the robustness of our findings across individual- and market-level differences in interface familiarity. Thus, Experiment 2 examines whether the observed effects are simply a function of consumers' increased exposure to by-attribute (in the West) and by-alternative interfaces (in the East).

*Method*

*Participants.* As in Experiment 1, we recruited prospective car buyers (N = 181; $M_{age}$ = 44; 50% females) in Singapore and Germany through local market research agencies. All participants of the Eastern (Western) sample lived in an Eastern (Western) country for at least the previous five years.

*Design and procedure.* Mirroring the design of Experiment 1, we employed a 2 (type of interface: by-attribute vs. by-alternative) × 2 (market: East vs. West) between-subjects design. Participants completed the Kimchi similarity task and were randomly assigned to either the by-

attribute ($N_{East}$ = 45, $N_{West}$ = 48) or the by-alternative condition ($N_{East}$ = 42, $N_{West}$ = 6) to configure their preferred car via Experiment 1's MC interface. Immediately after the car configuration, we measured participants' interface fluency, product satisfaction, interface familiarity, and consumer demographics. By measuring product satisfaction directly after the manipulation (Experiment 1) as well as after interface fluency (Experiment 2), we obtain an unbiased measure of both the mediator and the key dependent variable across studies.

*Measures.* We assessed consumers' interface fluency with three items on a 7-point scale ("How have you experienced the interface?" with the endpoints "difficult to process" vs. "easy to process," "difficult to understand" vs. "easy to understand," and "difficult to comprehend" vs. "easy to comprehend"; α = .92; Labroo, Dhar, and Schwarz 2008; White and Peloza 2009). Familiarity with the interface was measured using a single item ("How familiar was the interface to you?") on a 7-point scale, ranging from 1 = "unfamiliar" to 7 = "familiar". Finally, we assessed consumers' product satisfaction (α = .85) and their processing style (M = 4.04, SD = 2.10, min = 0, max = 6) as in Experiment 1.

*Results*

*Manipulation check and preliminary analyses.* As expected, we found that Eastern consumers processed information more holistically relative to Western consumers ($M_{East}$ = 4.43, $M_{West}$ = 3.87; t(179) = 1.81, $p$ = .04). Consistent with the results of the pilot study, we did not find systematic differences regarding Eastern and Western consumers' familiarity with by-attribute versus by-alternative interfaces. A two-way ANOVA with interface type and market as factors produced a significant main effect of market (F(1, 177) = 17.16, $p$ < .001), no significant main effect of interface type (F(1, 177) = .05, $p$ = .83), and, most importantly, no significant interaction of the two factors (F(1, 177) = 2.02, $p$ = .16). Planned contrasts confirmed that the

two interface types were perceived as similarly familiar in the East ($M_{attrib}$ = 4.47, $M_{altern}$ = 4.81; F(1, 177) = 1.59, $p$ = .21) and West ($M_{attrib}$ = 5.58, $M_{altern}$ = 5.35; F(1, 177) = .82, $p$ = .37).

*Main analyses*. In line with our key hypothesis and the results of Experiment 1, a two-way ANOVA with product satisfaction as dependent variable and interface type and market as factors revealed the predicted interaction of the two factors (F(1, 177) = 7.38, $p$ = .007). Planned contrasts confirmed that Eastern consumers were more satisfied when using the by-alternative interface ($M_{attrib}$ = 3.98, $M_{altern}$ = 4.27; F(1, 177) = 4.15, $p$ = .04), and that Western consumers were more satisfied when using the by-attribute interface ($M_{attrib}$ = 4.97, $M_{altern}$ = 4.68; F(1, 177) = 4.29, $p$ = .04). The main effect of interface type was not significant (F(1, 177) = .01, $p$ = .94) and the main effect of market was significant (F(1, 177) = 44.89, $p$ < .001). A two-way ANCOVA that controls for individual differences in interface familiarity and configuration time (i.e., consumers' time spent on configuring the product in seconds) produced consistent results, including a significant interaction between interface type and market (F(1, 175) = 5.31, $p$ = .02).

We found similar results for interface fluency. A two-way ANOVA revealed an interaction of interface type and market (F(1, 177) = 10.60, $p$ = .001). Planned contrasts confirmed that Eastern consumers experienced more interface fluency in the by-alternative condition ($M_{attrib}$ = 4.90, $M_{altern}$ = 5.37; F(1, 177) = 5.81, $p$ = .02), and that Western consumers experienced more interface fluency in the by-attribute condition ($M_{attrib}$ = 6.37, $M_{altern}$ = 5.88; F(1, 177) = 6.09, $p$ = .01). The main effect of interface type was not significant (F(1, 177) = .01, $p$ = .91) and the main effect of market was significant (F(1, 177) = 46.44, $p$ < .001). A two-way ANCOVA that controls for interface familiarity and configuration time also yielded a significant interaction between interface type and market (F(1, 175) = 8.46, $p$ = .004).

*Moderated mediation.* We tested the proposed conceptual model with a moderated mediation and specified interface type (0 = by-alternative, 1 = by-attribute) as independent variable, interface fluency as mediator, product satisfaction as dependent variable, and market (0 = West, 1 = East) as moderator of the path from interface type to interface fluency (see Figure 3). This model with bootstrapped estimates using 10,000 resamples produced a significant negative indirect effect for Eastern consumers (b = −.24, SE = .11, z = 2.16, $p$ = .03) and a significant positive indirect effect for Western consumers (b = .24, SE = .10, z = 2.52, $p$ = .01), with an index of moderated mediation excluding zero ($CI_{95\%}$ = [−.76; −.19]). Thus, for Eastern (Western) consumers, the by-alternative (by-attribute) interface led to an increase in interface fluency, which ultimately resulted in greater product satisfaction. As predicted, the interaction of interface type and market on interface fluency was significant (b = −.96, SE = .29, z = 3.29, $p$ = .001), as was the effect of interface fluency on product satisfaction (b = .49, SE = .04, z = 13.71, $p$ < .001). Estimating the same moderated mediation but controlling for interface familiarity and configuration time produced consistent effects, including a marginally significant negative indirect effect for Eastern consumers (b = −.18, SE = .10, z = 1.85, $p$ = .06), a significant positive indirect effect for Western consumers (b = .19, SE = .08, z = 2.35, $p$ = .02), and a moderated mediation index that excludes zero ($CI_{95\%}$ = [−.62; −.12]). These results provide further evidence for the importance of interface fluency and the robustness of our theorizing.

--- Insert Figure 3 about here ---

*Discussion*

Experiment 2 replicates and extends Experiment 1 by providing evidence for the underlying psychological process while ruling out alternative explanations. Specifically, the benefits of processing-congruent interfaces are caused by an increase in interface fluency (and

not interface familiarity), explaining the increase in consumers' satisfaction with the outcome. An additional study reported in Web Appendix C addresses further alternative explanations such as cross-cultural differences in configuration frequency, trust in brands, and trust in one's own choices. It also rules out alternative process accounts via motivation to process, task involvement, and perceptions of higher message quality.

The remaining studies were designed to provide further insight into the underlying mechanism (Experiment 3) and to explore the downstream consequences of processing-congruent interfaces with real-world behavioral measures (Experiments 4 and 5).

## *EXPERIMENT 3*

This study aims to provide more direct, causal evidence for the proposed mechanism of interface fluency. Instead of only measuring interface fluency (as in Experiment 2), Experiment 3 manipulates interface fluency using a novel intervention. Thus, the current study provides a rigorous test of our conceptual model using both measurement and experimental manipulation. Furthermore, we focus on consumers' likelihood to purchase the configured product (following up on the conversion effects reported in the pilot study) and test the robustness of our findings by examining a different sample and a new set of Eastern versus Western markets.

### *Method*

*Participants.* To generalize our findings across markets, we conducted Experiment 3 on Amazon Mechanical Turk (MTurk). We used MTurk's segmentation tool to recruit 412 participants ($M_{age}$ = 33; 38% females) from India (i.e., Eastern consumers) and the U.S. (i.e.,

Western consumers; Monga and John 2007). All participants of the Eastern (Western) sample lived in an Eastern (Western) country for at least the previous five years.

*Design and procedure.* To test our hypotheses, we used a 2 (type of interface: by-attribute vs. by-alternative) × 2 (market: East vs. West) × 2 (interface fluency: control vs. reduced) between-subjects design. Before any experimental manipulation, we assessed consumers' processing style and car ownership. Next, participants were randomly assigned to either a control ($N_{East}$ = 101, $N_{West}$ = 102) or a reduced interface fluency condition ($N_{East}$ = 101, $N_{West}$ = 108). Specifically, we developed a novel paradigm to manipulate interface fluency involving tilted images, which we used in the reduced interface fluency condition (see Web Appendix D). In the control interface fluency condition, we used regular, non-tilted images. The objective of this intervention was to orthogonally manipulate interface fluency without affecting other constructs that are critical in an MC context (such as consumers' ability to envision product use; Hildebrand et al. 2014). A pretest involving a range of fluency manipulations provided evidence for the effectiveness of the described intervention across interface types (see Web Appendix E). Participants were randomly assigned to either the by-attribute ($N_{East}$ = 97, $N_{West}$ = 94) or the by-alternative condition ($N_{East}$ = 105, $N_{West}$ = 116) to configure their preferred car, before they responded to measures of interface fluency, purchase likelihood, product satisfaction, and consumer demographics.

*Measures.* We assessed processing style (M = 4.29, SD = 2.10, min = 0, max = 6), interface fluency (α = .94), and product satisfaction (α = .88) as in Experiment 2. In addition, we included a binary measure of whether consumers currently owned a car (coded as 1) or not (coded as 0) and gauged consumers' likelihood to purchase their configured car using a

percentage scale from zero ("I would not purchase the configured car at all") to one hundred ("I would definitely purchase the configured car"; M = 60.03, SD = 26.54, min = 0, max = 100).

*Results*

*Manipulation checks and preliminary analyses.* As in the preceding studies, Eastern consumers processed information more holistically relative to Western consumers ($M_{East}$ = 4.80, $M_{West}$ = 3.79; t(410) = 4.98, $p < .001$). Supporting the pretest results, we found that the interface fluency manipulation was successful as it significantly reduced interface fluency ($M_{control}$ = 5.71, $M_{reduced}$ = 5.06; t(410) = 5.06, $p < .001$); the manipulation was similarly effective in the East ($M_{control}$ = 5.84, $M_{reduced}$ = 5.36; t(200) = 2.77, $p < .001$) and West ($M_{control}$ = 5.58, $M_{reduced}$ = 4.77; t(208) = 4.34, $p < .001$). Finally, we found no market-specific differences in terms of car ownership ($M_{East}$ = 99.0%, $M_{West}$ = 99.5%; $\chi^2 = .04$, $p = .83$).

*Main analyses*. A three-way ANOVA with interface fluency as dependent variable and interface type, market, and the interface fluency manipulation as factors revealed a significant two-way interaction of interface type and market ($F(1, 404) = 17.60$, $p < .001$), replicating the results of Experiment 2 with a different sample and new markets. Planned contrasts confirmed that, in line with our proposition, Eastern consumers experienced greater interface fluency when using the by-alternative interface ($M_{attrib}$ = 5.32, $M_{altern}$ = 5.80; F(1, 404) = 5.22, $p = .02$), whereas Western consumers experienced greater interface fluency when using the by-attribute interface ($M_{attrib}$ = 6.01, $M_{altern}$ = 5.34; F(1, 404) = 10.11, $p = .002$). The three-way interaction interface type × market × interface fluency manipulation was marginally significant ($F(1, 404) = 3.28$, $p = .07$). Planned contrasts confirmed that the effect of interface type and market varied in the control interface fluency condition ($M_{East,attrib}$ = 5.40, $M_{East,altern}$ = 6.08; F(1, 199) = 6.89, $p = .009$; $M_{West,attrib}$ = 6.68, $M_{West,altern}$ = 5.59; F(1, 199) = 15.78, $p < .001$) but was effectively

switched off in the reduced interface fluency condition ($M_{East,attrib}$ = 5.25, $M_{East,altern}$ = 5.50; F(1, 205) = .65, $p$ = .42; $M_{West,attrib}$ = 5.53, $M_{West,altern}$ = 5.05; F(1, 205) = 2.35, $p$ = .13). Finally, the main effect of the interface fluency manipulation was significant ($F$(1, 404) = 15.66, $p$ < .001; all other effects were non-significant [$p$s > .12]; see Web Appendix F for the three-way ANOVAs on purchase likelihood and product satisfaction).

*Moderated mediation*. To test the proposed process via interface fluency, we estimated two moderated mediation models: one for the control and one for the reduced interface fluency condition (see Web Appendix G). If our theorizing is correct, inhibiting interface fluency should switch off any effect on purchase likelihood. In the control condition, we found a significant negative indirect effect for Eastern consumers (b = −3.05, SE = 1.44, z = 2.12, $p$ = .03) and a significant positive indirect effect for Western consumers (b = 4.87, SE = 2.09, z = 2.33, $p$ = .02), with a moderated mediation index excluding zero ($CI_{95\%}$ = [−14.11; −1.73]). As predicted, the interaction of interface type and market on interface fluency was significant (b = −1.77, SE = .33, z = 5.41, $p$ < .001), which ultimately increased purchase likelihood (b = 4.46, SE = 1.38, z = 3.22, $p$ = .001). In line with our theorizing, a different pattern emerged in the reduced fluency condition: We found a non-significant indirect effect for both Eastern (b = −.40, SE = .55, z = .73, $p$ = .47) and Western consumers (b = .74, SE = .82, z = .91, $p$ = .37), with a moderated mediation index including zero ($CI_{95\%}$ = [−3.44; 1.16]). Finally, neither the interaction of interface type and market on interface fluency (b = −.73, SE = .44, z = 1.67, $p$ = .10) nor the effect of interface fluency on purchase likelihood were significant (b = 1.55, SE = 1.24, z = 1.25, $p$ = .21). Thus, experimentally reducing interface fluency switched off any beneficial effects of processing-congruent interfaces on purchase likelihood.

*Discussion*

By directly manipulating interface fluency using a novel intervention, Experiment 3 provides strong empirical support for our theorizing and the importance of interface fluency to explain the benefits of processing-congruent interfaces. The findings corroborate the effects of the pilot study, showing that the detrimental outcomes of processing-incongruent interfaces diminish consumers' likelihood to purchase their configured product. Finally, this study replicated our findings with a different sample and across a new set of markets.

## EXPERIMENT 4

Experiment 4 explores the downstream economic consequences of processing-congruent interfaces by employing a real-world behavioral measure: the amount of money consumers spend on a configured product. In addition, Experiment 4 further explores the robustness and generalizability of our theorizing. Whereas the preceding studies involved a product that requires greater deliberation (i.e., cars), the current study employs a product that is less cognitively demanding (i.e., chocolate). We also keep the physical location of the study constant while examining consumers from a variety of Eastern versus Western markets, further ruling out potential location effects.

*Method*

*Participants.* We conducted the study in a major Swiss tourist destination frequently visited by Eastern and Western consumers. A group of four researchers recruited a total of 136 international visitors. We excluded two participants from further analyses because they indicated an amount of money they could eventually not pay (USD 12 and 15; all amounts are converted

from CHF to USD), and one Eastern participant who lived in a Western country. This resulted in a final sample of 133 participants ($M_{age}$ = 38; 55% females) from seven Eastern and eleven Western countries, with Indians (26%) and Americans (24%) representing the two most prevalent nationalities.

*Design, procedure, and measures.* We employed a 2 (type of interface: by-attribute vs. by-alternative) × 2 (market: East vs. West) between-subjects design. Visitors were recruited in pedestrian areas and were asked to participate in a short study on Swiss chocolate. As a financial incentive, all visitors were provided with USD 5 upfront. Visitors first answered a few general questions about chocolate (e.g., "I like chocolate") and their trust in brands ("I trust brands") on 7-point Likert scales. Next, we measured visitors' familiarity with a set of three chocolate brands (also on 7-point Likert scales), one of which was the focal brand of this study. We chose a brand that is largely unknown among visitors (see Results section). Next, we assessed consumer demographics, including visitors' primary nationality and place of birth (instead of residence as in the previous studies). Visitors were then randomly assigned to either the by-attribute ($N_{East}$ = 30, $N_{West}$ = 40) or the by-alternative condition ($N_{East}$ = 30, $N_{West}$ = 33) and given the opportunity to configure their own Swiss chocolate using a tablet device (Samsung Galaxy Tab 3, 10.1 in). In the by-alternative condition, visitors chose from nine pre-specified alternatives (e.g., dark chocolate with almonds). In the by-attribute condition, visitors chose the type of chocolate bar first (i.e., milk, white, or dark), before choosing from the same set of ingredients provided in the by-alternative interface (i.e., hazelnut, raisins and nuts, or none). Having configured their preferred chocolate, visitors were invited to purchase their custom-made chocolate using an incentive compatible pay-what-you-want paradigm (Atasoy and Morewedge 2018). This served as the amount of money spent (M = 2.96, SD = 1.20, min = 0.5, max = 7), an outcome that has

previously been linked to fluency effects (Herrmann et al. 2013). After the payment was completed, all visitors received their configured product (i.e., a 100 g bar of chocolate).

*Results*

*Preliminary analyses.* As expected, the focal brand was largely unknown to visitors (M = 2.37) and brand familiarity did not differ between Eastern and Western consumers ($M_{East}$ = 2.15, $M_{West}$ = 2.55; t(131) = 1.10, $p$ = .27). Eastern consumers showed more trust in brands than Western consumers ($M_{East}$ = 5.74, $M_{West}$ = 5.22; t(120) = 4.98, $p < .001$; note that we did not measure brand trust for the first eleven observations in the field). All results are robust to differences in brand trust (see Web Appendix C for additional analyses).

*Main analyses*. A two-way ANOVA with money spent as dependent variable and interface type and market as factors revealed an interaction of interface type and market ($F$(1, 129) = 8.21, $p$ = .005), an effect that was robust when controlling for brand trust ($F$(1, 117) = 8.21, $p$ = .01). Planned contrasts confirmed that Eastern consumers paid more for their configured product when using the by-alternative interface ($M_{attrib}$ = 2.63, $M_{altern}$ = 3.27; F(1, 129) = 4.33, $p$ = .04), whereas Western consumers paid more for their configured product when using the by-attribute interface ($M_{attrib}$ = 3.21, $M_{altern}$ = 2.67; F(1, 129) = 3.88, $p$ = .05; see Figure 4). We found no significant main effect of interface type (F(1, 129) = .00, $p$ = .96) and market (F(1, 129) = .01, $p$ = .94). Analyzing Indian and American visitors only, two samples that are frequently used in cross-cultural research on processing styles (Monga and John 2007), produced consistent results. A two-way ANOVA yielded an interaction of interface type and market ($F$(1, 62) = 7.90, $p$ = .007), with Eastern consumers paying more when using the by-alternative interface ($M_{attrib}$ = 2.43, $M_{altern}$ = 3.32; F(1, 62) = 3.96, $p$ = .05) and Western consumers paying more when using the by-attribute interface ($M_{attrib}$ = 3.70, $M_{altern}$ = 2.88; F(1, 62) = 3.34, $p$ = .07).

--- Insert Figure 4 about here ---

To put these findings into perspective, we analyzed the surplus that consumers paid for their mass-customized product (relative to the average retail price). When using a processing-incongruent interface, consumers paid only a moderate surplus of 26.19% (USD Δ0.55) for their custom-made chocolate, a percentage that reflects the added value of MC and is consistent with industry reports (Deloitte 2015). When using a processing-congruent interface, however, consumers paid a substantially higher surplus of 54.29% (USD Δ1.14). In other words, adjusting MC interfaces to consumers' culture-specific processing style substantially increased the added value of MC, doubling the surplus that consumers paid for their configured product.

*Discussion*

Experiment 4 showed that international visitors spent significantly more on custom-made chocolate when using a processing-congruent (vs. incongruent) interface. These findings provide empirical support for our key hypothesis in a consequential field setting, using a real-world behavioral measure that involves downstream economic consequences for consumers. Notably, we found robust results with a simple configuration task that includes only two attributes, thereby providing a conservative test, and using a domain that involves arguably more consummatory motives of experiential goods (compared with the more cognitively demanding task of configuring cars as in the previous studies).

## EXPERIMENT 5

Can processing-congruent interfaces also promote conversion even if consumers do not effectively configure the product? Building on research showing that greater fluency can cause

aesthetic interest (Graf and Landwehr 2015), Experiment 5 explores whether the mere exposure to advertising stimuli that promote either a by-attribute or a by-alternative interface might have differential effects in the East and West. We thus tested whether varying merely the MC presentation mode produces consistent effects. This study took the form of a large-scale field experiment involving more than 200,000 consumers across six major markets.

*Method*

*Design and participants.* The field experiment employed a 2 (type of interface: by-attribute vs. by-alternative) × 2 (market: East vs. West) between-subjects design. We ran an advertisement on Facebook for a pre-defined duration of five days. The ad was presented to 206,178 unique Facebook users. To avoid any confounding language effects across markets, we used Facebook's targeting tool to place the ad exclusively in English-speaking markets: three Eastern markets (India, Hong Kong, Singapore) and three Western markets (Canada, UK, USA). The main dependent variable was conversion operationalized by the click-through rate of Facebook users (i.e., the number of users clicking on the ad; Rutz, Sonnier, and Trusov 2017).

*Procedure.* We created a Facebook page for a fictitious headphone brand and developed two advertising stimuli that promoted custom-made headphones based on either a by-attribute or a by-alternative interface (see Web Appendix H). The by-attribute interface included three attributes (headband, ear pads, and cables) with one option (headband: leather), two options (ear pads: fiber, leather), or three options (cables: black, blue, yellow). The by-alternative interface exhibited the same attribute space as the by-attribute interface but showed all six pre-specified alternatives (mirroring the experimental setup of the preceding studies). We chose a smaller attribute space due to the fixed ad size on Facebook (500 × 500 pixels) and to further add to the robustness and generalizability of our effects by using different attribute spaces across studies

(i.e., 12 in Experiments 1 to 3, 9 in Experiment 4, and 6 in Experiment 5). To avoid differences in positioning, we predefined the exact location of the ad on Facebook (i.e., users' newsfeed, instant articles, and market place).

*Pretest*

We conducted a pretest to examine whether the developed advertising stimuli evoke the predicted differences in interface fluency, as the nature of the field experiment did not allow us to collect data on interface fluency at the individual level. Using MTurk's segmentation tool, we recruited 180 participants from India and the U.S. who were interested in headphones and were regular Facebook users. We excluded one participant from further analyses whose place of birth and residence did not match, resulting in a final sample size of 179 ($M_{age}$ = 31; 37% females). Consumers were randomly presented either the by-attribute ($N_{East}$ = 49, $N_{West}$ = 36) or the by-alternative interface ($N_{East}$ = 53, $N_{West}$ = 41), before completing the interface fluency measure of Experiment 2 ($\alpha$ = .95) and consumer demographics. A two-way ANOVA yielded a significant interaction of interface type and market ($F(1, 175) = 8.65$, $p = .003$), with Eastern consumers perceiving the by-alternative interface as more fluent ($M_{attrib}$ = 5.78, $M_{altern}$ = 6.29; $F(1, 175) = 3.84$, $p = .05$) and Western consumers perceiving the by-attribute interface as more fluent ($M_{attrib}$ = 5.42, $M_{altern}$ = 4.67; $F(1, 175) = 6.40$, $p = .01$). These pretest results confirm that the developed advertising stimuli are perceived as more fluent when being processing-congruent.

*Results*

The field experiment provides further evidence for the effectiveness of processing-congruent interfaces. A chi-square test assessing the click-through rate conditional on type of interface and market revealed the expected difference across conditions ($M_{East,attrib}$ = 0.96%,

$M_{East,altern}$ = 1.38%, $M_{West,attrib}$ = 1.68%, $M_{West,altern}$ = 1.24%; $\chi^2(2, N = 2482) = 25.21$, $p < .001$). We further conducted separate *z*-tests in the East and West to account for different baseline sample sizes (due to different population sizes). These analyses provide additional within-culture evidence: Click-through rates in the East were indeed higher for the by-alternative interface (1,294 out of 93,852) compared with the by-attribute interface (873 out of 90,572; $z = 8.27$, $p < .001$). By contrast, click-through rates in the West were higher for the by-attribute interface (174 out of 10,366) compared with the by-alternative interface (141 out of 11,388; $z = 2.72$, $p = .007$).

To provide further insight into the practical importance of these findings, we calculated the monetary value by assessing the resulting costs per click (i.e., the price firms pay for each click on their advertisements). Employing a processing-congruent (vs. incongruent) interface reduced the costs per click in the East by 36% (from \$0.14 to \$0.09) and in the West by 20% (from \$0.86 to \$0.69), suggesting a promising means to reduce advertising costs and to provide more effective marketing campaigns for custom-made products.

*Discussion*

Experiments 4 and 5 demonstrated the practical importance of the current findings outside the laboratory. Whereas Experiment 4 showed that consumers spend more money when using a processing-congruent interface, Experiment 5 showed that consumers react more positively to an ad depicting a processing-congruent interface, resulting in greater conversion in terms of click-through rates. The findings of the field experiment have important implications for companies seeking to advertise custom-made products by demonstrating the differential advertising effectiveness of interfaces that are processing-congruent versus incongruent.

# GENERAL DISCUSSION

Mass customization has become a global phenomenon with an increasing number of firms allowing consumers to customize products to their own needs. Whereas the dominant logic across markets and industries is to provide one and the same interface to all consumers—a conventional by-attribute interface—our findings show that this widespread approach is at odds with consumers who process information more holistically. We have thus proposed a theory that argues for matching MC interfaces to cultural information processing, thereby generating a series of beneficial outcomes for consumers and firms.

## *Theoretical Contributions*

The findings provide a novel look at the link between customization and personalization, two one-to-one marketing concepts that aim to achieve the same goal: an experience tailored to consumers (Arora et al. 2008). Whereas customization achieves this goal by having consumers explicitly state their preferences (e.g., manual adjustment of a website), personalization does so by leveraging existing customer profile data (e.g., automatic adjustment of a website according to the preferences of similar consumers; Arora et al. 2008; Tseng and Piller 2011). Thus, consumers take on an active role with customization whereas firms take the lead with personalization. The current research provides the first set of systematic studies pointing at the large potential of what one might call "personalized customization," whereby not only the product but also the customization experience is tailored to consumers.

Our findings contribute to the growing body of evidence showing that customizing products can benefit both consumers and firms (Dellaert and Stremersch 2005; Kaiser et al. 2017; Moreau and Herd 2010; Valenzuela et al. 2009). Whereas prior research has largely

focused on the consequences and outcomes of MC, the current research introduces a key antecedent (or boundary) by establishing the importance of cultural information processing. This finding adds to research showing that the effectiveness of mass-customized and personalized solutions hinges on consumers' personality (e.g., narcissistic tendencies; de Bellis et al. 2016) and their cultural background (e.g., a country's level of uncertainty avoidance; de Bellis et al. 2015; Kramer, Spolter-Weisfeld, and Thakkar 2007; Steenkamp and Geyskens 2006). To the best of our knowledge, the present findings are the first to demonstrate that conventional by-attribute customization is not universally beneficial to all consumers and in fact can be detrimental to some—namely, Asian consumers with a more holistic processing style.

Our research links two largely unconnected disciplines by highlighting the role of fluency at the intersection of marketing and human-computer interaction. The rich literature on fluency effects in marketing and social psychology has documented the positive effect of ease of processing on a broad range of judgments, from the valuation of products to the perception of truthfulness (Alter and Oppenheimer 2008; Dechêne et al. 2010). The current research expands this prior work by showing how the adjustment of a user interface can enhance fluency. Instead of altering familiarity, exposure time, or visual clarity (all of which are well-known means to manipulate fluency; Oppenheimer 2008), we show that matching a consumer's processing style to the structural aspects of a user interface (or, more generally, a choice architecture) can lead to greater "interface fluency." These findings demonstrate how traditional fluency research can support the development of more effective user interfaces—in terms of downstream economic consequences such as the amount of money spent (as in Experiment 4) or click-through rates (as in Experiment 5).

Finally, our findings contribute to the literature on cross-cultural marketing, which suggests that cultural variability can affect a broad range of consumer perceptions and behaviors, such as evaluations of brands, prosocial donations, and consumer well-being (Batra et al. 2017; Monga and Williams 2016; Ng and Lee 2015). A major focus in this research stream has been on the cultural variability in independent versus interdependent self-construal and individualistic versus collectivistic cultures (Ng and Lee 2015). Our findings contribute to this prior work by highlighting the critical role of cultural differences in information processing for marketing researchers to better understand consumers' sensitivity to attribute-based choice architectures (such as customizing a product with a by-attribute interface) and to ultimately develop a better shopping and consumption experience for consumers across markets.

*Future Research*

While we did not find that the type of MC interface affects consumers' processing styles (see Experiment 1's posttest), longitudinal research designs may reveal whether exposure to processing-incongruent interfaces promotes a gradual adaptation of processing styles over time. With the proliferation of recent technologies, from augmented reality applications to hologram-based interfaces, researchers may test whether continuous exposure to novel interfaces can change "hard-wired" predispositions that are culturally determined. In light of the integration of social features into MC interfaces, one could further explore whether the beneficial effects of processing-congruent interfaces can also be achieved by matching consumers' social setting (instead of or in addition to cultural cues; Schlager et al. 2018).

Given our focus on within-culture comparisons, future research may explore whether priming consumers' processing style could reverse the effects shown in the current research. For example, instead of providing processing-congruent interfaces, firms could induce processing

styles by means of exogenous manipulations such as advertisements. On the one hand, a culturally incongruent processing style (e.g., priming Eastern consumers with analytic processing when using a by-attribute interface) should be beneficial as it aligns consumers' mode of processing with the interface (Lalwani and Shavitt 2013; Monga and John 2007). On the other hand, a culturally congruent processing style (e.g., priming Eastern consumers with holistic processing when using a by-attribute interface) could be beneficial as it bolsters consumers' habitual cultural values and counters cultural disfluency (Mourey, Lam, and Oyserman 2015).

Another fruitful area to explore further is the underlying psychological process. One may ask whether different types of fluency yield the same effects in an MC context. For example, previous research found that retrieval fluency can be misleading (Benjamin, Bjork, and Schwartz 1998) and that processing disfluency can trigger arousal and interest (Labroo and Pocheptsova 2016). It could thus be examined whether other types of fluency produce similar effects and whether processing-incongruent interfaces might even generate positive consumer responses under specific circumstances (e.g., when arousal is key). Finally, future research could explore how the effects of interface fluency differ from those of flow where consumers are completely engaged in the interaction with an interface (Hoffman and Novak 2009).

*Practical Implications*

In this research, we have addressed a key marketing issue for global organizations—whether to standardize MC interfaces across international markets or whether to personalize MC interfaces to specific markets. The current findings suggest that failing to adjust MC interfaces to markets can cause a series of negative consumer responses from reduced product satisfaction to lower conversion. In fact, our research indicates that many companies currently seem to use a suboptimal MC interface in Asia, with conversion rates that are only half the level of those in the

West (see our pilot study). This is a serious business drawback, as MC seems particularly relevant in Asian markets. A study by the Economist Intelligence Unit (2016) identified "East Asia as the global hotbed of mass-customization demand" (p. 5) and predicted that by 2020 the top three (out of eight) world regions for MC will be East, Southeast, and South Asia.

Whereas our findings suggest that marketers can reap significant benefits by matching MC interfaces to consumers' culture-specific processing style, the adaptation to individual (culture-unspecific) processing styles is likely to be beneficial as well. For example, if consumers are temporarily in a holistic mindset (as inferred from their clickstream data; Hauser et al. 2009), firms could dynamically provide a by-alternative interface. In light of research showing that perceived personalization can be more effective than actual personalization (Li 2016), firms could also explore whether these effects can be amplified by emphasizing the adaptation of the interface to the individual consumer. Our findings also highlight that companies can create greater conversion for custom-made products (as shown in Experiment 5 using click-through rates) by employing processing-congruent interfaces. Most importantly, these strategies do not require complex changes in technological infrastructure (i.e., the configuration system) or alterations in the use of marketing tools (such as price or advertising stimuli). All they require is a simple rearrangement of the MC presentation format across markets.

*REFERENCES*

Alter, Adam L. and Daniel M. Oppenheimer (2008), "Easy on the Mind, Easy on the Wallet: The Roles of Familiarity and Processing Fluency in Valuation Judgments," *Psychonomic Bulletin & Review*, 15 (5), 985–90.

Arora, Neeraj, Xavier Dreze, Anindya Ghose, James D. Hess, Raghuram Iyengar, Bing Jing et al. (2008), "Putting One-to-One Marketing to Work: Personalization, Customization, and Choice," *Marketing Letters*, 19 (3/4), 305–21.

Atasoy, Ozgun and Carey K. Morewedge (2018), "Digital Goods Are Valued Less Than Physical Goods," *Journal of Consumer Research*, 44 (6), 1343–57.

Batra, Rajeev, Y. Charles Zhang, Nilüfer Z. Aydinoğlu, and Fred M. Feinberg (2017), "Positioning Multicountry Brands: The Impact of Variation in Cultural Values and Competitive Set," *Journal of Marketing Research*, 54 (6), 914–31.

Benjamin, Aaron S., Robert A. Bjork, and Bennett L. Schwartz (1998), "The Mismeasure of Memory: When Retrieval Fluency Is Misleading as a Metamnemonic Index," *Journal of Experimental Psychology: General*, 127 (1), 55–68.

Botschen, Günther, Eva M. Thelen, and Rik Pieters (1999), "Using Means-End Structures for Benefit Segmentation: An Application to Services," *European Journal of Marketing*, 33 (1/2), 38–58.

Broniarczyk, Susan M. and Jill G. Griffin (2014), "Decision Difficulty in the Age of Consumer Empowerment," *Journal of Consumer Psychology*, 24 (4), 608–25.

Cesario, Joseph, Heidi Grant, and E. Tory Higgins (2004), "Regulatory Fit and Persuasion: Transfer from 'Feeling Right,'" *Journal of Personality and Social Psychology*, 86 (3), 388–404.

Chang, Chingching (2004), "The Interplay of Product Class Knowledge and Trial Experience in Attitude Formation," *Journal of Advertising*, 33 (1), 83–92.

Choi, Incheol, Minkyung Koo, and Jong An Choi (2007), "Individual Differences in Analytic Versus Holistic Thinking," *Personality and Social Psychology Bulletin*, 33 (5), 691–705.

Chu, P. C., Eric E. Spires, and Toshiyuki Sueyoshi (1999), "Cross-Cultural Differences in Choice Behavior and Use of Decision Aids: A Comparison of Japan and the United States," *Organizational Behavior and Human Decision Processes*, 77 (2), 147–70.

Colzato, Lorenza S., Ilja van Beest, Wery P. M. van den Wildenberg, Claudia Scorolli, Shirley Dorchin, Nachshon Meiran et al. (2010), "God: Do I Have Your Attention?" *Cognition*, 117 (1), 87–94.

de Bellis, Emanuel, Christian Hildebrand, Kenichi Ito, and Andreas Herrmann (2015), "Cross-

National Differences in Uncertainty Avoidance Predict the Effectiveness of Mass Customization Across East Asia: A Large-Scale Field Investigation," *Marketing Letters*, 26 (3), 309–20.

———, David E. Sprott, Andreas Herrmann, Hans-Werner Bierhoff, and Elke Rohmann (2016), "The Influence of Trait and State Narcissism on the Uniqueness of Mass-Customized Products," *Journal of Retailing*, 92 (2), 162–72.

DeBono, Kenneth G. and Richard J. Harnish (1988), "Source Expertise, Source Attractiveness, and the Processing of Persuasive Information: A Functional Approach," *Journal of Personality and Social Psychology*, 55 (4), 541–46.

Dechêne, Alice, Christoph Stahl, Jochim Hansen, and Michaela Wänke (2010), "The Truth About the Truth: A Meta-Analytic Review of the Truth Effect," *Personality and Social Psychology Review*, 14 (2), 238–57.

Dellaert, Benedict G. C., Aloys W. J. Borgers, Jordan J. Louviere, and Harry J. P. Timmermans (2001), "Using Conjoint Choice Experiments to Model Consumer Choices of Product Component Packages," in *Conjoint Measurement: Methods and Applications*, Anders Gustafsson, Andreas Herrmann, and Frank Huber, eds. Berlin: Springer, 387–414.

——— and Stefan Stremersch (2005), "Marketing Mass-Customized Products: Striking a Balance Between Utility and Complexity," *Journal of Marketing Research*, 42 (2), 219–27.

Deloitte (2015), "Made-to-Order: The Rise of Mass Personalisation," (accessed December 1, 2018), [available at https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/consumer-business/ch-en-consumer-business-made-to-order-consumer-review.pdf].

Deng, Xiaoyan, Barbara E. Kahn, H. Rao Unnava, and Hyojin Lee (2016), "A 'Wide' Variety: Effects of Horizontal Versus Vertical Display on Assortment Processing, Perceived Variety, and Choice," *Journal of Marketing Research*, 53 (5), 682–98.

Economist Intelligence Unit (2016), "Made to Order: Customisation Advances in Emerging Markets," (accessed August 1, 2017), [available at http://growthcrossings.economist.com/report/made-to-order].

Fogliatto, Flavio S., Giovani J. C. da Silveira, and Denis Borenstein (2012), "The Mass Customization Decade: An Updated Review of the Literature," *International Journal of Production Economics*, 138 (1), 14–25.

Goh, Joshua O., Michael W. Chee, Jiat Chow Tan, Vinod Venkatraman, Andrew Hebrank, Eric D. Leshikar et al. (2007), "Age and Culture Modulate Object Processing and Object-Science Binding in the Ventral Visual Area," *Cognitive, Affective, & Behavioral Neuroscience*, 7 (1), 44–

52.

Graf, Laura K. M. and Jan R. Landwehr (2015), "A Dual-Process Perspective on Fluency-Based Aesthetics: The Pleasure-Interest Model of Aesthetic Liking," *Personality and Social Psychology Review*, 19 (4), 395–410.

———, Stefan Mayer, and Jan R. Landwehr (2018), "Measuring Processing Fluency: One Versus Five Items," *Journal of Consumer Psychology*, 28 (3), 393–411.

Hauser, John R., Glen L. Urban, Guilherme Liberali, and Michael Braun (2009), "Website Morphing," *Marketing Science*, 28 (2), 202–23.

Herington, Carmel and Scott Weaven (2009), "E-Retailing by Banks: E-Service Quality and Its Importance to Customer Satisfaction," *European Journal of Marketing*, 43 (9/10), 1220–31.

Herrmann, Andreas, Manja Zidansek, David E. Sprott, and Eric R. Spangenberg (2013), "The Power of Simplicity: Processing Fluency and the Effects of Olfactory Cues on Retail Sales," *Journal of Retailing*, 89 (1), 30–43.

Hildebrand, Christian, Gerald Häubl, and Andreas Herrmann (2014), "Product Customization via Starting Solutions," *Journal of Marketing Research*, 51 (6), 707–25.

Hoffman, Donna L. and Thomas P. Novak (2009), "Flow Online: Lessons Learned and Future Prospects," *Journal of Interactive Marketing*, 23 (1), 23–34.

Hong, Jiewen and Brian Sternthal (2010), "The Effects of Consumer Prior Knowledge and Processing Strategies on Judgments," *Journal of Marketing Research*, 47 (2), 301–11.

Huffman, Cynthia and Barbara E. Kahn (1998), "Variety for Sale: Mass Customization or Mass Confusion?" *Journal of Retailing*, 74 (4), 491–513.

Inman, J. Jeffrey, Joonwook Park, and Ashish Sinha (2008), "A Dynamic Choice Map Approach to Modeling Attribute-Level Varied Behavior Among Stockkeeping Units," *Journal of Marketing Research*, 45 (1), 94–103.

Ji, Li-Jun, Zhiyong Zhang, and Richard E. Nisbett (2004), "Is It Culture or Is It Language? Examination of Language Effects in Cross-Cultural Research on Categorization," *Journal of Personality and Social Psychology*, 87 (1), 57–65.

Kaiser, Ulrike, Martin Schreier, and Chris Janiszewski (2017), "The Self-Expressive Customization of a Product Can Improve Performance," *Journal of Marketing Research*, 54 (5), 816–31.

Kimchi, Ruth and Stephen E. Palmer (1982), "Form and Texture in Hierarchically Constructed Patterns," *Journal of Experimental Psychology: Human Perception and Performance*, 8 (4), 521–35.

Kim, Hakkyun, Akshay R. Rao, and Angela Y. Lee (2009), "It's Time to Vote: The Effect of Matching Message Orientation and Temporal Frame on Political Persuasion," *Journal of Consumer Research*, 35 (6), 877–89.

Kramer, Thomas, Suri Spolter-Weisfeld, and Maneesh Thakkar (2007), "The Effect of Cultural Orientation on Consumer Responses to Personalization," *Marketing Science*, 26 (2), 246–58.

Kuo, Andrew and Dan Hamilton Rice (2015), "The Impact of Perceptual Congruence on the Effectiveness of Cause-Related Marketing Campaigns," *Journal of Consumer Psychology*, 25 (1), 78–88.

Labroo, Aparna A. and Anastasiya Pocheptsova (2016), "Metacognition and Consumer Judgment: Fluency Is Pleasant But Disfluency Ignites Interest," *Current Opinion in Psychology*, 10, 154–59.

———, Ravi Dhar, and Norbert Schwarz (2008), "Of Frog Wines and Frowning Watches: Semantic Priming, Perceptual Fluency, and Brand Evaluation," *Journal of Consumer Research*, 34 (6), 819–31.

Lalwani, Ashok K. and Sharon Shavitt (2013), "You Get What You Pay For? Self-Construal Influences Price-Quality Judgments," *Journal of Consumer Research*, 40 (2), 255–67.

Lavine, Howard and Mark Snyder (1996), "Cognitive Processing and the Functional Matching Effect in Persuasion: The Mediating Role of Subjective Perceptions of Message Quality," *Journal of Experimental Social Psychology*, 32 (6), 580–604.

Lee, Angela Y. and Jennifer L. Aaker (2004), "Bringing the Frame into Focus: The Influence of Regulatory Fit on Processing Fluency and Persuasion," *Journal of Personality and Social Psychology*, 86 (2), 205–18.

Liang, Beichen, Rodney C. Runyan, and Wei Fu (2011), "The Effect of Culture on the Context of Ad Pictures and Ad Persuasion: The Role of Context-Dependent and Context-Independent Thinking," *International Marketing Review*, 28 (4), 412–34.

Li, Cong (2016), "When Does Web-Based Personalization Really Work? The Distinction Between Actual Personalization and Perceived Personalization," *Computers in Human Behavior*, 54, 25–33.

Masuda, Takahiko and Richard E. Nisbett (2001), "Attending Holistically Versus Analytically: Comparing the Context Sensitivity of Japanese and Americans," *Journal of Personality and Social Psychology*, 81 (5), 922–34.

Monga, Alokparna Basu and Deborah Roedder John (2007), "Cultural Differences in Brand Extension Evaluation: The Influence of Analytic Versus Holistic Thinking," *Journal of*

*Consumer Research*, 33 (4), 529–36.

——— and Jerome D. Williams (2016), "Cross-Cultural Styles of Thinking and Their Influence on Consumer Behavior," *Current Opinion in Psychology*, 10, 65–69.

Moreau, C. Page and Kelly B. Herd (2010), "To Each His Own? How Comparisons with Others Influence Consumers' Evaluations of Their Self-Designed Products," *Journal of Consumer Research*, 36 (5), 806–19.

Morling, Beth and Takahiko Masuda (2012), "Social Cognition in Real Worlds: Cultural Psychology and Social Cognition," in *Sage Handbook of Social Cognition*, Susan T. Fiske and C. Neil Macrae, eds. New York: Russell Sage Foundation, 429–50.

Mourey, James A., Ben C. P. Lam, and Daphna Oyserman (2015), "Consequences of Cultural Fluency," *Social Cognition*, 33 (4), 308–44.

Navon, David (1977), "Forest Before Trees: The Precedence of Global Features in Visual Perception," *Cognitive Psychology*, 9 (3), 353–83.

Ng, Sharon and Angela Y. Lee (2015), *Handbook of Culture and Consumer Behavior*. New York: Oxford University Press.

Nisbett, Richard E., Kaiping Peng, Incheol Choi, and Ara Norenzayan (2001), "Culture and Systems of Thought: Holistic Versus Analytic Cognition," *Psychological Review*, 108 (2), 291–310.

——— and Takahiko Masuda (2003), "Culture and Point of View," *Proceedings of the National Academy of Sciences of the United States of America*, 100 (19), 11163–70.

Norenzayan, Ara, Edward E. Smith, Beom Jun Kim, and Richard E. Nisbett (2002), "Cultural Preferences for Formal Versus Intuitive Reasoning," *Cognitive Science*, 26 (5), 653–84.

Oppenheimer, Daniel M. (2008), "The Secret Life of Fluency," *Trends in Cognitive Sciences*, 12 (6), 237–41.

Reinecke, Katharina and Abraham Bernstein (2013), "Knowing What a User Likes: A Design Science Approach to Interfaces that Automatically Adapt to Culture," *MIS Quarterly*, 37 (2), 427–53.

Rosseel, Yves (2012), "lavaan: An R Package for Structural Equation Modeling," *Journal of Statistical Software*, 48 (2), 1–36.

Rutz, Oliver J., Garrett P. Sonnier, and Michael Trusov (2017), "A New Method to Aid Copy Testing of Paid Search Text Advertisements," *Journal of Marketing Research*, 54 (6), 885–900.

Salonen, Ville and Heikki Karjaluoto (2016), "Web Personalization: The State of the Art and Future Avenues for Research and Practice," *Telematics and Informatics*, 33 (4), 1088–104.

Schlager, Tobias, Christian Hildebrand, Gerald Häubl, Nikolaus Franke, and Andreas Herrmann (2018), "Social Product-Customization Systems: Peer Input, Conformity, and Consumers' Evaluation of Customized Products," *Journal of Management Information Systems*, 35 (1), 319–49.

Schwarz, Norbert (2004), "Metacognitive Experiences in Consumer Judgment and Decision Making," *Journal of Consumer Psychology*, 14 (4), 332–48.

Steenkamp, Jan-Benedict E. M. and Hans Baumgartner (1998), "Assessing Measurement Invariance in Cross-National Consumer Research," *Journal of Consumer Research*, 25 (1), 78–90.

——— and Inge Geyskens (2006), "How Country Characteristics Affect the Perceived Value of Web Sites," *Journal of Marketing*, 70 (3), 136–50.

Thompson, Debora V. and Rebecca W. Hamilton (2006), "The Effects of Information Processing Mode on Consumers' Responses to Comparative Advertising," *Journal of Consumer Research*, 32 (4), 530–40.

Tseng, Mitchell M. and Frank T. Piller (2011), *The Customer Centric Enterprise: Advances in Mass Customization and Personalization*. Berlin: Springer.

Valenzuela, Ana, Ravi Dhar, and Florian Zettelmeyer (2009), "Contingent Response to Self-Customization Procedures: Implications for Decision Satisfaction and Choice," *Journal of Marketing Research*, 46 (6), 754–63.

van Rompay, Thomas J. L., Peter W. de Vries, and Xaviera G. van Venrooij (2010), "More Than Words: On the Importance of Picture-Text Congruence in the Online Environment," *Journal of Interactive Marketing*, 24 (1), 22–30.

Varnum, Michael E. W., Igor Grossmann, Shinobu Kitayama, and Richard E. Nisbett (2010), "The Origin of Cultural Differences in Cognition: The Social Orientation Hypothesis," *Current Directions in Psychological Science*, 19 (1), 9–13.

Wang, Huaitang, Takahiko Masuda, Kenichi Ito, and Marghalara Rashid (2012), "How Much Information? East Asian and North American Cultural Products and Information Search Performance," *Personality and Social Psychology Bulletin*, 38 (12), 1539–51.

Wheeler, Christian S., Richard E. Petty, and George Y. Bizer (2005), "Self-Schema Matching and Attitude Change: Situational and Dispositional Determinants of Message Elaboration," *Journal of Consumer Research*, 31 (4), 787–97.

White, Katherine and John Peloza (2009), "Self-Benefit Versus Other-Benefit Marketing Appeals: Their Effectiveness in Generating Charitable Support," *Journal of Marketing*, 73 (4), 109–24.

Table 1

SUMMARY OF METHODS AND RESULTS

| Study[1] | Main Focus | Participants | Customized Product (Attribute Space) | Key Constructs | Dependent Variable (DV) | Δ of DV for Processing-Congruent Interface (vs. Incongruent)[2] |
|---|---|---|---|---|---|---|
| Pilot | Negative consequences of universal interfaces | 31,830,440 car buyers (7 Eastern vs. 10 Western markets) | Cars (> 1 million) | By-attribute interface | Conversion rate (0-100%) | 112.61% |
| 1 | Effect of processing-congruent interfaces | 175 prospective car buyers (Singapore vs. Germany) | Cars (12) | Processing style, interface type | Product satisfaction (7-point Likert scale) | 10.53% (East), 10.90% (West) |
| 2 | Process of interface fluency (mediation) | 181 prospective car buyers (Singapore vs. Germany) | Cars (12) | Processing style, interface type, interface fluency | Product satisfaction (7-point Likert scale) | 7.14% (East), 6.16% (West) |
| 3 | Process of interface fluency (moderation) | 412 MTurk workers (India vs. USA) | Cars (12) | Processing style, interface type, interface fluency | Purchase likelihood (0-100%) | 10.25% (East), 18.78% (West) |
| 4 | Real-world behavioral measure | 133 visitors (7 Eastern vs. 11 Western markets) | Chocolates (9) | Interface type | Money spent (USD) | 24.05% (East), 20.47% (West) |
| 5 | Large-scale field evidence | 206,178 Facebook users (3 Eastern vs. 3 Western markets) | Headphones (6) | Interface type | Click-through rate (0-100%) | 43.04% (East), 35.57% (West) |

[1] Experiments 1, 2, 4 and 5 employed a 2 (type of interface: by-attribute vs. by-alternative) × 2 (market: East vs. West) between-subjects design. Experiment 3 employed a 2 × 2 × 2 design with interface fluency (control vs. reduced) as additional factor.

[2] Results in the pilot study display the relative percentage share between the East and West. Results in Experiment 3 are based on the interface fluency control condition.

Figure 1

CONVERSION RATES OF BY-ATTRIBUTE INTERFACES

ACROSS EASTERN AND WESTERN MARKETS (PILOT STUDY)

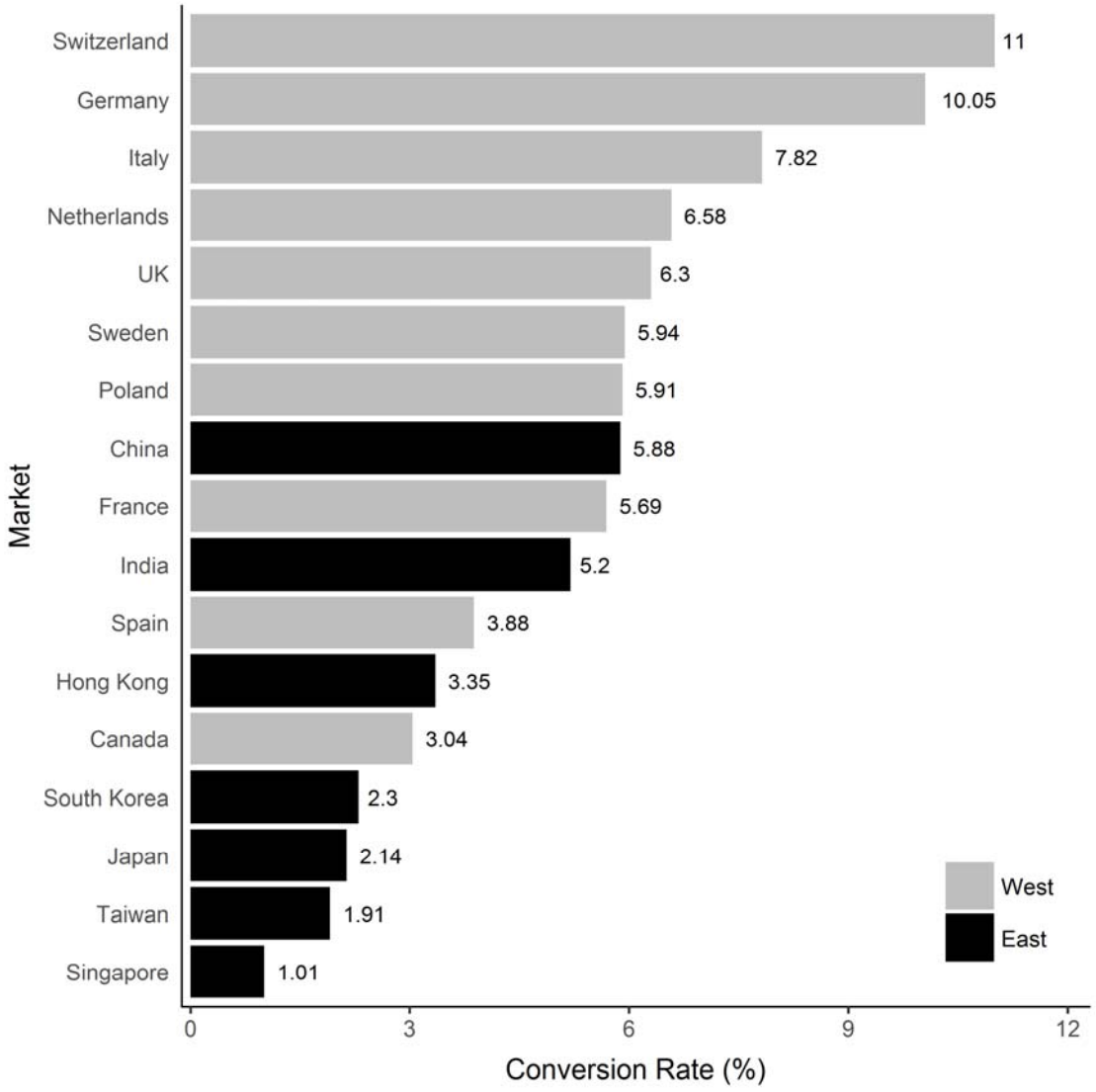
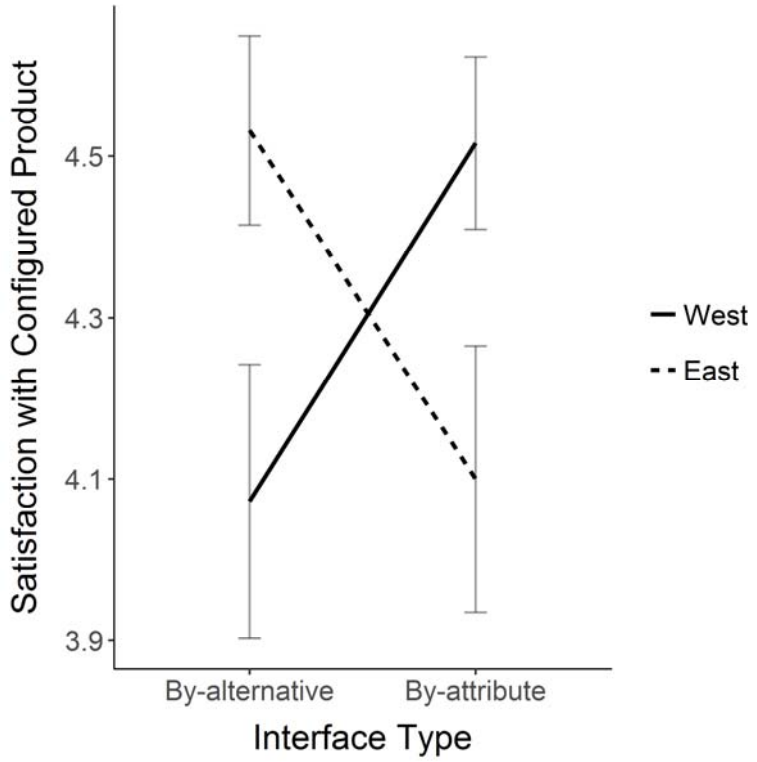


Figure 2

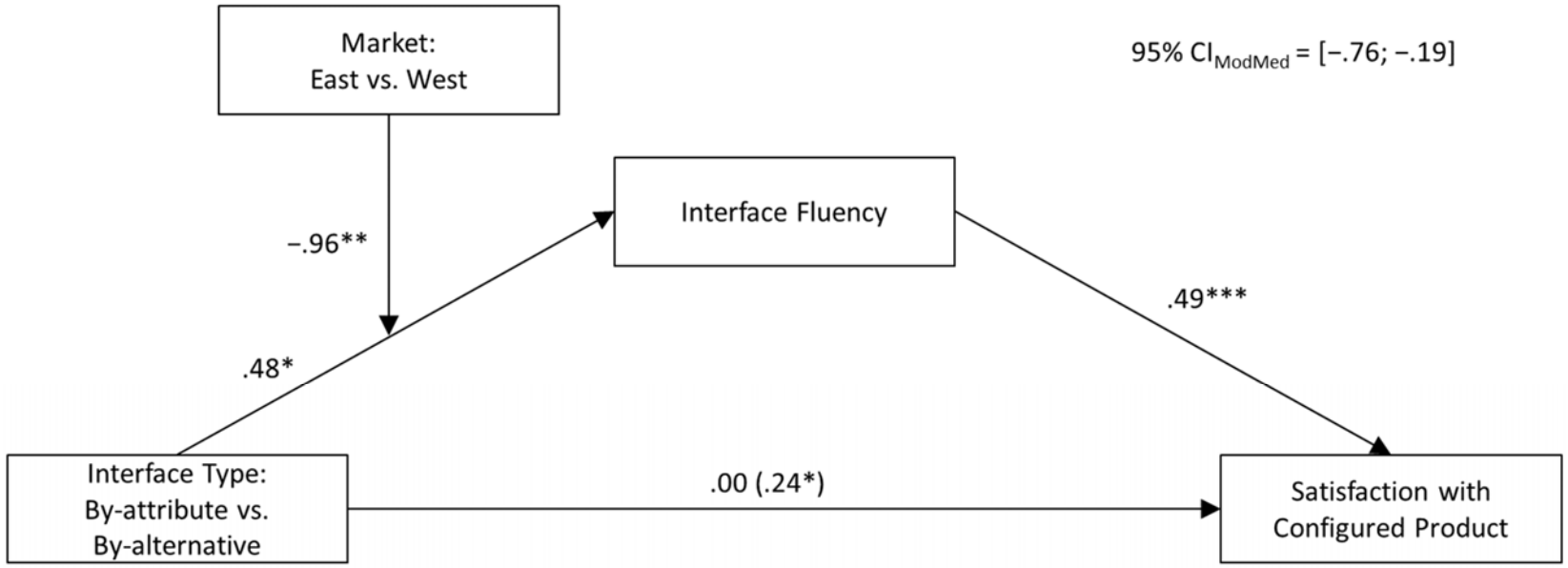
THE EFFECT OF INTERFACE TYPE AND MARKET ON CONSUMERS' SATISFACTION WITH THE CONFIGURED PRODUCT (EXPERIMENT 1)




Notes: Error bars indicate the standard error.

Figure 3

MODERATED MEDIATION MODEL (EXPERIMENT 2)

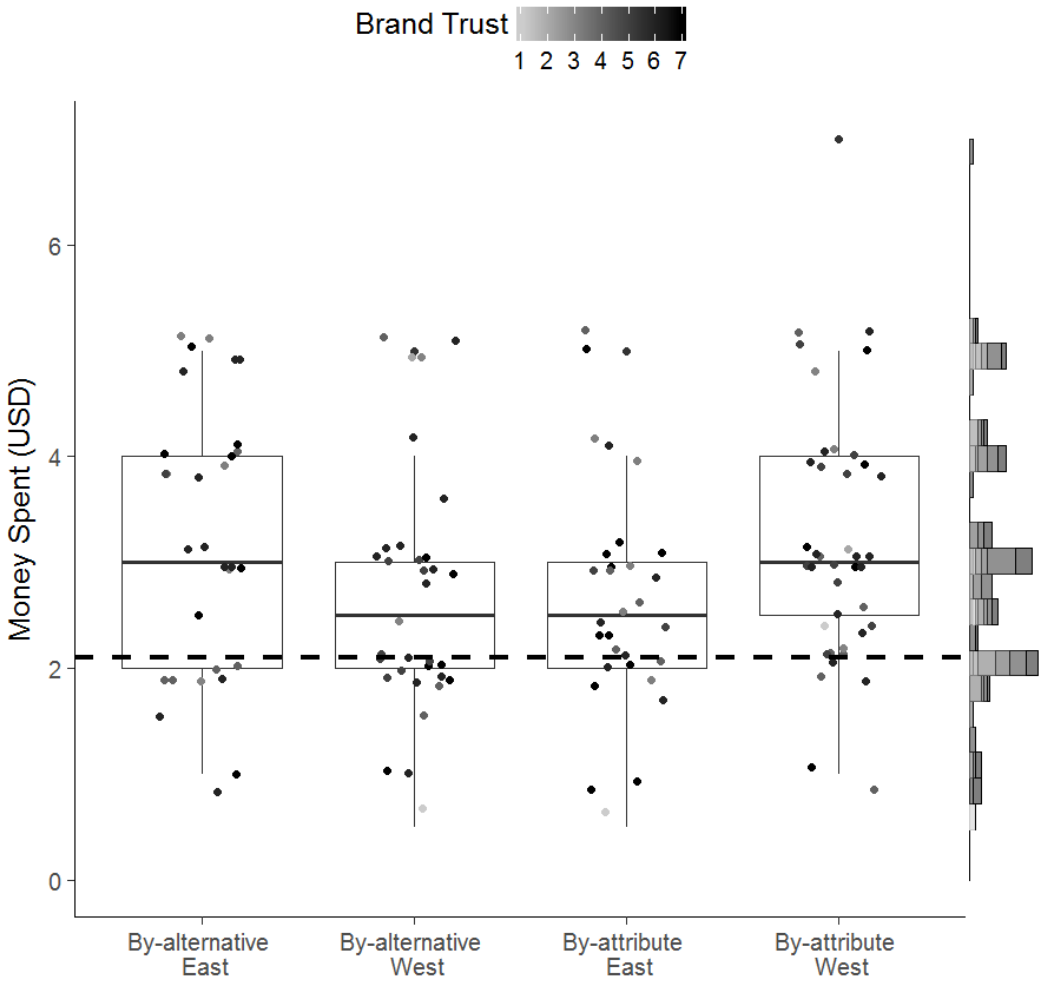



Notes: The path coefficients are unstandardized regression coefficients. The value in parentheses indicates the total effect of interface type on satisfaction with the configured product. The indirect effect via interface fluency was negative for Eastern consumers ($p$ = .03) and positive for Western consumers ($p$ = .01).

* $p$ < .05; ** $p$ < .01; *** $p$ < .001.

Figure 4

THE EFFECT OF INTERFACE TYPE, MARKET, AND BRAND TRUST ON THE AMOUNT OF MONEY CONSUMERS SPENT (EXPERIMENT 4)




Notes: The boxplot shows the amount of money consumers spent on the configured product (in USD) by type of interface (by-attribute vs. by-alternative) and market (East vs. West) while accounting for individual differences in brand trust. The dashed horizontal line indicates the average retail price of the non-customized product. Note that effects are robust when excluding outliers (i.e., one participant who spent USD 7).