Product Design and Its Influence on Consumers' Behavior

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Annika Wiecek

Berichter: Univ.-Prof. Dr. oec. Daniel Wentzel

Univ.-Prof. Torsten-Oliver Salge, Ph. D.

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For my mother

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ABSTRACT

In the tough struggle for consumers' grace, product design has long been praised as the last means to stay competitive. Its value in creating attention and interest (e.g., Bloch 1995; Creusen and Schoormans 2005), in differentiating one's products from the competition (e.g., Karjalainen and Snelders 2010; Kotler and Rath 1984; Talke et al. 2009) and in ultimately generating sales (e.g., Gemser and Leenders 2001; Jindal et al. 2016; Landwehr, Labroo, and Herrmann 2011; Landwehr, Wentzel, and Herrmann 2013; Liu et al. 2017) has repeatedly been highlighted. However, despite the substantial interest in the subject there has been virtually no research on the post-purchase effects of products' design. That is, there is a lack of knowledge about the effects of products' appearance on consumers' product usage behavior.

This dissertation addresses this gap in the literature and investigates the effects of product design on consumers' product use. The influence of the three most important roles (Homburg, Schwemmle, and Kuehnl 2015) of products' design, i.e., delivering aesthetic value, communicating functional value, and expressing symbolic value, is analyzed.

Article I investigates the effect of design aesthetics on the intensity of product use and also examines the potential downstream consequences of this effect, i.e., skill development and cognitive lock-in.

Article II develops a new construct (i.e., 'design-based consumption norms') that postulates a relationship between holistic design impressions and the two traditional classes of consumption behavior, i.e., utilitarian and hedonic consumption.

Article III examines the effect of aesthetic congruity (i.e., visual coherence among the designs of a set of products) on perceptions of products' effectiveness and the resulting extent of product use.

The findings of this dissertation are relevant to both theory and practice and are discussed at a collective level as well as within the individual research articles.

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Article II: “Design-Based Consumption Norms”

ABBREVIATIONS

AMA	American Marketing Association
CVPA	Centrality of Visual Product Aesthetics
EMAC	European Marketing Academy

PART I:

SYNOPSIS OF THE THESIS

1. INTRODUCTION

Imagine a typical day in your everyday life. Starting with a good breakfast, you take a look in your cupboard and, between pickle jars and marmalade, a brightly-colored box of cereals catches your eye. Captured by its vibrant appearance you instantly grasp the package and indulge in a brimful bowl of cereals for a start. Voraciously, you gulp your breakfast down. Right after you're finished you start washing up. Next to the water tap, the new blue detergent that you bought yesterday is already waiting for you. Looking at it, you're directly reminded of the claim that made you want to buy it in the first place 'No other detergent delivers more! Every drop makes your tableware just cleaner, cleaner, the cleanest!'. You make another trip to your cupboard to search for a sponge and fortunately, it doesn't take long until you find what you were looking for. While you're standing in front of your kitchen sink again, you suddenly notice how well the sponge and the detergent match—they are exactly the same color. With a smile on your face and suddenly fully convinced of the cleaning power of your washing utensils you drop an ample portion of the detergent onto your sponge and start doing the washing up. Once you're done, you take a look at your watch. It's 6:30 am—still enough time to play around with your smartphone for a while before you need to go to work. You take a seat on your couch and as you get carried away by the appealing design of your smartphone, you don't notice the time passing. A full hour has passed before you take another peek at your watch. Horrified at how time flies, you grab your things and head down the stairs on your way to work. Fortunately, your workplace is within walking distance. As you quickly make your way down the street, you spot a small phone store on the next corner. In its window, you see a flashy banner promoting a new type of smartphone. You quickly scan the offer. Compared to your current smartphone, the new one offers many improvements, and the price is good, too. For a moment, you toy with the idea of switching to the new phone. But then you also envisage all the hassle of adjusting to its new and unfamiliar operating mode and the time and effort required to use it as proficiently as you do your

current phone. In the end, you decide to stay with your current phone. You have simply become too accustomed to it. Without any further thought about the offer, you move along the street and only minutes later you finally arrive at your office. It's time to work.

The scenario described above is anything but special. A rather average morning, as it is experienced by thousands of people every day over and over again. The implication, however, is that our daily lives are greatly influenced by the design of products. Because even though it may not be noticeable at first sight, many of the behaviors described above have been shaped by products' visual appearance. Specifically, in our scenario, the vibrant and lively design of the cereal box stimulated an indulgent eating behavior. The animated character of the package reflected on the way the product was used. Furthermore, the aesthetic appeal created by the harmonic appearance of the similarly colored washing utensils (i.e., detergent and sponge) strengthened our trust in their cleaning power, and thereby encouraged us to deploy them extensively. Finally, the visual attractiveness of our smartphone 'seduced' us into its prolonged usage, which led to habituation, and ultimately prevented us from taking a competing offering.

Those three effects of product design on consumers' consumption behavior are addressed in this thesis. Specifically, it investigates how consumption may be shaped by the aesthetic, the symbolic, and the functional value of products' appearance.

2. THEORETICAL BACKGROUND AND RESEARCH GAP(S)

This chapter provides the theoretical background to the three scientific articles that constitute this thesis and derives the (respective) research gap(s) that they address.

2.1. Common Theoretical Background and Research Gap(s)

Product design is becoming increasingly important to companies' success. As products become ever more alike in terms of their functional features, products' visual appearance has become a central means of differentiation from the competition (e.g., Bloch 1995; Karjalainen and Snelders 2010; Kotler and Rath 1984; Talke et al. 2009). In line with this rising importance of product design, research on this subject has grown continuously over the years. However, despite the increased interest in the subject, research in this area is still anything but complete. To date, there is not even a commonly agreed upon definition of the term 'product design', for instance (Homburg et al. 2015; Luchs and Swan 2011). In fact, Homburg et al. (2015) did a review of research on product design in 2015, examining more than 270 articles published on this subject between January 1995 and September 2014, of which only 24 contained a definition of the term. And what is more, these definitions differed in the kind and number of dimensions (e.g., aesthetics, ergonomics) that they considered to be constitutive of product design (e.g., Brakus, Schmitt, and Zhang 2014; Creusen and Schoormans 2005; Krippendorf 2011; Moon, Miller, and Kim 2013). Stimulated by this finding, Homburg et al. (2015) reviewed all articles from their initial list once again, now searching explicitly for possible dimensions of product design. They identified a set of 43 articles that contained some reference to one or more product design dimensions. Homburg et al. (2015) allocated those dimensions to six categories which they labeled 'aesthetics', 'functionality', 'symbolism', 'shape', 'ergonomics', and 'others'. Given their aim to develop a parsimonious scale to measure product design, they determined whether all of these categories were needed to accurately conceptualize it. The authors excluded shape as an atomistic design dimension.

They also excluded the 'others' category, as only three of the dimensions that it contained were mentioned more than once. And finally, they subsumed the ergonomic design dimension under 'functionality' due to the close relationship between the two (Creusen and Schoormans 2005; Homburg et al. 2015). The three resulting design dimensions were 'aesthetics', 'functionality', and 'symbolism'. Support for those dimensions is also given by the findings of similar studies done in previous years (i.e., Creusen and Schoormans 2005; Luchs and Swan 2011).

Following Homburg et al. (2015), the aesthetic dimension refers to the visual appearance of a product and is conceptualized both as a product attribute and a subjective product impression. The functional dimension captures the degree to which a product fulfills its intended purpose. Though a product's actual functionality may only be assessed upon product usage, a product's visual appearance may take a significant effect on that product's perceived functionality. Finally, the symbolic dimension refers to the metaphorical meaning that a product conveys. That is, the associations that it elicits, such as a product's personality.

To explore whether consumers do in fact perceive product designs along those three dimensions, Homburg et al. (2015) conducted 28 qualitative consumer interviews on the subject. In those interviews, they confronted consumers with two randomly selected images of smartphones, asking participants to choose one and to outline the reasons for their selection. To establish the validity of their results across different product categories, they conducted 32 additional interviews in which they asked consumers to think of a product that they liked, to report why they cherished it, and to explain in how far its design differed from those of competitive products in the same product category. A careful analysis of those interviews revealed that consumers' design perceptions did align with Homburg et al.'s (2015) literature-based design dimensions. That is, consumers' answers reflected the three design dimensions that Homburg et al. (2015) had identified. Based on their findings, Homburg et al. (2015) defined product design as follows "product design refers to a set of constitutive elements of a

product that consumers perceive and organize as a multidimensional construct comprising the three dimensions of aesthetics, functionality, and symbolism" (p.44). In line with their findings, this definition clearly highlights the critical role of aesthetics, functionality, and symbolism in product design. This is why this thesis focuses on exactly those three design dimensions.

However, while much research has already been conducted on each of those design dimensions (e.g., Bloch 1995; Hoegg, Alba, and Dahl 2010; McCracken 1986; Orth and Malkewitz 2008; Reimann et al. 2010; Zhu, Billeter, and Inman 2012), most of the earlier studies have focused on their effects on consumers' product perceptions and evaluations, that is, on the pre-consumption phase. There has virtually been no research on their effects on specific consumption behaviors, though (for an exception, see Wu et al. 2017). In this regard, a significant part of the consumption cycle has been disregarded in design research so far. This thesis addresses that gap in the literature and examines how each of those dimensions affects consumers' product use. Three articles have been conducted for this purpose. Articles I and II each focus on a single design dimension—Article I on design aesthetics and Article II on designs' symbolic value. The third article, in contrast, addresses two dimensions simultaneously, namely, the aesthetic and the functionality dimension.

2.2.Theoretical Background and Research Gap Article I: "The Aesthetic Fidelity Effect"

The word 'aesthetics' has its roots in the Greek verb 'aesthanesthai', which means 'to perceive (by the senses)'. In the eighteenth century, its meaning was changed, which led to modern definitions such as 'pleasing in appearance' (Meriam-Webster Dictionary 2018; Patrick and Peracchio 2010). The experience of such perceptual pleasure is a basic human need (Maslow 1954). It represents a fundamental value deeply rooted in the human personality (Vernon and Allport 1931). In fact, there is no known culture that does not show some aesthetic interest (Dutton 2002).

By now, much research has been conducted on what is considered to be aesthetically pleasing. Two dominant views have emerged over the years. According to one view, aesthetics is part of an object. Proponents believe that there is a limited set of visual principles that make an object beautiful. Anything that complies with those principles is thought to be perceived as being aesthetic. The principles with the longest tradition refer to unifying properties such as harmony, balance, and symmetry (Kumar and Garg 2010; Palmer, Schloss, and Sammartino 2013). These principles are believed to be innate and to produce uniform aesthetic responses across all people (e.g., Langlois et al. 1987; Langlois et al. 2000; Townsend and Sood 2012). According to the second view, 'beauty is in the eye of the beholder' (Hönekopp 2006). In other words, tastes are believed to differ. What is considered aesthetic is thought to vary by person. In line with that, the influence of personal characteristics such as age and gender (Holbrook and Schindler 1994), cultural background (Masuda et al. 2008) as well as aesthetic sensitivities (Bloch, Brunel, and Arnold 2003) has also been investigated. By extension, this view may also account for differences which are caused by object properties that can only be subjectively defined, such as a product's perceived prototypicality (Kumar and Garg 2010; Landwehr et al. 2013; Veryzer and Hutchinson 1998), for instance.

A growing number of researchers (e.g., Hekkert and Leder 2008; Reber, Schwarz, and Winkielman 2004) argue, though, that the two views are not mutually exclusive but complementary. Some basic aesthetic properties of an object may be appreciated by all people, but people may differ in the extent to which they respond to those properties.

Although aesthetics is still most closely associated with the arts, there is growing recognition that it is not confined to it (Leder et al. 2004). By now it has been widely acknowledged that not only the appearance of paintings or sculptures may be aesthetically pleasing but also that of everyday objects, such as products. As such, the interest in 'everyday aesthetics' has grown steadily in recent years (Light and Smith 2005). In fact, in 2010 the

Journal of Consumer Psychology published a special issue on 'design aesthetics', in which Patrick and Peracchio (2010, p.393) proclaimed that consumption is witnessing the "age of Aesthetics, Beauty and Design". This trend was reinforced by an increasing recognition that aesthetics has become central to companies' success (Landwehr et al. 2011; Landwehr et al. 2013; Liu et al. 2017). Given that products become ever more alike in terms of their functional features design aesthetics has become a central mean to achieve competitive differentiation (e.g., Bloch 1995; Karjalainen and Snelders 2010; Kotler and Rath 1984; Liu et al. 2017; Talke et al. 2009). Such aesthetic-based differentiation is crucial, since consumers tend to decide in favor of the more aesthetic offer when products do not differ in terms of their functional attributes (Chitturi, Raghunathan, and Mahajan 2007).

However, the strong interest in aesthetics' effects on the pre-consumption phase (i.e., preference formation and purchase) is not matched by an equally strong focus on aesthetics' post-purchase effects. In fact, except for one study (Wu et al. 2017), there has been no research on how a product's visual appeal affects consumers' product usage. Article I addresses this gap in the literature by examining the effects of designs' aesthetic value on the extent of product use and the associated downstream consequences of skill development and skill-based preference (i.e., reduced propensity to switch to competitive products due to differences in usage proficiency).

2.3. Theoretical Background and Research Gap Article II: "Design-Based Consumption Norms"

The consumer has traditionally been seen as rational decision maker who is primarily driven by economic reasons. As such, she was thought to focus on product characteristics such as price, functionality, or durability (Hirschman and Holbrook 1982; Levy 1959). But this strong held conviction is long outdated. The reality is now that "people buy things not only for what they can do, but also for what they mean" (Levy 1959, p.118). Put differently, the symbolic meaning of products now takes a central role in the sale of products.

A principal contributor to a product's symbolic meaning is its design (McCracken 1986). The visual composition of a product may not only contribute to its aesthetic appeal but also represents a form of symbolic language. A product's design may serve as a medium of symbolic communication (McCracken 1986; Solomon 1983). Focusing on differences between the vertical and the horizontal dimension in product packaging design, van Rompay et al. 2012 found, for instance, that cues inspiring verticality perceptions (e.g., conveyed by the camera angle used for a product image that is displayed on the packaging of a product) may symbolize luxuriousness and thereby affect consumers' product evaluations and price expectations. In a related vein, Sundar and Noseworthy (2014) investigated the meaning communicated by the positioning of design elements on products' packaging. Their research showed that people intuitively associate height with power. As a result, they prefer products from powerful brands more if a brand's logo is positioned rather high up (vs. low down) on the products' packaging, while they prefer products from less powerful brands more if a brand's logo is positioned rather low down (vs. high up) on the packaging. As a last example, two studies of Labrecque and colleagues (2012, 2013) examined the symbolic meaning that may be conveyed by a product's (packaging) color. Specifically, they related different product colors to different brand personality traits. In one of their experiments they find, for instance, that red packages of high saturation communicate a 'rugged' product personality, whereas violet packages of low saturation make a product appear 'sophisticated'. Further, they showed that these associations also affect purchase intentions. Those participants instructed to buy a durable, strong, and well-built product chose the red packaging (i.e., the 'rugged' product), while those instructed to buy a classy, attractive, and refined product chose the one in the violet packaging (i.e., the 'sophisticated' product).

However, although these and other studies have generated valuable new insights in the field, virtually all of them focused on the associations evoked by a single design characteristic (i.e., placement of logos, verticality cues, color) rather than those created by holistic design

perceptions. In fact, up until now there has been no established scheme in design research that allows the classification of product designs according to the holistic impressions that they create. The only exception that currently exists (Orth and Malkewitz 2008) suffers from several limitations that are discussed in more detail in Article II. Additionally, similarly to the aesthetic dimension, research on consumers' product usage behavior is still lacking for the symbolic design dimension. How may a more vibrant and playful design impression affect consumers' behavior compared to a more reserved and prudent one, for instance? The third article addresses those gaps in the literature and uses design symbolism to develop a new construct (i.e., 'design-based consumption norms') that relates two forms of product design (i.e., a two-dimensional design scheme) to the two principal classes of consumers' consumption behavior, i.e., utilitarian and hedonic consumption.

2.4.Theoretical Background and Research Gap Article III: "Aesthetic Congruity – More Than a Pleasant Sight"

Aesthetic congruity is at the heart of discussions about aesthetics, as it touches several of the most central design principles of aesthetics research such as unity (Veryzer 1993; Veryzer and Hutchinson 1998), similarity (Deng, Hui, and Hutchinson 2010) and harmony (Kumar and Garg 2010). Aesthetic congruity captures the degree to which different designs form a coherent, harmonic unit (Patrick and Hagtvedt 2011). People generally aspire to establish such visual unity in a product ensemble. In their homes, they try to combine different furniture, such as sofas, wardrobes, and decoration, for instance, in order to create a coherent visual impression (Bell, Holbrook, and Solomon 1991). Similarly, they coordinate their different pieces of clothing so as to create a unified outfit (Lam and Mukherjee 2005; see figure 1). Such perceptions in which individual designs "look as though they belong together or as though there is some visual connection beyond mere chance that has caused them to come together" are aesthetically pleasing to the eye (Verzyer and Hutchinson 1998, p.374). A

visual mismatch caused by combining a red bag, yellow trousers, and a gray sweater, in contrast, may hurt people's sense of a 'good Gestalt' (Wertheimer 1922, 1923).

To date, the concept of aesthetic congruity is not well understood; it has only been investigated in the context of fashion and furniture, as exemplified above. As such, there is a lack of knowledge about its effects on products that are not used for beautification. The third article addresses that gap in the literature by applying the concept to products that do not serve a decorative purpose. Importantly, however, it combines it with research on designs' functional value.

FIGURE 1

AN AESTHETICALLY CONGRUENT OUTFIT AND AN AESTHETICALLY INCONGRUENT OUTFIT

A product's functional value is certainly the most elementary of all product characteristics. After all, a product's function is typically what a product is purchased for. However, even though a product's functionality may only be accurately assessed after a product's use, consumers make related judgements—often long beforehand—by simply looking at a product (Creusen and Schoormans 2005). Despite this wisdom there has been relatively little research on the relationship between product design and perceptions of

products' effectiveness, though (Hoegg et al. 2010; Sundar, Machleit, and Noseworthy 2013). And although perceptions of a product's effectiveness are "probably the most important influences on [products'] usage" (Folkes, Martin, and Gupta 1993), measurements of product use have not been part of any of those studies.

By investigating the effects of aesthetic congruity on perceptions of products' effectiveness and resulting usage behavior, the third article thus addresses an additional research gap that involves the functional dimension of product design.

3. SUMMARY OF THE RESEARCH ARTICLES

In this chapter, I provide short summaries of the three scientific articles that constitute this thesis. Each summary outlines the guiding research question, the research methodology employed, the main findings of the respective article as well as the principal theoretical and managerial implications. My supervisor, Prof. Dr. Daniel Wentzel, contributed to all of these articles throughout the writing process. Prof. Dr. Jan R. Landwehr has contributed to the first article both on a conceptual and an analytical level.

3.1.Summary of Article I: "The Aesthetic Fidelity Effect"

The first article investigates the effects of designs' aesthetic value on the extent of product use and also examines the potential downstream consequences that may result there from, i.e., skill development and skill-based preferences. A set of three studies is conducted to this end. The first study finds that aesthetic designs tempt consumers into a more intensive product use. This increased usage is shown to support the development of product-specific usage skills which ultimately provoke a cognitive lock-in. That is, consumers prefer to stay with the product they have already become used to rather than switching to an alternative offering. This effect of aesthetics on product preferences is termed the 'aesthetic fidelity' effect. The second study tests an alternative explanation for this effect that is based on mood and motivation. The results, however, support the explanation based on a more intensive product use. The final study reveals a boundary condition to the 'aesthetic fidelity' effect. A product's ease of use is found to moderate the effect of design aesthetics on usage behavior. Specifically, it is shown that in the case of a low ease of use, aesthetic designs no longer increase product usage. Accordingly, no increases in usage proficiency or product preferences are found in this case either.

The study results are valuable to both theory and practice. While most previous studies have investigated the effects of aesthetics on pre-purchase preferences and purchasing

behavior (Landwehr et al. 2011; Landwehr et al. 2013; Liu et al. 2017; for an exception, see Wu et al. 2017), this research demonstrates that they extend beyond the pre-consumption stage and have an enduring impact on people's consumption experiences. In this regard, it also shows that design aesthetics may not only help to generate sales but also to keep customers in the long term.

A previous version of the article was accepted for a presentation at the European Marketing Academy (EMAC) Annual Conference 2016 and was nominated for the 'Best Paper Award Based on a Doctoral Dissertation' at that conference. Furthermore, it was accepted for a presentation at the American Marketing Association (AMA) Winter Academic Conference 2017.

3.2.Summary of Article II: "Design-Based Consumption Norms"

The second article is a conceptual paper and introduces the concept of 'design-based consumption norms'. 'Design-based consumption norms' are conceptualized as symbolic directives for consumers' consumption behavior that are conveyed by a product's visual appearance. Two forms of 'design-based consumption norms' are proposed to exist which stipulate either a utilitarian (i.e., reserved, rational, pragmatic) or a hedonic product use (i.e., pleasure-oriented, lighthearted, indulgent). We term these two forms of consumption norms 'functionalist' and 'experiential' respectively.

Two types of product design are theorized to convey those norms, i.e., functionalist designs and experiential designs. Functionalist designs are characterized by simplified unornamented forms and a well-structured, straight-line appearance, expressing a rational, ordered, and prudent character. Experiential designs, in contrast, are characterized by ornamental and creative visual elements that convey notions of fun and liveliness (Raffelt, Schmitt, and Meyer 2013). Importantly, we focus on the effects of holistic design impressions and not on the impact of only one design characteristic.

Given the large conceptual overlaps between the symbolism of functionalist designs and the character of utilitarian consumption and the symbolism of experiential designs and the nature of hedonic consumption, functionalist designs are postulated to encourage utilitarian consumption behaviors (i.e., to convey a 'functionalist consumption norm'), whereas experiential designs are proposed to stimulate a hedonic product use (i.e., to convey an 'experiential consumption norm'). Importantly, we claim that those consumption norms even come into effect when the behavior that they stipulate does not match the nature of the underlying product. That is, we believe that functionalist consumption norms even take effect in the case of hedonic (vs. utilitarian) products and that experiential consumption norms even encourage a hedonic consumption behavior in the case of utilitarian (vs. hedonic) goods.

The concept of 'design-based consumption norms' has the potential to advance design research in significant ways. It may shift product design to the very core of consumer research, as it suggests that products' appearance may be a crucial determinant of how consumers interact with their products and thus how people live their daily lives. As such, 'design-based consumption norms' may also have important implications for management as well as for consumer interest groups.

3.3.Summary of Article III: "Aesthetic Congruity – More Than a Pleasant Sight"

The third article examines how aesthetic congruity among products (i.e., in a product ensemble) affects product perceptions and thereby products' use. In particular, drawing on the findings about the effects of design aesthetics on perceptions of products' functional performance (e.g., Hoegg et al. 2010; Sundar et al. 2013), it is hypothesized that aesthetic congruity affects perceptions of products' effectiveness and thereby the extent of their use. To test the respective hypotheses, a comprehensive empirical analysis is conducted. In line with the reasoning of the article, a better visual fit among products' appearances is shown to increase the perceived efficacy of the elements (i.e., products) of a product ensemble. The

effect of those perceptions on consumers' product usage behavior is shown to vary with the benefit of a product's effectiveness that is currently salient (i.e., outcome-focused benefit vs. process-focused benefit; Taylor et al. 1998) and the nature of the underlying product ensemble component (i.e., utilitarian product vs. hedonic product). Specifically, it is shown that when consumers focus on the advantage of effective (vs. normal) products that these types of products produce superior consumption results (i.e., the outcome-focused benefit), aesthetic congruity increases the use of both hedonic as well as utilitarian ensemble components. If, however, consumers focus on the advantage that satisfactory results can be achieved more readily (i.e., at comparably lower usage volumes; the process-focused benefit) by effective (vs. normal) products, utilitarian ensemble components are no longer used more intensively in the case of aesthetic congruity. In fact, aesthetic congruity decreases their usage when the process-focused benefit is salient. Hedonic ensemble components, in contrast, are still used more intensively in this case, though.

This article advances the literature in significant ways. By uniting very disparate fields of research that haven't yet been extensively studied (e.g., aesthetic congruity, product effectiveness) it contributes to the literature on aesthetic congruity (Patrick and Hagtvedt 2011), product effectiveness (Zhu et al. 2012), utilitarian and hedonic consumption (Hirschman and Holbrook 1982) as well as process- and outcome-focused thinking (Taylor et al. 1998). From a managerial point of view, this research may provide valuable recommendations for products' design and the advertising of products' effectiveness by showing their joint impact on the intensity of product use.

A different version of the article was accepted for a presentation at the American Marketing Association (AMA) Winter Academic Conference 2018 and has won the 'Best Paper Award' in the Track 'Consumer Behavior' at that conference. Furthermore, it was accepted for a presentation at the European Marketing Academy (EMAC) Annual Conference 2018.

The findings of each paper and their theoretical and managerial contributions are discussed in more detail in the respective articles in the second part of this thesis.

4. OVERALL THEORETICAL AND MANAGERIAL CONTRIBUTION

The goal of this thesis is to investigate the effects of the three most important dimensions of product design (i.e., aesthetic value, symbolic value, and functional value) on consumers' product usage behavior. This chapter outlines the joint theoretical and managerial contribution of the three constituting articles.

4.1.Theoretical Contribution

Though there has already been much research on product design, most previous studies have focused on its effects on initial product perceptions and evaluations. The central role of design aesthetics in shaping consumers' preferences and in increasing companies' sales has been highlighted in several articles, for instance (Landwehr et al. 2011; Landwehr et al. 2013; Liu et al. 2017). Likewise, studies on designs' symbolic value have outlined the multitude of symbolic associations that product designs may evoke (e.g., Orth and Malkewitz 2008; Sundar and Noseworthy 2014; van Rompay et al. 2012). Also, the effects of products' appearance on expectations about a product's functionality have already been investigated (e.g., Hoegg et al. 2010; Sundar et al. 2013). However, there has been far less research on the effects of products' appearance on actual product usage behaviors (for an exception, see Wu et al. 2017). That is, the consumption stage has been largely neglected by previous design research. This thesis addresses that gap in the literature and highlights the significant effect that product design may have on consumers' product use. Specifically, it shows how the three most important values of a product's design (i.e., aesthetic value, symbolic value, functional value; Homburg et al. 2015) may shape everyday consumption behaviors, such as the time people spend on their smartphones or the amount of yogurt that they eat. As such, it advances design research in significant ways by opening it up to the underresearched area of product use.

4.2.Practical Contribution

This thesis does not only contribute to the literature on product design but also offers valuable insights to practice. Specifically, it highlights that product design may not only be helpful in generating attention and interest at the supermarket shelve (Bloch 1995) but also in affecting consumers during product ownership. Companies may use product design to increase consumers' consumption, to facilitate product habituation (i.e., to encourage the development of product usage skills) and to reduce product switching, for instance. However, in order to reap such benefits, managers need to consider three factors when designing their products: First, the aesthetic appeal of their product (Article I), second the creativeness and liveliness of their design (Article II) and third, the degree to which their product's appearance harmonizes with the design of complementary items (Article III).

However, given the far-reaching impact that product design may have on consumers' daily behavior, not only companies but also consumer interest groups may consider products' design more carefully. Consumer interest groups may assume an important role in raising consumers' awareness of the potential effects that products' appearance may have on their consumption behavior in order to shield them from any manipulation.

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PART II:

RESEARCH ARTICLES

THE AESTHETIC FIDELITY EFFECT

Product aesthetics is a powerful means for achieving competitive advantage. Yet most studies to date have focused on the role of aesthetics in shaping pre-purchase preferences and have failed to consider how product aesthetics affects post-purchase processes and consumers' usage behavior. This research focuses on the relationship between aesthetics and usage behavior in the context of technological products. Study 1 finds that products with more aesthetic designs are used more intensively than those with less aesthetic designs. This increased usage intensity, in turn, leads to the acquisition of product-specific usage skills that form the basis for a cognitive lock-in. Hence, consumers are less likely to switch away from products with appealing designs, an effect that is labeled as the 'aesthetic fidelity' effect. Study 2 addresses an alternative explanation for this effect based on mood and motivation but finds that the 'aesthetic fidelity' effect is indeed determined by usage intensity. Finally, Study 3 identifies a boundary condition to the 'aesthetic fidelity' effect and finds that the relationship between product aesthetics and usage behavior is moderated by a product's ease of use. In sum, this research demonstrates that the effects of product aesthetics extend beyond the pre-consumption stage and have an enduring impact on people's consumption experiences.

Keywords: aesthetics, product design, product usage, consumption intensity, skill acquisition, cognitive lock-in

In many product categories, the aesthetics of a product's design is a crucial determinant of consumer choice. Consumer responses to products such as Apple's iPhone, Porsche's 911, and Vitra's Lounge Chair may not only be determined by the superior quality of these products but also by their iconic and highly aesthetic designs. Against this background, investigating when and why consumers are influenced by design aesthetics has become a fertile area of research. Simply put, consumers show a greater preference for products that are aesthetically appealing (Bloch 1995; Cox and Cox 2002; Hagtvedt and Patrick 2008; Hoegg, Alba, and Dahl 2010; Reimann et al. 2010; Veryzer and Hutchinson 1998) and the appeal of a product's design is also predictive of a product's success in the marketplace (Landwehr, Labroo, and Herrmann 2011; Landwehr, Wentzel, and Herrmann 2013; Liu et al. 2017).

However, while the effects of product aesthetics on pre-purchase preferences and consumer choice are well documented in the literature, existing research has largely failed to consider how design aesthetics affects post-purchase processes and consumers' usage behavior (for a recent exception, see Wu et al. 2017). For instance, assuming that a consumer buys an iPhone because of its appealing design, will she also use the phone on a more frequent basis to experience the aesthetic pleasure provided by the design? And how will this increased usage affect her skills in using the iPhone and her willingness to switch to a competitive smartphone?

In this research, we focus on durable products that require a certain level of skill on part of the consumer (e.g., smartphones, smartwatches, cars) and argue that the aesthetic appeal of a product's design may be related to usage behavior and product preferences. Specifically, we postulate that consumers will use products with aesthetically appealing designs more intensively compared to products with less appealing designs. This increased usage intensity, in turn, may lead to the acquisition of product-specific usage skills (Anderson 1983) that form the basis for a cognitive lock-in where consumers are less likely to switch away from a product they can already operate efficiently (Johnson, Bellman, and Lohse 2003; Murray and

Häubl 2007). In sum, we argue that product designs may not only serve as a source of aesthetic pleasure but may also bond a consumer to a product by triggering greater usage intensity and proficiency, an effect we label as the 'aesthetic fidelity' effect.

In identifying the effect of product aesthetics on usage intensity, skill acquisition, and subsequent choice behavior, this research makes several important contributions to the literature. First, we show that product aesthetics affects consumers beyond the pre-consumption phase and may determine how intensively consumers use a product and how proficient they become at using it. In this respect, we aim to contribute to a better understanding of the relationship between product aesthetics and actual consumption behavior, a perspective that has rarely been considered in the literature (Wu et al. 2017).

Second, we extend current theorizing on skill acquisition and the lock-in phenomenon. While existing studies have mainly focused on the process and the consequences of skill acquisition (Billeter, Kalra, and Loewenstein 2010; Lakshmanan and Krishnan 2011; Lakshmanan, Lindsey, and Krishnan 2010; Murray and Häubl 2007), there has been relatively little research on the determinants of this learning process. In this respect, our research shows that the aesthetic appeal of a product may motivate consumers to engage with a product more intensively and to develop product-specific usage skills, thus broadening our understanding of how consumers acquire skills in the marketplace.

Third, by showing that the effect of design aesthetics on usage intensity, skill acquisition, and preferences is moderated by ease of use, we also contribute to the literature on utilitarian and hedonic consumption. While most studies in this area have focused on understanding how consumers choose between utilitarian and hedonic goods and/or product attributes (Chernev 2004; Chitturi, Raghunathan, and Mahajan 2007, 2008; Dhar and Wertenbroch 2000), our research shows how the interplay between different kinds of attributes affects the actual consumption experience. In particular, we find that the effect of a

hedonic attribute (i.e., a product's design aesthetics) may be compromised if a utilitarian attribute (i.e., a product's ease of use) does not meet a critical threshold.

The remainder of this article is structured as follows. In the theoretical section, we review literature streams on design aesthetics, hedonic consumption, and skill acquisition and develop our hypotheses. In the empirical section, we report the results of four studies. A correlational pilot study that relies on real usage data finds that cars that are more aesthetically appealing are also used more intensively (i.e., have greater mileage). Building on this finding, Studies 1 to 3 are designed as laboratory experiments. Study 1 provides initial evidence for an 'aesthetic fidelity' effect and the underlying cognitive process. While study 2 addresses a potential alternative explanation for these findings, study 3 identifies an important boundary condition to the 'aesthetic fidelity' effect, namely a product's ease of use. Last, we provide theoretical and managerial implications in the general discussion.

CONCEPTUAL DEVELOPMENT

Positive affect and the experience of pleasure play a crucial role in the perception and evaluation of design aesthetics. In his seminal paper, Bloch (1995) argued that perception of a product's design triggers an affective reaction that may range from simple product liking to deeply moving emotional experiences similar to those of works of art. In a similar vein, Leder et al. (2004) proposed a model of aesthetic experience where aesthetic emotions are argued to be the result of a continuous and satisfactory assessment of a stimulus. While this model focuses on the perception of artworks, aesthetic pleasure also plays an important role in the perception of everyday products (Patrick 2016).

The notion that consumers are attracted to aesthetic designs because of their affect-inducing nature is also consistent with the hedonic perspective of consumption (Alba and Williams 2013; Hirschman and Holbrook 1982; Holbrook and Hirschman 1982). The hedonic

perspective focuses on the emotive and sensory facets of the consumption process and considers consumption as a 'primary process' that is aimed at immediate gratification. The consumer is conceptualized as a pleasure seeker who chooses and uses products to satisfy his or her constant need for emotional arousal. In line with the pleasure principle (Freud 1975), aesthetics' hedonic marking may thus fuel into a natural human desire for affective stimulation. Finally, research in neuroscience has also affirmed the pleasing and rewarding properties of aesthetic stimuli using functional magnetic resonance imaging (fMRI) studies. As such, aesthetic perceptions have been shown to activate the reward circuitry of the brain, thereby generating a 'liking' as well as a 'wanting' response (Aharon et al. 2001; Berridge 1996; Berridge and Robinson 1998; Kawabata and Zeki 2004; Reimann et al. 2010).

Of interest to the current context, the affective reaction triggered by an aesthetic design may also lead to a corresponding behavioral response. As such, when a product's design elicits a positive affective response, consumers "will tend to engage in approach activities, such as extended viewing, listening, or touching the product" (Bloch 1995, p.20). Put differently, the affect triggered by aesthetic product designs may also influence how intensively a product is used. That is, the experience of pleasure may signal to a consumer that she is enjoying a product and may thus intensify and prolong the use of the product (Chen, Wyer, and Shen 2015; Martin et al. 1993). In line with that reasoning, the time spent on an activity has long been considered an index of hedonic response (Berlyne 1971). Similarly, free-choice persistence is one of the most prominent measures of people's enjoyment (i.e., intrinsic motivation) (Deci 1971, 1975; Deci, Koestner, and Ryan 1999). Studies from the consumer domain also provide support for the idea that affect and usage intensity are positively related. For instance, Bellizzi and Hite (1992) and Donovan et al. (1994) showed that the pleasure derived from a store's color and atmosphere increased the time that consumers spent in the store. Similarly, Menon and Kahn (2002) found that consumers' affective reaction towards the visual appeal of an online shopping site made them

spend more time browsing and exploring products sold on that website as well as other websites. In a different context, Olney, Holbrook, and Batra (1991) showed that people's zipping and zapping behavior was influenced by the experience of pleasure. Commercials that were pleasurable to watch led to longer viewing times than less pleasurable ads. Finally, Holbrook and Gardner (1998, but see also 1993) found that CD listening times were significantly influenced by how much people enjoyed the music from the CDs.

In sum, these findings suggest that the experience of pleasure intensifies the execution of an ongoing activity. Applied to the current context, one may argue that a product's aesthetic appeal is positively related to usage intensity. That is, relative to products with less aesthetic designs, consumers may tend to use products with aesthetically appealing designs more intensively so as to expand the positive affective experience afforded by the product's design. Thus,

H1: Products with aesthetic designs will be used more intensively compared to those with unaesthetic designs.

The increased usage intensity triggered by aesthetic designs may have important downstream consequences. Research has shown that repeated use or consumption of a product may lead to lock-in, that is, a situation where consumers feel that the costs of switching from an incumbent product to another product are greater than the benefits that such a switch might provide (Klemperer 1987, 1995; Shapiro and Varian 1999). Importantly, lock-in may occur in the absence of search costs or financial costs and may be based on the cognitive costs associated with learning how to operate a new product (Johnson et al. 2003; Murray and Häubl 2007; Zauberman 2003). As such, the acquisition of new skills typically conforms to a power law of practice. That is, skills in most tasks tend to evolve very rapidly at first but evolve at a continuously reducing pace later on (Newell and Rosenbloom 1981). At high

levels of proficiency, execution of a behavior requires little cognitive effort and may become increasingly automated (Anderson 1983).

In the context of product use, Murray and Häubl (2007) observe that "the costs associated with thinking about and using a particular product decrease as a function of the amount of experience a consumer has with it" (p.77). Importantly, as consumers become more experienced with a product, they may not only become more proficient at operating it, but may also become increasingly reluctant to switch to a competitive product. That is, while the incumbent product can be used efficiently, a new product would require the consumer to learn a new set of product-specific skills. These differences in cognitive effort and time expenditure make it costly to the consumer to switch, thus increasing the subjective value of the incumbent product and creating cognitive lock-in (Johnson et al. 2003; Ratchford 2001).

For instance, Murray and Häubl (2007) showed that slight changes in the interface of a website may lead to lock-in. In their research, participants were required to complete a search task on a website that either relied on drop-down menus or radio buttons for navigation. After participants had some time to get used to the navigation modes, they became significantly faster in using them. More importantly, when participants were offered the chance to switch to a different navigation mode to complete an additional number of search tasks, they showed a strong preference for the mode they had practiced and had become proficient with. In sum, usage skills that are developed during repeated use and that cannot be transferred to other products may create cognitive switching costs, leading to greater customer loyalty (Johnson et al. 2003; Murray and Häubl 2003, 2007). Importantly, cognitive lock-in does not require that the product is functionally superior or that the consumer has a positive attitude toward the product (Murray and Häubl 2007).

These findings are of direct relevance for understanding the relationship between design aesthetics and usage behavior. As proposed in H1, consumers may tend to use products with aesthetic designs more intensively than those with unaesthetic ones. Assuming that operating

the product requires some degree of proficiency, consumers are likely to develop product-specific usage skills and may eventually feel that switching to an alternative product is costly. Hence, these arguments suggest that the effects of product aesthetics extend beyond the actual act of consuming. Specifically, we postulate that aesthetic product designs may trigger an 'aesthetic fidelity' effect where consumers will become more proficient at operating products with highly aesthetic designs (relative to those with less aesthetic designs) and will subsequently exhibit a greater preference for these products (i.e., are less likely to switch to an alternative product when offered the opportunity to do so). Thus,

H2: Products with aesthetic designs will lead to higher levels of usage proficiency compared to those with unaesthetic designs.

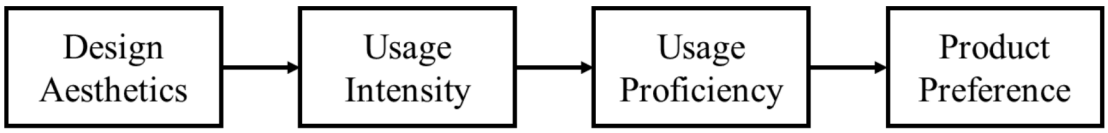
H3: Products with aesthetic designs will engender greater product preferences (i.e., will reduce consumers' propensity to switch to a competitive product) compared to those with unaesthetic designs.

To sum up, we postulate that aesthetic product designs initiate a chain of processes that climax in the 'aesthetic fidelity' effect. Specifically, we propose that aesthetic designs intensify a product's use, thereby fostering the development of product-specific usage skills (Newell and Rosenbloom 1981). These skills, in turn, increase the value of a product to the consumer (i.e., by reducing learning and usage costs) and may therefore engender higher product preferences (Johnson et al. 2003; Murray and Häubl 2007). Formally,

H4: The effect of design aesthetics on product preference will be mediated in serial by higher usage intensity and higher levels of usage proficiency.

FIGURE 1

CONCEPTUAL MODEL



Next, we seek to identify a boundary condition for the 'aesthetic fidelity' effect. Central to our framework is the notion that aesthetics is hedonically marked and that using aesthetically appealing products is intrinsically pleasurable (Bamossy, Scammon, and Johnston 1983; Bloch 1995). One may argue, however, that a design's aesthetic appeal is not the only factor feeding into a product's hedonic value. In this respect, researchers have argued that the hedonic value of using a product is also affected by the product's ease of use (Davis, Bagozzi, and Warshaw 1992). While functionality is considered to be the most important attribute for technological products that are used for instrumental reasons, ease of use is one of the most important determinants for predicting the use of technological products that are of a more hedonic nature (Van der Heijden 2004). Moreover, unlike design aesthetics, ease of use is a property that consumers can only experience after they have bought and/or started using a product. As such, research has shown that technological products that are difficult to use deteriorate the consumption experience and may trigger dissatisfaction and frustration (Davis et al. 1992; Thompson, Hamilton, and Rust 2005; Van der Heijden 2004; Wood and Moreau 2006).

These findings are also of relevance in the current context. That is, we postulate that a product's ease of use will moderate the relationship between product aesthetics and usage intensity. As such, we have argued that an aesthetic design will trigger a positive affective response that will cause a consumer to use a product more intensively. This effect, however, will likely only emerge when the product is easy to use. In this case, the experience of using

the product will align with the affective reaction triggered by the product's design such that consumers will tend to use products with aesthetic designs more intensively than products with unaesthetic designs.

When, however, the product is difficult to use, a different pattern of results may emerge. In this case, the experience of using the product will contrast with the effect of design aesthetics.

While consumers may experience an initial affective reaction in response to an attractive design (Bloch 1995; Reimann et al. 2010), this reaction may not suffice to compensate for the difficulty of using the product (Davis et al. 1992; Van der Heijden 2004). Put differently, the hedonic value associated with using an attractive product will be compromised by the product's low ease of use. This, in turn, may affect how intensively the product will be used. As usage intensity is strongly affected by the hedonic value of the consumption experience (Hirschman and Holbrook 1982; Holbrook and Gardner 1998), consumers may show little inclination to use products that are difficult to use—even if these products are aesthetically appealing. Hence, products with more appealing designs will not be used more intensively than those with less appealing designs when ease of use is low. Thus,

H5: A product's ease of use will moderate the effect of design aesthetics on usage intensity. That is, the effect of design aesthetics on usage intensity will be more pronounced when a product is easy (vs. difficult) to use.

The interactive effect of design aesthetics and ease of use on usage intensity may also have downstream consequences. That is, our previous arguments have highlighted the importance of usage intensity in shaping usage proficiency and product preferences. In particular, the more time consumers spend with a product, the more proficient they should become at using it and the more locked-in they should subsequently feel. Against this background, one may expect that design aesthetics will only trigger the effects outlined in our

conceptual model (see figure 1) when ease of use is high but not when it is low. Technically speaking, we would expect to observe a moderated serial mediation such that the effect of design aesthetics on the first mediator (i.e., usage intensity) will be moderated by ease of use (as proposed in H5), and usage intensity, in turn, will determine the level of usage proficiency and product preferences. Thus,

H6: Design aesthetics will serially influence usage intensity, usage proficiency, and product preferences when ease of use is high but not when ease of use is low (i.e., moderated serial mediation).

PILOT STUDY

One of the key contentions of our model is that products that are more aesthetically appealing are also used more intensively. Before testing this contention in a controlled laboratory environment, we aimed to examine whether this relationship could also be observed in a real-life setting. Specifically, we focused on the car market and examined if the appeal of a new car's design is related to a car's mileage (i.e., use) when sold on the used car market. Testing this relationship, however, required a measure of aesthetic appeal that was collected in the past rather than the present. As the mileage of a car accumulates over time, we needed to employ a measure that would be indicative of a car's aesthetic appeal at the beginning rather than the end of the usage period. That is, using a present-day measure of the aesthetic appeal of a particular car would be less reliable for predicting past driving behavior and usage intensity. Hence, we relied on a pre-existing dataset from Landwehr et al. (2013). This dataset was collected in 2007 and contains ratings of the aesthetic appeal of 28 cars that were sold as new cars in Germany at that time (16 from the compact car category and 12 from the midsize executive category).

To obtain data on the usage intensity of these cars between 2007 and 2017, we relied on data provided by the largest online platform for used vehicles in Germany, namely mobile.de. Cars that are sold on this platform need to indicate their total mileage as well as the year in which they were first registered. For each of the 28 models in our sample, we extracted all of the cars that were first registered in 2007 (8,965 cars). Hence, the time period of usage was constant across all cars (i.e., 10 years from 2007 to 2017). Next, we identified the median mileage for each of the 28 cars and regressed these mileages on the aesthetic appeal judgments provided by Landwehr et al. (2013). We focused on the median value of mileage rather than the mean value as the former is more robust against outliers. As expected, the aesthetic appeal of the cars was positively related to their mileage ($b = .38$, $p < .05$)[1]. Hence, these results provide initial support for the idea that products that are more aesthetically appealing are also used more intensively. Next, we turn to a more systematic exploration of this effect.

STUDY I: THE AESTHETIC FIDELITY EFFECT

Design, Participants, and Procedure

The aim of study 1 was to provide support for the 'aesthetic fidelity' effect and to test the underlying cognitive process (i.e., to test H1-H4). Study 1 used a one-factorial design where design aesthetics (aesthetic, unaesthetic) was manipulated between participants. A total of 70 German students participated in the study for a bag of candies as an incentive (M_{age} = 22.2 years, 48% female). One participant was deleted because she guessed the true purpose of

[1] For two of the 28 models in our sample, we had less than five observations each (i.e., for these two models less than five cars were offered on the platform at the time we collected the data). When excluding these two observations, the pattern of results remains robust ($b = .30$, $p < .05$).

the study. Participants were run individually and randomly assigned to one of the two conditions.

At the beginning of the experiment, all participants were handed a smartphone for visual inspection (the 'incumbent phone'). Importantly, all participants received the same smartphone (i.e., a Samsung Galaxy A3) and the aesthetic design of the smartphone was altered by using different design cases. Half of the participants received a smartphone with an aesthetic design case and the other half the same phone with an unaesthetic design case (see figure 2). The aesthetic appeal of the design cases had been pretested prior to the study (more details follow below). Participants were told that they were free to use the phone and the applications installed on the phone for as long as they wanted to and were encouraged to try different applications. Importantly, all applications on the phone were secured with an unlock pattern which participants repeatedly needed to enter during the usage period (i.e., each time they wanted to open a new application).

After participants indicated that they had finished using the phone, they were asked to take a 'pattern entering test'. That is, participants were asked to enter the pattern installed on the phone five times in a row and the experimenter measured the time participants needed to complete this task. In the next part of the study, participants were shown a second phone that was the same model as the first one (i.e., a Samsung Galaxy A3) but differed in terms of its design case and unlock pattern (the 'competitive phone'). While the design case of the competitive phone was different from the first one, the aesthetic appeal of the two phones did not differ. That is, if participants had received an (un-)aesthetic phone in the first part of the experiment, they were given an equally (un-)aesthetic phone in the second part.

FIGURE 2

SMARTPHONE DESIGNS USED IN STUDY 1

Prior to the main study, we conducted a pretest to ensure that a) the two aesthetic (unaesthetic) phones did not differ in their aesthetic appeal and b) that the aesthetic phones were indeed more appealing than the unaesthetic ones. Eighty participants were asked to rate the two aesthetic or the two unaesthetic phones in terms of their aesthetic appeal using three 7-point items adapted from Mathwick, Malhotra, and Rigdon (2001) ('The smartphone is attractive', 'The smartphone is aesthetically appealing', 'The smartphone looks good', α = .98). The pretest showed that there were no differences in terms of aesthetic appeal between the two aesthetic (M_{phone1} = 3.53, M_{phone2} = 3.41, $t(39)$ = .83, p > .40) or the two unaesthetic designs (M_{phone1} = 1.71, M_{phone2} = 1.65, $t(39)$ = .53, p > .55). Furthermore, the aesthetic designs were considered more aesthetic than the unaesthetic ones ($M_{aesthetic}$ = 1.68, $M_{unaesthetic}$ = 3.47, $F(1, 78)$ = 25.49, p < .001).

Participants in the main study were then given one opportunity to practice entering the unlock pattern of the competitive phone, after which they were asked to enter this pattern five times in a row as quickly as possible. Again, the experimenter measured the time that participants needed to complete this task. Following this, participants had to indicate which of the two phones they would prefer if they could keep one and use it in the future and responded to a final set of measures including the manipulation checks. To ensure that responses were not affected by a particular design, the two variants of the aesthetic/unaesthetic designs were randomly assigned to the incumbent and the competitive conditions. That is, the particular designs that were used to operationalize the incumbent and the competitive phone were counterbalanced within each experimental condition (aesthetic vs. unaesthetic). As this randomized assignment did not reveal any effects, the data were collapsed across this methodological control factor in both conditions.

Measures

Dependent Variables. Usage intensity (i.e., duration of product use) of the phones was measured in seconds using a stopwatch. Following Murray and Häubl (2007), we used relative task completion times of the two pattern entering tests as a measure of participants' usage proficiency. To obtain a meaningful metric, we subtracted participants' completion time with the incumbent phone from their completion time with the competitive phone. Thus, higher scores indicate that participants were faster using the incumbent phone compared to the competitive phone. Product preference was measured as a binary variable denoting participants' preference for the incumbent phone (i.e., choice share of the incumbent).

Manipulation Check. As a check on the aesthetic appeal of the phones, we relied on the same three 7-point items as in the pretest ($\alpha = .96$). All items used in this study and the other

studies used 7-point scales. Moreover, we included product usage enjoyment as an additional manipulation check in study 1. As such, previous research suggests that using aesthetically attractive products is intrinsically enjoyable (Bamossy et al. 1983; Bloch 1995). Hence, measuring usage enjoyment allowed us to ascertain that product designs that differ in terms of their aesthetic appeal are indeed associated with different levels of affect. Product usage enjoyment was measured on a four-item scale developed by Agarwal and Karahanna (2000) ('I had fun using the smartphone', 'Using the smartphone provided me with enjoyment, 'I enjoyed using the smartphone', 'Using the phone was enjoyable', $\alpha = .93$).

Results

Manipulation Check. A one-way ANOVA indicated that the aesthetic appeal of the phones had been manipulated successfully. That is, the aesthetic phones were perceived as significantly more aesthetic than the unaesthetic ones ($M_{aesthetic} = 3.88$, $M_{unaesthetic} = 1.90$, $F(1, 67) = 38.32$, $p < .001$). Within the groups, both design variants were considered to be of equal appeal (aesthetic designs: $M_{design1} = 3.96$, $M_{design2} = 3.79$, $t(33) = 1.08$, $p > .25$; unaesthetic designs: $M_{design1} = 1.93$, $M_{design2} = 1.87$, $t(34) = .68$, $p > .50$). Moreover, participants also indicated that the more aesthetic phones were more enjoyable to use than the less aesthetic ones ($M_{aesthetic} = 4.60$, $M_{unaesthetic} = 2.98$, $F(1, 67) = 37.04$, $p < .001$).

Hypothesis Testing. An ANOVA revealed that the aesthetic smartphone was used for significantly longer periods of time than the unaesthetic one ($M_{aesthetic} = 464.09$, $M_{unaesthetic} = 139.57$, $F(1, 67) = 85.55$, $p < .001$), thus providing support for H1. Moreover, use of the aesthetic phone led to significant learning effects. The difference in the entering speed of the lock pattern between the competitive and the incumbent phone was significantly larger in the group with the aesthetic phones compared to the group with the unaesthetic phones ($M_{aesthetic}$

= 1.78, $M_{unaesthetic}$ = -.10, F(1, 67) = 4.05, $p < .05$). These results provide support for H2 and suggest that participants that had received the aesthetic phone developed product-specific usage skills.

To test H3, we employed a logistic regression model that regressed phone choice (1 = incumbent phone; 0 = competitive phone) on the effect-coded experimental factor (-1 = unaesthetic phones; 1 = aesthetic phones). This analysis revealed a positive effect of design aesthetics on preferences for the incumbent smartphone ($b = .68$, $p = .01$). Specifically, 77% of those participants that had received a more aesthetic phone in the beginning of the study preferred to remain with this phone (even though they could have chosen another phone that was equally attractive), whereas only 46% of those participants that were given an unattractive phone indicated that they wanted to keep this phone. These results provide support for H3.

Mediation Analysis. To test the mediation effect proposed in H4, we used a serial multiple mediator model (Model 6, Hayes 2013) of the following form: design aesthetics ➔ usage intensity ➔ usage proficiency ➔ product preference. In line with H4, the results of a bootstrapping mediation analysis (5,000 resamples) showed that the indirect effect of design aesthetics on preference for the incumbent phone through usage intensity and usage proficiency was significant and positive (indirect effect = .40; 95% CI: [.03, 1.27]).

Discussion

Study 1 provides support for our conceptual framework and points to the possibility of an 'aesthetic fidelity' effect. That is, participants used products with more attractive designs for significantly longer periods of time than those with less attractive designs. As a result of this extended usage experience, participants became more proficient at using the product,

which, in turn, reduced the probability of switching to an alternative product that was equally attractive (i.e., a lock-in effect).

While the results of study 1 are in line with our conceptual reasoning, there is also an alternative explanation that may account for these findings. As such, a key argument of our model is that aesthetic designs lead to longer usage times, which, in turn, will enhance usage proficiency and preferences. In other words, design aesthetics matter because it increases the time consumers spend with a product. Arguably, however, design aesthetics may affect usage proficiency and preferences in a more direct fashion by strengthening a person's mental abilities. Specifically, a great number of studies have revealed a relationship between individuals' affective states and their cognitive performance (for a review, see Isen 2001). For instance, positive affect has been found to increase cognitive flexibility (Murray et al. 1990), openness and efficiency (Isen and Means 1983; Isen, Rosenzweig, and Young 1991), to encourage more creative problem solving (Isen, Daubman, and Nowicki 1987), and to promote more integrative thought processes (Dovidio et al. 1995; Estrada, Isen, and Young 1997). In this respect, Frederickson's (1998) broaden-and-build theory of positive emotions argues that good emotions widen people's current thought-action repertoire, thereby building individuals' intellectual, physical, and social resources. These arguments may also be of relevance in the current context. As such, more aesthetic product designs may trigger positive affect (Bamossy et al. 1983; Reber, Schwarz, and Winkielman 2004) and this increase in affect, in turn, may form the basis for rapid skill acquisition. That is, a momentary strengthening of one's cognitive system may allow for a deeper understanding of a new product and increased usage proficiency.

Furthermore, the positive affect triggered by a more aesthetic design may contribute to skill development by increasing performance motivation. As such, research has typically found that performance is dependent on a person's motivation (Cerasoli, Nicklin, and Ford 2014) and that positive affect is a factor that may fuel motivation (Erez and Isen 2002; Seo,

Barrett, and Bartunek 2004). More specifically, positive emotions may have an activating effect and may urge a person to work towards a specific goal (Brehm 1999; Cacioppo, Gardner, and Berntson 1999; see also Seo et al. 2004). Hence, positive affect may increase intrinsic motivation, thereby encouraging an individual to invest more effort in a task and to be more tenacious in the face of setbacks (for a review, see Cerasoli et al. 2014). In the current context, more aesthetic product designs may thus support skill acquisition and product preferences by increasing consumers' motivation to master a product and to become more proficient at using it.

In light of these arguments, usage intensity may be less central in explaining the relationship between aesthetic designs, skill acquisition, and product preferences. Instead, one may argue that an 'aesthetic fidelity' effect may emerge because aesthetic designs affect consumers' momentary cognitive abilities and/or their motivation to master a new product, regardless of the time they spend using the product. In the next study, we address these competing explanations and aim to gain further support for our framework by experimentally manipulating usage intensity to identify its causal effect in the serial mediation model.

STUDY II: THE ROLE OF USAGE INTENSITY

Design, Participants, and Procedure

Study 2 used a 2 (design aesthetics: aesthetic, unaesthetic) x 2 (usage intensity: low, high) between-participants design. A total of 117 German students (M_{age} = 22.23 years, 27% female) participated in the study for a bag of candies as an incentive. Students were run individually and randomly assigned to one of the four conditions.

Similar to study 1, participants were handed a smartphone with an aesthetic or unaesthetic design case. All applications on the phone were secured with an unlock pattern

(the same models, design cases, and unlock patterns as in study 1 were used). In contrast to study 1, however, participants were not allowed to interact with the phone as long as they liked. Instead, participants were either told not to use the phone at all in the initial stage of the study (low usage intensity) or were told that they were allowed to use the phone for exactly six minutes (high usage intensity). The experimenter ensured that participants complied with these requests. Across all four conditions, we then administered the pattern entering test described in study 1 and measured task completion times (participants in the low-usage conditions were allowed one trial before taking the test). Following this, participants were handed the second phone that differed in terms of its design and unlock pattern and were asked to complete the second pattern entering test. Similar to study 1, participants were allowed a one-time trial of the patterns prior to the second test. Finally, participants were asked to indicate their preference for either of the two phones and responded to a final set of measures including the manipulation check. As in study 1, the two variants of the aesthetic/unaesthetic designs were randomly assigned to the incumbent and the competitive conditions. As this randomized assignment did not reveal any effects, the data were collapsed across this methodological control factor in both conditions.

This experimental design allowed us to address the two alternative process explanations outlined above. If the relationship between design aesthetics, usage proficiency, and preferences is indeed determined by increased usage intensity, then controlling for usage intensity should eliminate the effect of aesthetics. In other words, because skills are acquired through practice, design aesthetics should no longer affect usage proficiency and preferences if participants cannot decide on their own how intensively they want to interact with the product. Hence, we would expect to only observe a main effect of the usage intensity manipulation on skill acquisition and preferences. If, on the other hand, the effect of design aesthetics is determined by increased mental abilities or motivation, then controlling for usage intensity should exert less of an effect. That is, participants exposed to the aesthetic phone

should exhibit greater cognitive abilities and/or performance motivation than those exposed to the unaesthetic one and this effect should emerge regardless of the opportunity to practice. Hence, we would expect to only observe a main effect of design aesthetics on skill acquisition and preferences.

Measures

Dependent Variables. Participants' usage proficiency and preferences were measured in the same manner as in study 1.

Manipulation Check. The aesthetic appeal of the phones was measured with the same items as in study 1 ($\alpha = .95$).

Results

Manipulation Check. Again, the aesthetic phones were rated as being more attractive than the unaesthetic ones ($M_{aesthetic} = 3.59$, $M_{unaesthetic} = 2.74$, $F(1, 113) = 10.72$, $p < .01$). Within the groups, the attractiveness of the two design variants did not differ significantly (aesthetic designs: $M_{design1} = 3.56$, $M_{design2} = 3.62$, $t(58) = -.49$, $p > .60$; unaesthetic designs: $M_{design1} = 2.78$, $M_{design2} = 2.70$, $t(57) = .53$, $p > .55$).

Hypothesis Testing. A 2 X 2 ANOVA revealed a significant main effect of usage intensity on usage proficiency ($F(1, 113) = 4.66$, $p < .05$). That is, the difference in the entering speed of the lock patterns between the competitive and the incumbent phone was significantly larger for participants that were allowed six minutes of usage than for those that had not been allowed to use the phone ($M_{high\ usage\ intensity} = 1.45$, $M_{low\ usage\ intensity} = -.28$).

However, the main effect for design aesthetics ($F(1, 113) < 1$) as well as the interaction did not reach significance ($F(1, 113) < 1$). Hence, these results suggest that usage proficiency was determined by the opportunity to use the phone rather than the aesthetic appeal of the phones per se.

A logistic regression where participants' phone preference (0 = competitive phone; 1 = incumbent phone) was regressed on design aesthetics (-1 = unaesthetic phones; 1 = aesthetic phones), usage intensity (-1 = low; 1 = high), and their interaction yielded similar results. This analysis revealed a significant main effect of usage intensity ($b = .52$, $p < .01$), indicating that 74% of those participants that had been given the opportunity to use the phone for six minutes decided to remain with the incumbent phone, whereas only 50% of those participants that had not been allowed to use the phone opted for the incumbent phone. Moreover, the main effect of design aesthetics ($b = -.10$, $p > .60$) and the interaction effect were not significant ($b = .03$, $p > .85$). Again, these effects suggest that usage intensity was instrumental in determining lock-in.

Mediation Analysis. In addition, we performed a mediation analysis to gain further support for the underlying process. Since the proposed mediator (i.e., usage proficiency) and the outcome variable (i.e., preference for the incumbent) are only influenced by usage intensity but not by aesthetics or the interaction, we tested the following mediation model: usage intensity ➔ usage proficiency ➔ product preference (aesthetics and the interaction were included as control variables). In line with our conceptual model (see figure 1), the results of a bootstrapping mediation analysis (5,000 resamples) showed that the indirect effect of usage intensity on product preferences through usage proficiency was significant and positive (indirect effect = .51; 95% CI: [.05, 1.15]).

Discussion

The results of study 2 provide further support for our conceptual model. Importantly, study 2 rendered an explanation based on a broadened thought-action repertoire and/or a heightened performance motivation less likely as the effect of design aesthetics on skill acquisition and product preferences disappeared when usage intensity was explicitly controlled for. Instead, skill acquisition and preferences were determined by the opportunity to interact with the phone. Hence, these results suggest that the 'aesthetic fidelity' effect is based on an intensified product use that, in turn, may be triggered by more aesthetic designs. Study 3 sought to identify a potentially important boundary condition for this effect by focusing on the product's ease of use.

STUDY III: THE BOUNDARIES OF THE AESTHETIC FIDELITY EFFECT

Design, Participants, and Procedure

The aim of study 3 was to test H5 and H6. Study 3 used a 2 (design aesthetics: aesthetic, unaesthetic) x 2 (ease of use: low, high) between-participants design. A total of 83 German students (M_{age} = 22.98 years, 34% female) participated in the study for a bag of candies as an incentive. Students were run individually and randomly assigned to one of the four conditions.

The procedure of the experiment was the same as in the first study. That is, all participants were given the same phone with either an aesthetic or an unaesthetic design. As in study 1, participants were free to use the phone for as long as they wanted to and were encouraged to try different applications. All applications on the phone were secured with a lock pattern that was either relatively easy or difficult (for more details, see below). After participants indicated that they had finished using the phone, they completed the first pattern

entering test. Following this, participants were handed a second smartphone (i.e., the competitive phone) that was the same as the first one (i.e., the incumbent phone) but differed in terms of its design and unlock pattern. As in study 1, participants had one opportunity to practice the unlock pattern of the competitive phone and were then asked to complete the second pattern entering test. Finally, all participants indicated which of the two smartphones they preferred to keep and use in the future and responded to a final set of measures including the manipulation check. As in the previous studies, the two variants of the aesthetic/unaesthetic designs were randomly assigned to the incumbent and the competitive conditions. Again, the analyses revealed no effects for this randomized assignment, so that the data were collapsed across this methodological control factor.

Independent Variables

To manipulate design aesthetics, we relied on the same design cases that were used in the previous studies. To manipulate ease of use, we installed different lock patterns. Specifically, the patterns used in Studies 1 and 2 served as patterns of low difficulty (i.e., high ease of use). More complex patterns (i.e., less intuitive, more difficult to remember, more error-prone, more laborious and lengthy to execute) were created for the low ease of use condition. The lock patterns used in the study are provided in figure 3.

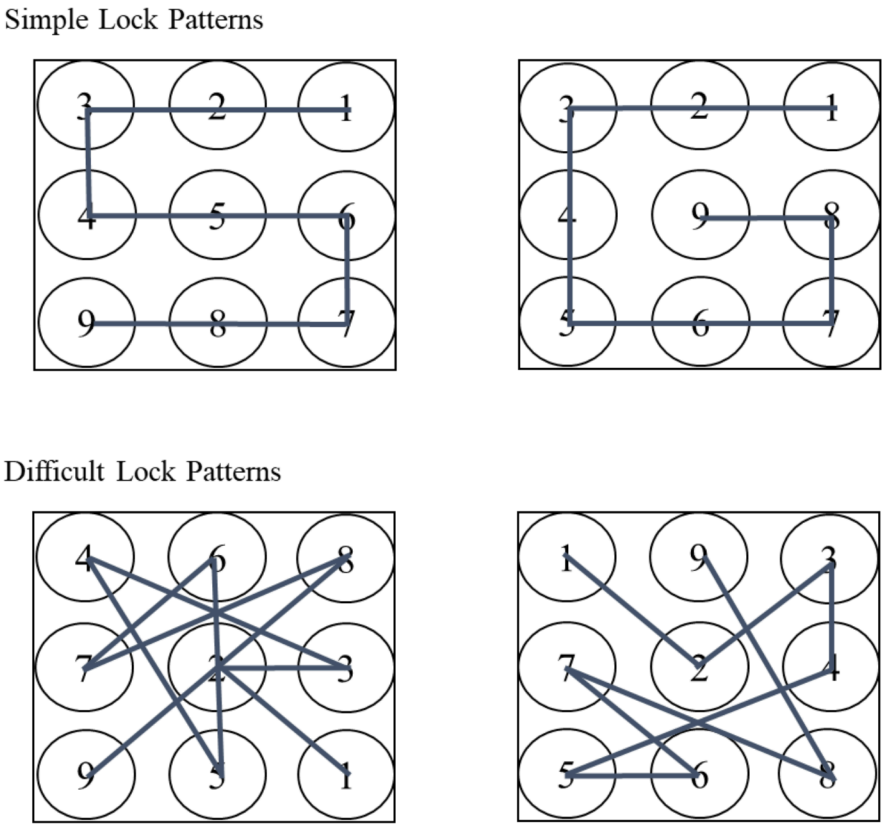
Measures

Dependent Variables. Usage intensity (i.e., length of product use) of the phones was measured in seconds using a stopwatch. Usage proficiency and lock-in were measured in the same manner as in study 1.

Manipulation Check. The aesthetic appeal of the phones was measured with the same items as in study 1 (α = .92).

FIGURE 3

LOCK PATTERNS USED IN STUDY 3



Results

Manipulation Check. As in the previous studies, aesthetic phones were rated as more attractive than the unaesthetic ones ($M_{aesthetic}$ = 3.58, $M_{unaesthetic}$ = 2.43, $F(1, 79)$ = 16.28, p < .001). Within the groups, the design variants did not differ in terms of attractiveness (aesthetic designs: $M_{design1}$ = 3.62, $M_{design2}$ = 3.54, $t(40)$ = 0.55, p > .55; unaesthetic designs: $M_{design1}$ = 2.40, $M_{design2}$ = 2.47, $t(41)$ = -.44, p > .65).

Hypothesis Testing. A 2 X 2 ANOVA with usage intensity as the dependent variable revealed significant main effects for both design aesthetics ($F(1, 79) = 27.64$, $p < .001$) and ease of use ($F(1, 79) = 14.29$, $p < .001$). Importantly, these effects were qualified by a significant interaction ($F(1, 79) = 10.72$, $p < .01$). To follow up on this interaction, two planned contrasts were performed. In line with H5, design aesthetics only led to longer usage times when ease of use was high ($M_{aesthetic} = 428.33$, $M_{unaesthetic} = 166.30$, $F(1, 79) = 35.99$, $p < .001$) but not when ease of use was low ($M_{aesthetic} = 211.65$, $M_{unaesthetic} = 150.77$, $F(1, 79) = 1.99$, $p > .15$).

Mediation Analysis. We performed a moderated serial mediation analyses to test H6. In particular, we tested the following sequence of effects conditional on ease of use (high vs. low): design aesthetics ➔ usage intensity ➔ usage proficiency ➔ product preferences. The two experimental factors were effect-coded for the analysis (i.e., -1 = unaesthetic phones; 1 = aesthetic phones; -1 = low ease of use; 1 = high ease of use). In line with H6, the results of a bootstrapping mediation analysis (5,000 resamples) showed that the indirect effect of design aesthetics on preferences for the incumbent phone through usage intensity and proficiency was significant and positive (indirect effect = .66; 95% CI: [.19, 1.56]) when ease of use was high. However, when ease of use was low, the indirect effect was not significant (indirect effect = -.09; 95% CI: [-.33, .08]). Accordingly, the bootstrapped index of moderated mediation (Hayes 2015) reveals a significant difference in magnitude between the two indirect effects (95% CI: [.20, 1.81]), which confirms that the serial mediation is indeed moderated by ease of use.

Discussion

Study 3 identifies an important boundary condition for the 'aesthetic fidelity' effect by examining how design aesthetics interacts with a product's ease of use. As such, when ease of use was high, more aesthetic designs led to longer usage times than less aesthetic designs, replicating the findings of study 1. When, however, ease of use was low, usage intensity did not differ as a function of aesthetics. Furthermore, a moderated serial mediation analysis revealed that the interactive effect of design aesthetics and ease of use on usage intensity had further downstream consequences on proficiency and product preferences. In sum, study 3 demonstrates that design aesthetics will only trigger the sequence of effects outlined in our conceptual model (see figure 1) when the ease with which a product can be used meets a minimal threshold. These results expand the findings of the previous studies by pointing to the important role of ease of use in shaping aesthetics-based usage behavior.

GENERAL DISCUSSION

The purpose of this research was to examine the relationship between design aesthetics and consumers' usage behavior and preferences. In particular, we argued that aesthetic designs may decrease the likelihood that consumers will switch from an incumbent product to a competitive product and that this effect is driven by increased usage intensity and usage proficiency. Study 1 provided initial support for an 'aesthetic fidelity' effect and found that more aesthetic products were used more intensively. This extended usage experience, in turn, resulted in greater usage proficiency and greater preferences for the incumbent product. Study 2 addressed an alternative explanation that was based on the idea that aesthetic designs enhance consumers' momentary thought-action repertoire and performance motivation and that these factors will drive skill acquisition and product preferences. Finally, study 3

examined a potential boundary condition—a product's ease of use—and found that aesthetic designs led to increased usage intensity, greater skill development, and greater preferences for the incumbent when products were easy to use but not when they were difficult to use.

These findings make several contributions to the literature. First, our findings contribute to the growing literature on design aesthetics. Although design aesthetics has attracted a lot of research attention in recent years (Landwehr et al. 2011; Landwehr et al. 2013; Liu et al. 2017; Townsend and Shu 2010; Trudel and Argo 2013; Wu et al. 2017), most of these studies have examined design aesthetics in the context of pre-purchase preferences and purchasing behavior (for an exception, see Wu et al. 2017). Our research examines the effects of aesthetics from a hitherto rarely considered perspective and shows that aesthetics may affect how intensively consumers use a product and how proficient they become at using it. Hence, our research demonstrates that the effects of design aesthetics extend beyond the pre-consumption stage and have an enduring impact on people's consumption experiences.

In this respect, it is of interest to compare our findings to the findings of a recent study by Wu et al. (2017). These authors found that product aesthetics may lead to reduced consumption enjoyment and may inhibit actual consumption, a finding which seems to contradict the findings of our research. Note, however, that Wu et al. (2017) focused on very different kinds of products (i.e., nondurable products, such as napkins or toilet paper) and that the effect of product aesthetics on usage behavior may differ across different product categories. As such, the authors argue that nondurable products are inevitably destroyed during consumption. As consumers appreciate the effort that is necessary for creating beautiful products, they may lament seeing them getting destroyed during the consumption process and may thus tend to use them to a lesser extent. In our research, however, we focused on categories where the product is durable and not destroyed during consumption and where more intensive usage may allow consumers to gain greater usage proficiency (e.g., smartphones, cars). Hence, the findings of Wu et al. (2017) as well as the findings of this

research point to the importance of considering the effects of aesthetics on actual consumption behavior and also suggest that the exact nature of these effects may depend on the particular product category in question.

Second, our research contributes to the literature on skill acquisition and the lock-in phenomenon. Previous research in this area has investigated how different forms of practice influence the process of skill acquisition (Lakshmanan and Krishnan 2011; Lakshmanan et al. 2010) and how learning may affect switching behavior (Johnson et al. 2003; Murray and Häubl 2007). As a result, there is considerable knowledge on how consumers acquire skills and what the consequences of this process may be (i.e., a cognitive lock-in). Interestingly, however, there is less research on what motivates consumers to engage in practice in the first place. To the best of our knowledge, ours is one of the first studies that explicitly addresses this question and examines a potential antecedent of the skill acquisition process. That is, our research shows that the aesthetic appeal of a product may draw consumers into using the product and may thus play an important role in the skill acquisition process and its ensuing consequences (i.e., a cognitive lock-in).

Finally, by demonstrating that the effect of design aesthetics is moderated by ease of use, this research also contributes to the literature on hedonic and utilitarian consumption. This stream of research has examined how consumers choose between hedonic and utilitarian goods and how they resolve trade-offs involving functional and hedonic product attributes (Chernev 2004; Chitturi et al. 2007; Dhar and Wertenbroch 2000; Okada 2005). Extending these findings, our studies demonstrate that the in-use experience of hedonic and functional attributes may affect consumers' usage behavior and product preferences. As such, our research shows that the effect of a hedonic attribute (i.e., the aesthetic appeal of a product's design) may be undermined if a functional attribute (i.e., a product's ease of use) does not meet a minimal threshold. Put differently, our results suggest that the utility that consumers

derive from a certain level of a hedonic attribute may be determined by the level of a functional attribute that is also part of the consumption experience.

MANAGERIAL IMPLICATIONS

The current research also has important managerial implications. As such, our findings suggest that companies can enrich the consumption experience and increase the in-use value that is delivered to consumers through the aesthetic appeal of their products. This may be of particular relevance for products that are of a technological nature and that require certain skills on part of the consumer. In this respect, research has noted that initial learning costs may act as a barrier to the adoption of new products (Bagozzi, Davis, and Warshaw 1992; Billeter et al. 2010; Thompson et al. 2005). For instance, Billeter et al. (2010) report that consumers invest on average a mere 20 minutes in learning how to use new electronic products and that up to 50% of those products that consumers return to electronic stores because of apparent malfunctioning are indeed fully functional. Against this background, aesthetic designs may facilitate and prolong the initial usage process and may increase the probability that consumers actually learn how to use the product effectively. Assuming that the extended use of a product is associated with the development of specific usage skills, aesthetic designs may also create switching barriers as consumers may be reluctant to switch to a competitive product that would require the acquisition of new skills (Johnson et al. 2003; Murray and Häubl 2007). Put differently, design aesthetics may lead to an 'aesthetic fidelity' effect that may act as a source of competitive advantage. Moreover, the findings of this research may be of direct benefit to companies that offer their products on a rental basis. By intensifying consumption, aesthetic designs may naturally increase the calculation basis for a rental fee (e.g., length of rental, number of kilometers travelled). In other words, aesthetic designs may be an effective way to increase rental revenues.

At the same time, our findings also point to potential drawbacks of aesthetic product designs. As products with aesthetic designs may foster more intensive usage and the development of product-specific skills, consumers may become strongly habituated to a particular product and may be less likely to replace it. This may pose a challenge for companies that operate in categories where consumers are encouraged to substitute a product they are using with a new version or an upgrade on a regular basis. As such, these arguments demonstrate that the relationship between design aesthetics, usage intensity, and skill acquisition may have positive as well as negative implications for companies.

LIMITATIONS AND FUTURE RESEARCH

Our studies also have limitations that call for future research. First, all of the experimental studies relied on the same type of stimulus (i.e., smartphones). Relying on this kind of product allowed us to achieve a high level of experimental control and internal validity by manipulating the aesthetic appeal of the product (i.e., the design case) without altering any other product characteristics (e.g., ease of use, functionality, and ergonomics). More importantly, smartphones are prototypical of the kind of products where an 'aesthetic fidelity' effect may be most likely to occur, that is, everyday durable products that require a certain level of usage proficiency. However, future research may want to test our hypotheses using different kinds of products. In this respect, it may also be of interest to examine if and to what extent the effects of aesthetics vary across different product categories. As such, one may argue that the more important aesthetics is in a particular category, the stronger is its influence on usage intensity and skill development. For instance, aesthetics may have a stronger effect on the use of smartphones than, say, power tools. Similarly, future research may also test for potential differences between everyday and 'special occasion' products. 'Special occasion' products refer to products that are saved for special events by virtue of

their beauty (e.g., china that is only used on Christmas or a piece of jewelry that is only worn on important events). In such cases, a product's beauty may discourage rather than encourage an extended use.

In addition, the effects identified in this research may also depend on an individual's consumption motivation. That is, in light of the affective nature of aesthetics and the strong link between aesthetics and hedonic consumption (Hirschman and Holbrook 1982), aesthetics may have a stronger effect on usage intensity and skill acquisition when consumers are intrinsically motivated (i.e., consumption as 'fun') than when they pursue a utilitarian consumption goal (i.e., consumption as 'task'). For instance, previous research has shown that an appealing and vibrant design may conflict with a task-oriented mindset but may be evaluated positively when people have a hedonic consumption goal (Wang, Hernandez, and Minor 2010; Wang, Minor, and Wei 2011). Similarly, affective considerations have little effect on listening times of music when people are extrinsically motivated but are more influential when consumers are intrinsically motivated (Holbrook and Gardner 1998; see also Pham 1998). Accordingly, an 'aesthetic fidelity' effect may be more likely to emerge when consumers are motivated by hedonic/intrinsic consumption goals rather than task-oriented/extrinsic ones.

Finally, future research may also want to consider the long-term effects of aesthetics. Arguably, consumers may habituate to a particular product design over time or may even become bored (Berlyne 1971; Graf and Landwehr 2015), causing them to use the product less intensively. Although the results of our pilot study suggest that the relationship between aesthetics and usage intensity may be observed over extended periods of time, explicitly considering long-term effects may provide a fuller picture of the effects of aesthetics on consumption behavior and product preferences.

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DESIGN-BASED CONSUMPTION NORMS

Consumers' product usage behavior may be affected by a wide variety of factors, such as a product's usability or its level of performance. The effects of the most salient of all product attributes—those of a product's visual appearance—have, however, rarely been considered in this context before (for an exception, see Wu et al. 2017). The present article addresses this gap in the literature and argues that product design has a significant influence on the way in which consumers use their products. Specifically, the concept of 'design-based consumption norms' is introduced. These are conceptualized as symbolic directives for consumers' consumption behavior that are conveyed by a product's visual appearance. Two types of consumption norms are proposed to exist, and the two norms and their respective product designs and consumption behaviors are extensively discussed. The article concludes with theoretical and managerial implications.

Keywords: product design, consumption behavior, product usage, hedonic/utilitarian consumption

Product design has long become a central topic in marketing research. In times when products are becoming more and more alike in terms of functional features, a product's appearance has become one of the last means to stay competitive (e.g., Karjalainen and Snelders 2010; Kotler and Rath 1984; Talke et al. 2009). It may evoke interest in a product (e.g., Bloch 1995) and is central to consumers' product evaluation (e.g., Creusen and Schoormans 2005; Deng and Kahn 2009; Hagtvedt and Patrick 2008; Mugge, Dahl, and Schoormans 2017; Page and Herr 2002) and purchase behavior (Gemser and Leenders 2001; Jindal et al. 2016; Landwehr, Wentzel, and Herrmann 2013; Liu et al. 2017). However, in this article, we argue that the effect of a product's appearance may be even more substantial—– that it may influence virtually every behavior of a consumer's daily life. Specifically, we propose that product designs may convey consumption norms to consumers (i.e., 'design-based consumption norms'). That is, we postulate that based on their metaphorical meaning, product designs provide consumers with directives for their consumption behavior and thereby influence consumers' product usage. Importantly, we focus on the effects of holistic design impressions and not on the impact of only a single design characteristic, such as color (e.g., Deng, Hui, and Hutchinson 2010; Labrecque, Patrick, and Milne 2013) or a design's novelty (Mugge and Dahl 2013; Talke et al. 2009).

Two main categories of product design are proposed to exist and to underlie the concept of 'design-based consumption norms' (Raffelt, Schmitt, and Meyer 2013): on the one hand, designs that create a calm, ordered, and rational impression (i.e., functionalist designs) and, on the other hand, designs that appear vibrant, emotional, and stimulating (i.e., experiential designs). We contend that these different design impressions stimulate corresponding consumption behaviors. We refer to the well-established distinction between hedonic and utilitarian consumption in this context (e.g., Batra and Ahtola 1990; Dhar and Wertenbroch 2000; Mano and Oliver 1993; Okada 2005; Voss, Spangenberg, and Grohmann 2003). Hedonic consumption (e.g., candy) is traditionally described as primarily affect-driven,

whereas utilitarian consumption (e.g., fruit) is typically characterized as being more guided by rationality and thought. We postulate that large conceptual overlaps lead functionalist designs to provoke a utilitarian product use and experiential designs to stimulate hedonic consumption behaviors.

Importantly, our concept of 'design-based consumption norms' is not limited by the nature of the underlying product. Instead, we claim that functionalist and experiential designs encourage a utilitarian or, respectively, hedonic consumption behavior even if the underlying product is of the opposite nature (i.e., utilitarian consumption of a hedonic product and hedonic consumption of a utilitarian product).

The remainder of this article is structured as follows. First, we will develop the concept of 'design-based consumption norms' and formulate a set of corresponding research propositions. Afterwards, we will summarize our propositions and discuss potential implications for research and practice.

CONCEPTUAL DEVELOPMENT

Based on a comprehensive analysis of architectural design, Raffelt et al. (2013) defined two types of architecture which they termed 'functionalist' and 'experiential' architecture. Conceptually, they located the origins of those two types of architecture in different periods of history with different Zeitgeists. Specifically, they located functionalist architecture in the era of modernism and the capitalist philosophy, and experiential architecture in the era of postmodern society and the deconstructivist movement.

Modernism proclaimed the establishment of rational order and the rule of reason. Society believed in the superiority of analytic thought and logic over emotions and spirituality. The focus on cognition and science at the expense of culture and symbolism substantiated a philosophy of utilitarianism and realism. Architecture during this time was

dominated by the principle of 'form follows function'. Modernist ideologies of rationalism, functionalism, and universalism found their expression in simple forms, order, and straight-line design. Buildings reflected ideals such as harmony, structure, and lawfulness. The Bauhaus style is a prominent example of the modernist dogma in Germany. Postmodernism criticized the all-encompassing rationalism of modernism and the associated marginalization of expression and of the richness of the human experience. Viewing modernism as repressive and stifling, the movement attempted to liberate society from its rigid boundaries. Postmodernism rejected modernism's emphasis on order and structure and instead celebrated a liberal and hedonistic worldview. The shift towards an experience economy brought about a stronger emphasis on expression and symbolism. In line with that, more expressive forms, such as ornaments and free-flowing visual elements, increasingly dominated architecture (Firat and Venkatesh 1995; Raffelt et al. 2013).

Raffelt et al.'s (2013) design structure is reflective of the eras' differences. It forms a continuum from harmonious and monotonous (i.e., functionalist) designs with "simplified and proportional forms, horizontal and vertical lines and [a] stark, unornamented, rational and industrial look" (p.202) to disordered and lively (i.e., experiential) designs with "eclectic forms, multiple references, and complex, ornamental, and playful design elements" (p.202).

According to Raffelt et al. (2013), the position of an architecture on this continuum varies with its 'harmony', 'elaborateness', 'natural feel', 'transparency', and 'colorfulness'. These are the five design dimensions that Raffelt et al. (2013) identified as part of their research. The dimensions were described in terms of primary and secondary design attributes. Primary design attributes refer to physical design characteristics, such as form (e.g., organic), color (e.g., warm), façade (e.g., simple), and material (e.g., natural). Secondary design attributes refer to semantic descriptions such as 'calm', 'exclusive', or 'rustic'. The first factor 'harmony' was described as proportional in terms of its physical appearance. The resulting impression was said to be coherent, harmonious, and comforting. It was also considered

elegant and clear. 'Elaborateness' was associated with free-flowing forms as well as a nonfunctional façade. It was considered striking, exclusive, playful, and expressive as well as imaginative and unique, but not monotonous, rational, or banal. The factor 'natural feel' was mostly defined in terms of two primary design-attributes, i.e., colors (dull, warm) and materials (rough, unrefined). These attributes created a rustic and cozy impression. 'Transparency' was associated with an open façade and transparent materials. It did appear weightless and graceful. Lastly, the fifth factor 'colorfulness' loaded high on various color-related primary design attributes. An overview of the five design dimensions, including their primary and secondary design attributes, is given by table 1.

TABLE 1

DESIGN DIMENSIONS AND PRIMARY AND SECONDARY DESIGN ATTRIBUTES

	Color-fulness	**Trans-parency**	**Natural feel**	**Harmony**	**Elaborate-ness**
Primary Design Attributes	• color-related attributes	• open façade • transparent	• natural • absorbing • rough • unrefined • dull • warm colors	• proportional	• free-flowing forms • nonfunctional façade
Secondary Design Attributes		• weightless • graceful	• rustic • cozy	• harmonious • comforting • coherent • clear • elegant	• personal • unique • imaginative • exclusive • striking • expressive • playful • progressive

These design dimensions, including their semantic meanings, bear strong resemblance to design dimensions identified in previous research on the design of logos in the US (Henderson and Cote 1998) and in Asia (Henderson et al. 2003), on the design of typefaces

(Henderson, Giese, and Cote 2004), on the design of product packaging (Orth and Malkewitz 2008), and on the design of various consumer durables (Mugge et al. 2017).

Raffelt et al. (2013) used all five architectural design dimensions to specify a set of four subtypes to the superordinate functionalist-experiential design distinction (see table 2). They termed them 'solid', 'balanced', 'expressive', and 'disruptive'. Solid designs represent the most extreme form of functionalist architecture. They are described as monotonous, ordinary, unimaginative, and common. They are technical in their form and lack vividness. Balanced designs represent a more moderate form of functionalist designs and have a harmonic, well-balanced, coherent, and comforting appearance. They create an impression of elegancy, timelessness, and protection. Expressive designs represent a moderate version of experiential design. They are perceived as exclusive, lively, and intriguing. The use of free-flowing, nontechnical forms creates an imaginative, unique, and personal impression. Finally, disruptive designs, as an extreme form of experiential design, have a faddish, dissonant style that may not only create confusion but may even be perceived as intimidating and threatening. Similar design (sub)types were also identified by Orth and Malkewitz (2008) in their study on product packaging design.

TABLE 2

SUBTYPES OF FUNCTIONALIST AND EXPERIENTIAL DESIGN

	Functionalist Design		**Experiential Design**	
	Solid Designs	**Balanced Designs**	**Expressive Designs**	**Disruptive Designs**
Primary Design Attributes	• technical • lack of vividness	• harmonic • well-balanced • coherent	• free-flowing forms • nontechnical	• inharmonic
Secondary Design Attributes	• monotonous • ordinary • unimaginative • common	• comforting • elegant • timeless • protective	• imaginative • unique • personal • intriguing • exclusive • lively	• faddish • dissonant • confusing • improvised • clumsy

The characterization of the four subtypes underscores the different qualitative natures of functionalist and experiential design. Functionalist design, with its roots in the capitalist philosophy, conveys "an image of rationality and utilitarianism" based on its straight, industrial look that arises from such design elements as angular forms and straight lines (Raffelt et al. 2013, p.202). Experiential designs, on the other hand, reflect the "hedonic, emotional, creative and innovative elements" of postmodern society through an ornamental and playful appearance (Raffelt et al. 2013, p.202; see table 3).

TABLE 3

CHARACTERISTICS OF FUNCTIONALIST AND EXPERIENTIAL DESIGN

	Functionalist Design	**Experiential Design**
Primary Design Attributes	simplified straight-line design/edgy structured/ordered coherent/harmonic	complex/ornamental curvaceous/organic free-flowing eclectic
Secondary Design Attributes	calm rational	lively playful

These qualitative differences between functionalist and experiential design are further illustrated by the different brand personalities that they convey. Raffelt et al. (2013) argue that the 'competence' trait of Aaker's (1997) brand personality scale is closely linked to the values of modern society and, as such, inherent in and expressed by functionalist designs, whereas the same would be true of the 'excitement' trait, postmodern society, and experiential designs. In line with their reasoning, Raffelt et al. (2013) find that architectural designs tend to be perceived as either competent or exciting, but not both. Specifically, both subtypes of functionalist designs (i.e., balanced designs and solid designs) were associated with a predictable, rational, and responsible nature (i.e., descriptors of the personality trait 'competence'), while both subtypes of experiential designs (i.e., disruptive designs and

expressive designs) were considered trendy, spirited, and imaginative (i.e., descriptors of an 'exciting' character). This bi-dimensionality of design-based personality impressions has also become apparent in previous research on packaging design (Orth and Malkewitz 2008). Importantly, Raffelt et al. (2013) additionally note that the 'competence' and the 'excitement' personality trait are structurally very different. Specifically, while competence may be more mental, diagnostic, or intellectual in nature, excitement may be less cognitive and more visceral-affective. Raffelt et al. (2013) speculate that this structural difference may also affect how consumers perceive and evaluate functionalist and experiential designs, either in a more cognitive or a more affective manner.

Although Raffelt et al. (2013) developed their framework in the context of architecture, they reasoned that it may be part of a general design language and thus applicable to other contexts as well. The similarity of their design dimensions to those of previous research serves as a first indicator for that conjecture (Henderson and Cote 1998; Henderson et al. 2003, 2004; Orth and Malkewitz 2008). However, not only their design dimensions but also Raffelt et al.'s (2013) design subtypes (Orth and Malkewitz 2008) and more importantly, the superordinate bi-dimensional design structure with functionalist designs on the one hand and experiential designs on the other bear resemblance to findings in other fields of research (see table 4).

In research on landscape design, for instance, researchers have regularly distinguished between the two factors 'order' and 'complexity', which correspond to functionalist and experiential design respectively. Arnheim (1966, p.123) suggested, for example, that the appearance of landscapes may be governed by a "kind of lawfulness" and "obedience to controlling principles" (i.e., order) on the one hand and "a multiplicity of relationships" (i.e., complexity) on the other. In a similar vein, Kaplan (1988) argued that people's reaction to a landscape may be governed by the scenery's 'coherence' and its 'complexity'. 'Coherence' was described as the "making sense component" (p.243) that would reflect how organized,

comprehensible, and structured a landscape was. The 'complexity' factor, on the other hand, was characterized as the involvement component that would capture "how much is going on" (p.243) in a landscape. As such, it would be an expression of visual diversity or richness.

The distinction between functionalist and experiential design, including their respective connotations, has also been subject to research in information science. Specifically, Lavie and Tractinsky (2004) introduced the now well-established bi-dimensional structure of 'classical and expressive website aesthetics'. Similarly to the functionalist-experiential dichotomy, classical and expressive aesthetics capture the degree to which a (website) design is clear, ordered, controlled, and symmetric (i.e., 'classical aesthetics') on the one hand and creative, original, and fascinating (i.e., 'expressive aesthetics') on the other. Wang, Hernandez, and Minor (2010) and Wang, Minor, and Wei (2011) applied Lavie and Tractinsky's (2004) dichotomy to online retailing and found that expressive aesthetics (Wang et al. (2010, 2011) renamed it 'aesthetic appeal') increases consumers' satisfaction with an online retailing side but only when people browse 'for fun', and not when they follow an explicit purchase task (i.e., those that are 'task-oriented'). Wang et al. (2010, 2011) reasoned that the lively and stimulating character of expressive aesthetics may be a source of amusement but may also distract people from a purchase task and thus conflict with the goal of completing a purchase efficiently and effectively.

Finally, in the Henderson et al. (2004) study cited earlier, the authors identified not only seven design factors but also four related impression dimensions. These dimensions were termed 'pleasing', 'reassuring', 'engaging', and 'prominent'. However, the two dimensions that were best explained by typeface design were 'reassuring' and 'engaging'. The dimension 'reassuring' captured how calm, honest, formal, and familiar a design was (similarly to functionalist design), whereas the dimension 'engaging' captured how emotional and interesting a design appeared (similarly to experiential design). A cluster analysis showed that designs either scored high in the 'reassuring' dimension or the 'engaging' dimension, but not

both. This finding was underscored by the relationship between those two design dimensions and the two universal design factors 'harmony' and 'elaborateness'. Specifically, harmony (including characteristics such as harmony, balance, uniformity, and smoothness) had a positive influence on the reassuring dimension and a negative one on the engaging dimension, whereas for the factor elaborateness (including characteristics such as ornate, distinctive, and meaningful) it was the other way round.

TABLE 4

FUNCTIONALIST AND EXPERIENTIAL DESIGN IN DIFFERENT FIELDS OF RESEARCH

Study	Design Dimensions		Context
Arnheim (1966)	**Order** • lawfulness • controlling principles	**Complexity** • multiple relationships	landscape design
Kaplan (1988)	**Coherence** • organized • comprehensible • structured	**Complexity** • visual diversity • visual richness	landscape design
Lavie and Tractinsky (2004) **Wang et al. (2010, 2011)**	**Classical aesthetics** • clear • ordered • controlled • symmetric	**Expressive aesthetics** • creative • original • fascinating	website design
Henderson et al. (2004)	**Reassuring** • calm • honest • formal • familiar	**Engaging** • emotional • interesting	logo design
Raffelt et al. (2013)	**Functionalist** • simplified • structured • rational	**Experiential** • ornamented • lively • playful	architecture design

In sum, the bi-dimensional design structure proposed by Raffelt et al. (2013) with calm and formal designs on the one hand (i.e., functionalist designs) and emotional and

elaborate designs (i.e., experiential designs) on the other hand is well supported by other fields of research. In fact, Raffelt et al. (2013) themselves summarized their review of relevant research as indicating that "in each visual design domain [there] appear to be functional and experiential designs" (p.208). As such, it stands to reason that the functionalist-experiential dichotomy is applicable to product (packaging) design as well. That is, product (packaging) designs may arguably appear either rational, structured, and ordered through the use of technical forms and straight-line simplicity, or experiential, that is, vibrant, lively, and stimulating through the use of colorful, organic, and ornamental visual elements (see figure 1). Hence,

P1: Product (packaging) designs may be classified as being either functionalist or experiential both in terms of their visual appearance and the semantic meaning that they carry.

FIGURE 1

FUNCTIONALIST AND EXPERIENTIAL DESIGN

Similarly to product design, consumption behaviors may also be categorized into two broad classes, i.e., utilitarian consumption and hedonic consumption (e.g., Dhar and Wertenbroch 2000; Mano and Oliver 1993; Okada 2005; Voss et al. 2003).

Utilitarian consumption is cognitive-driven. It is characterized by an unemotional and rational way of thinking and a high level of self-control. Consumption is seen as a 'mission' that people aim to accomplish "with a minimum amount of time wasted" (Babin, Darden, and Griffin 1994, p.646). Accordingly, consumers behave in a prudent and intended manner and do not let emotions induce them to engage in risky or irrational acts. Hedonic consumption, on the other hand, is affect-driven. Consumers do not intensively reason about their actions but let emotions guide their behavior. Accordingly, they behave in a rather lighthearted and pleasure-oriented manner and do not show a high level of self-regulatory ability or restraint. They behave "like a kid in a candy store" (Babin et al. 1994, p.646), resulting in such uncontrolled and indulgent actions as impulse buying (e.g., Ramanathan and Menon 2006; Rook 1987) or overeating (e.g., Belei et al. 2012).

The well-established differences between utilitarian and hedonic consumption are also exemplified in a set of similar constructs which they have been related to. Okada (2005) compared them to 'shoulds' and 'wants', for instance. According to her, utilitarian consumption and 'shoulds' share notions of necessity and vices, whereas she considers hedonic consumption and 'wants' to be more affective in nature, more experientially appealing, and more closely associated with virtues and discretionary behavior. Similarly, Chernev (2004) and Chitturi, Raghunathan, and Mahajan (2007, 2008) related utilitarian and hedonic consumption to the prevention-promotion distinction known from regulatory focus theory. Utilitarian consumption, with its prudent and restrained character, has been linked to a prevention focus that centers around safety, security, and responsibilities, whereas hedonic consumption, with its focus on maximizing pleasure and self-fulfillment, has been related to a promotion focus that emphasizes achievement, aspirations, and the maximization of gains. In

a related vein, Patrick and Park (2006) draw a connection between utilitarian consumption and an avoidance motivation that aims at preventing negative losses and the maintenance of the status quo and hedonic consumption and an approach motivation which involves the desire to enhance the pleasure of consumption.

The presented characterization of utilitarian and hedonic consumption discloses great conceptual overlaps with the ideas expressed by functionalist and experiential design. Utilitarian consumption and functionalist design share a common sense of order, prudence, and rationality, whereas hedonic consumption and experiential design both emphasize concepts such as pleasure, play, and lightheartedness. Given those parallels, it stands to reason that the activation of shared mental constructs by a product's appearance increases the likelihood that consumers will enact the corresponding consumption behavior. More specifically, functionalist designs with their rational and industrial look may promote utilitarian consumption behaviors (i.e., prudent, rational, controlled), whereas experiential designs with their vibrant and lively appearance may stimulate a hedonic (i.e., indulgent, carefree, fun-oriented) product use. Products' visual appearance (i.e., functionalist vs. experiential design) may thus ultimately determine how a product is used (i.e., utilitarian vs. hedonic consumption). This idea is also supported by the presented reasoning of Raffelt et al. (2013) that functionalist and experiential designs may differ in how they are perceived and evaluated—either in a more analytical and object-centered manner or a more sensory-affective way. Because taking this thought one step further, it stands to reason that functionalist and experiential designs affect consumers' broader mindset. That is, functionalist design may promote a more cognitive, rational mindset, whereas experiential design may evoke a more playful and affective one. As such, functionalist and experiential designs may affect whether consumers' behavior is more driven by cognition (a characteristic of utilitarian consumption) or by affect (a characteristic of hedonic consumption). Hence, in sum,

P2a: Functionalist product designs will stimulate utilitarian consumption behaviors.

P2b: Experiential product designs will stimulate hedonic consumption behaviors.

Propositions 2a and 2b essentially express the idea that functionalist and experiential designs may provide a consumption norm for consumers' product usage behavior. Products' appearance may ultimately determine how consumers consume. We will term this idea 'design-based consumption norms' and 'functionalist and experiential consumption norms', respectively (see table 5).

TABLE 5

BEHAVIOR RELATED TO FUNCTIONALIST AND EXPERIENTIAL CONSUMPTION NORMS

Behavior Associated with a 'Functionalist Consumption Norm'	**Behavior Associated with an 'Experiential Consumption Norm'**
cognitive-driven	affect-driven
task-oriented	pleasure-oriented
rational	impulsive
prudent	lighthearted
serious	playful
avoid	approach

Importantly, propositions 2a and 2b (i.e., the concept of 'design-based consumption norms') are not limited by the nature (utilitarian vs. hedonic) of the underlying product. Traditionally, hedonic consumption is associated with the use of hedonic products and utilitarian consumption with the use of utilitarian products. That is, hedonic and utilitarian consumption behaviors are typically explained by the hedonic or utilitarian nature of the underlying product (Dhar and Wertenbroch 2000; Mano and Oliver 1993; Okada 2005; Voss et al. 2003). The consumption of M&Ms (i.e., hedonic product) is thought to be driven primarily by emotions (i.e., characteristic of hedonic behavior), for instance, whereas the consumption of Bircher muesli (i.e., utilitarian product) is thought to be more guided by logic

and prudence (i.e., characteristic of utilitarian behavior). However, not all products may be easily classified as hedonic or utilitarian. A laptop may fit into either of those categories, for instance. Furthermore, even if a product can be classified as primarily hedonic or utilitarian, the concept of 'design-based consumption norms' suggests that it may not necessarily provoke the corresponding consumption behavior. People may indulge (i.e., a hedonic behavior) in an animated package of ready-sliced apples (i.e., a utilitarian product), for instance, while minding their manners (i.e., a utilitarian behavior) when eating a nice chocolate cake (i.e., a hedonic product) from a cake box that has a rather elegant look. The design of the packages may alter their 'natural' behavioral reaction to the nature of the respective product.

As such, 'design-based consumption norms' can also not be limited to the idea of 'fit', i.e., the belief that they are only followed when they also match the nature of the underlying product. Instead, we believe that functionalist designs encourage a utilitarian consumption behavior even if the underlying product is of a hedonic (vs. utilitarian) nature, whereas experiential designs are proposed to encourage a hedonic product use even if the underlying product is a utilitarian (vs. hedonic) one.

GENERAL DISCUSSION

In this article, we introduced the concept of 'design-based consumption norms'. They were conceptualized as symbolic directives for consumers' product usage behavior that originate in a product's design. Specifically, we proposed that product designs may fall into two main categories, i.e. functionalist design and experiential design. Functionalist designs are characterized by the use of straight lines and simplified forms, whereas experiential designs make use of expressive and ornamental visual elements. These two different types of design carry very different semantic meanings. While functionalist designs convey a sense of

rationality and order, experiential designs express notions of excitement and fun. As such, it was argued that the two designs may appeal to different forms of consumption behavior, i.e., utilitarian and hedonic consumption. Given their large conceptual overlaps, functionalist designs have been proposed to promote a utilitarian (i.e., deliberate, thought-driven) product usage behavior, whereas experiential designs have been linked to a hedonic (i.e., pleasure-oriented, indulgent) product use.

The concept of 'design-based consumption norms' advances the literature in several ways. First, it adds to the literature on product design. Research on product design has typically focused on the pre-consumption phase of preference formation and purchase. As such, the value of product design has primarily been seen in creating attention and interest at the supermarket shelf (Bloch 1995; Creusen and Schoormans 2005; Schoormans and Robben 1997). However, the concept of 'design-based consumption norms' ties product design specifically to the post-purchase phase of product use and establishes it as the principal determinant of consumers' behavior in this context. As such, it extends the role of product design from being merely a sales generator to a factor that affects the most part of consumers' daily behavior.

Second, 'design-based consumption norms' extend current theorizing on utilitarian and hedonic consumption (Babin et al. 1994; Batra and Ahtola 1990; Dhar and Wertenbroch 2000; Hirschman and Holbrook 1982; Mano and Oliver 1993; Okada 2005; Voss et al. 2003) by detaching them from the nature (i.e., utilitarian vs. hedonic) of the underlying product and linking them to products' visual appearance. 'Design-based consumption norms' highlight that the characters of utilitarian and hedonic consumption may be expressed visually by a product's appearance and suggest that such visual form of communication may suffice to stimulate those two types of behavior. As such, 'design-based consumption norms' may help explain why utilitarian and hedonic products may not necessarily stimulate corresponding consumption behaviors (i.e., utilitarian products may be used in a hedonic way and hedonic

products may be used in a utilitarian manner) and how products that are not easily classifiable as either utilitarian or hedonic may be used.

MANAGERIAL IMPLICATIONS

According to the proposed concept of 'design-based consumption norms', a product's visual appearance may not only influence a product's aesthetic appeal (e.g., Bloch 1995; Hoegg, Alba, and Dahl 2010; Landwehr et al. 2013) but also consumers' product usage behavior. As such, companies' design decisions may have a much greater impact on consumers' daily lives than is commonly thought. While that may offer many opportunities to companies, such as an increase in sales by using experiential designs to encourage indulgent behavior, it also raises their responsibility. After all, their design decisions may have serious consequences for consumers. They may encourage such harmful behaviors as overeating, for instance. As such, consumer interest groups may take a prominent role in educating consumers about the potential effects of products' design on consumption behavior and advocate the use of functionalist designs where necessary.

LIMITATIONS AND FUTURE RESEARCH

The concept of 'design-based consumption norms' raises several interesting avenues for future research. In a first step, the concept itself needs to be tested, though. That is, future studies need to examine whether the functionalist-experiential dichotomy is applicable to the design of products and whether it affects consumption behavior in the proposed way. Specifically, future research needs to explore whether functionalist designs encourage a utilitarian consumption behavior (i.e., a rational and prudent behavior) and whether experiential designs trigger a hedonic product use (i.e., a pleasure-oriented and indulgent

product use). One specific study design to test that would be to confront consumers with a food product that either features a functionalist or an experiential packaging design and to measure whether people eat more of the food (i.e., indulgence as a typical hedonic consumption behavior) when it is provided in the experiential (vs. functionalist) packaging.

After an initial test of the concept, it may be worthwhile to investigate a number of potential moderators of the proposed relationships. The saliency of a product's design may be an important first factor to consider in this context. It stands to reason that the effects of 'design-based consumption norms' are more pronounced (i.e., that a product's design has a stronger effect on the way consumers use their products) when the design of a product is particularly salient (i.e., when "design is a central product attribute that may serve as a point of differentiation and may be the basis of choice for a consumer"; Patrick and Hagtvedt 2011, p.395) and its metaphorical meaning (i.e., the consumption norm that it carries) is thus clearly perceptible. However, design saliency may not only differ by product but also by person. People may differ in their sensitivity towards products' visual appearance (Bloch 1995; Bloch, Brunel, and Arnold 2003). Those who attend more closely to a product's design may also be more sensitive to the symbolic meaning that it carries and thus be more affected by 'design-based consumption norms'. As such, future research may investigate the effects of design saliency not only by selecting suitable products but also by taking consumers' design sensitivity into account.

In a similar vein, it may be worthwhile to examine whether the strength of 'design-based consumption norms' varies on the functionalist-experiential continuum. With more extreme versions of functionalist and experiential design 'design-based consumption norms' may become more and more obtrusive so that it may become increasingly difficult to withstand them. Future studies may thus wish to investigate whether there are differences between the individual subtypes of functionalist and experiential design.

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AESTHETIC CONGRUITY – MORE THAN A PLEASANT SIGHT

Research on design aesthetics has grown steadily in the past decade. Given the benefits that it promises, aesthetics has become a focal point of interest. However, studies on its effects typically focus on the level of the individual product. Aesthetic impressions created by a combination of products (i.e., aesthetic congruity among products) have not as yet received much attention. The present research addresses this gap and investigates how aesthetic congruity among products affects product perceptions and consumers' consumption behavior. Our findings show that aesthetic congruity fosters perceptions of products' effectiveness and thereby affects the intensity of their use. In fact, we found that aesthetic congruity may either increase or decrease a product's use depending on the benefit of a high product effectiveness (i.e., process-focused benefit vs. outcome-focused benefit) that is salient and the nature of the respective ensemble component (i.e., hedonic vs. utilitarian).

Keywords: design aesthetics, aesthetic congruity, product effectiveness, product usage intensity, utilitarian/hedonic consumption, process-/outcome-focus

Aesthetic designs are central to market success. Not only do they provide pleasure in themselves (Bamossy, Scammon, and Johnston 1983), they also create a 'positive halo' that may enhance the perception of any other product characteristic (Dion, Berscheid, and Walster 1972; Hoegg, Alba, and Dahl 2010; Nisbett and Wilson 1977). Accordingly, they have long become a significant determinant of companies' sales (Landwehr, Wentzel, and Herrmann 2013; Liu et al. 2017). However, up until now, research on design aesthetics has typically focused on the visual appeal of individual products (e.g., Cox and Cox 2002; Hagtvedt and Patrick 2008; Hoegg et al. 2010; Luchs, Brower, and Chitturi 2012; Reimann et al. 2010; Veryzer and Hutchinson 1998). That is, products were usually treated as single units of analysis that are perceived and consumed in isolation. Yet, most products tend to be consumed in combination with other products. A mop, for instance, tends to be used with a corresponding wash bucket. Likewise, an MP3 Player tends to be used with corresponding headphones. Accordingly, it may be warranted to consider design aesthetics in the broader consumption context. That is, at a higher level of analysis—the level of entire consumption units.

This idea that consumers' perceptions may not only be affected by individual products but also product ensembles is usually discussed under the term 'aesthetic congruity'. Aesthetic congruity refers to the aesthetic appeal of the joint visual perception of a set of products (Patrick and Hagtvedt 2011). As yet, this area of research has not been well understood. Previous research has largely failed to consider how aesthetic congruity affects (performance-related) product perceptions and corresponding consumption behaviors. For instance, will you find vanilla ice-cream from a yellow bowl tastier than the same ice-cream from a green bowl? Or will you consider a new blue washing powder to be more powerful when it comes in a visually matching blue package? And how may these perceptions influence the extent of your product use?

In this research, we address those questions and demonstrate that aesthetic congruity among products increases perceptions of products' effectiveness (i.e., their ability to fulfill the consumption goal that is associated with them) and thereby affects the intensity of their use. Specifically, we show that aesthetic congruity may serve as an incentive to either increase or decrease consumption depending on two factors. First, it depends on the type of benefit of a high effectiveness that is salient (e.g., due to a corresponding slogan). In this context, we distinguish between the effects of the process- (i.e., satisfactory results are more readily achieved by effective products) and the outcome-focused benefit (i.e., effective products produce superior results) of effective products. Secondly, it depends on the nature of the respective ensemble component–––that is, whether the component is a utilitarian or a hedonic product.

With these findings, we contribute to several streams of research. Above all, we add to the literature on aesthetic congruity: First, we broaden the concept of aesthetic congruity by applying it to new product categories. Previous research has been limited to products that serve a decorative purpose (e.g., Bell, Holbrook, and Solomon 1991; Lennon 1990; Patrick and Hagtvedt 2011). Our findings, however, illustrate that aesthetic congruity is also relevant to products that are not used for beautification. Related to this point, we show that aesthetic congruity does not only affect perceptions of aesthetic appeal or general product liking (which are very similar in substance and accordingly strongly related, see Reber, Schwarz, and Winkielman 2004) but also judgements of products' effectiveness (i.e., the products' ability to fulfill consumers' consumption goals). Moreover, we extend this field of research by examining the effects of aesthetic congruity on actual product usage behavior. Previous studies have been limited to questionnaires (for an exception, see Patrick and Hagtvedt 2011) and also only focused on behaviors related to products' acquisition (e.g., Lam and Mukherjee 2005; Patrick and Hagtvedt 2011).

Furthermore, we contribute to the literature on product effectiveness by showing that a high product effectiveness may offer different types of benefits to consumers (i.e., process- vs. outcome-focused benefit) and thereby stimulate different product usage behaviors. Furthermore, we extend this field of research from the utilitarian to the hedonic domain by studying the effects of a high product effectiveness on utilitarian and hedonic products simultaneously (Lin and Chang 2012; Scott, Nowlis, and Mandel 2009; Zhu, Billeter, and Inman 2012).

By extending the literature on product effectiveness to hedonic products, we also extend current theorizing on utilitarian and hedonic consumption (e.g., Batra and Ahtola 1990; Dhar and Wertenbroch 2000; Hirschman and Holbrook 1982; Okada 2005), as we show that utilitarian and hedonic products may be differently affected by perceptions of aesthetic congruity.

Finally, we add to the literature on process- and outcome-focused thinking (Escalas and Luce 2003, 2004; Taylor et al. 1998) by demonstrating that benefit salience (i.e., process- vs. outcome-focused benefit of a high product effectiveness) may interact with product type (i.e., hedonic vs. utilitarian) to affect behavior.

The remaining article is structured as follows. In the theoretical part, we will review the relevant literature and develop our hypotheses. In the empirical section, we present a study that tested our hypotheses. The article concludes with a discussion of our findings as well as theoretical and managerial implications.

CONCEPTUAL DEVELOPMENT

People have a natural “tendency to perceive groupings of elements as an integrated entity" (Veryzer and Hutchinson 1998, p.375). That is, they do not necessarily perceive objects as single units but as part of a larger visual body. Based on basic Gestalt principles

(Wertheimer 1922, 1923) such as proximity or similarity, those groupings of visual elements may create a more or less coherent impression. Specifically, the better individual visual elements or objects match, the more unified a visual grouping may appear. Establishing such unity is desirable, as it makes an impression easier (i.e., more fluent) to process and so creates a state of harmony that is pleasing to the eye (Althuizen and Sgourev 2014; Reber et al. 2004). That is, coherent visual impressions are perceived as being aesthetic (e.g., Kumar and Garg 2010; Lennon 1990; Veryzer 1993; Veryzer and Hutchinson 1998). Bell et al. (1991) provided evidence for that, using furniture as stimuli. Specifically, they confronted participants with photographs of furniture sets that were either matching in style (traditional vs. contemporary) or not and asked participants to rate the pictures in terms of perceived unity and aesthetic appeal. In line with the authors' predictions, more unified ensembles created a more favorable aesthetic impression. Extending those findings, Lam and Mukherjee (2005) showed that unity among fashion items does not only shape consumers' perceptions of the ensemble (i.e., the outfit) as a whole but also of the individual ensemble components. Specifically, they found that clothes from a well-matched outfit were perceived to be more aesthetic than clothes from a mismatched outfit. The mismatch 'hurt' people's sense of 'good Gestalt' (Wagemans et al., 2012 a, 2012b; Wertheimer 1922, 1923). As Patrick and Hagtvedt (2011) have shown, such a mismatch may even produce negative affect. People in their study felt frustration and regret when they had purchased an item that did not match an existing consumption environment (e.g., mismatch between a pair of earrings and a pendant). They were even willing to return the unfitting item or buy additional items that matched the new item in order to re-establish aesthetic congruity (see also McCracken 1988 on the "Diderot effect").

By raising aesthetic appeal, visual unity among products may also affect other product judgements. Aesthetics may create a 'halo effect' (Dion et al. 1972; Nisbett and Wilson 1977) that colors other product perceptions. In line with that, Bell et al. (1991) and Lam and Mukherjee (2005) have shown, for instance, that an increase in unity and aesthetic appeal may

be accompanied by a higher general product liking. Importantly, however, those biasing effects may not be limited to global product judgements. In fact, the literature on halo effects (Nisbett and Wilson 1977) suggests that any quality of a product may be perceived more favorably in case of an aesthetic appearance. Arguably, the most central of those qualities when it comes to a product's usage is how well a product serves its specific purpose (i.e., a product's effectiveness) (Folkes, Martin, and Gupta 1993). After all, a product's function is what a product is typically purchased for. Consumers buy products to satisfy their specific needs and naturally choose the product that best serves those needs.

Research on design aesthetics shows that such perceptions of products' effectiveness may indeed be influenced by a product's visual appeal. Sundar, Noseworthy, and Machleit (2013) found, for instance, that when consumers are uncertain of a product's effectiveness, they refer to its visual appeal to form efficacy inferences and let these inferences then guide their purchase decision. A positive effect of design aesthetics on perceptions of a product's effectiveness has also been reported by Mugge, Dahl, and Schoormans (2017). Specifically, in their study on product design dimensions, the authors find that 'harmony', which is a defining characteristic of aesthetic design, positively influences beliefs about a product's performance quality (i.e., effectiveness). This finding also resonates with previous findings about the relationship between design aesthetics and more general notions of product quality (e.g., Page and Herr 2002; Veryzer and Hutchinson 1998). Yet more notably, Hoegg et al. (2010) showed that products with aesthetic designs are assumed to be functionally superior to those with unaesthetic designs, even if consumers receive objective information that contradicts this assumption right after they have seen the products.

In line with these findings, we propose that products that are part of an aesthetically congruent product ensemble are perceived to be better serving their purpose (i.e., to be more effective) than products of aesthetically incongruent product ensembles. Thus,

H1: Products that are part of aesthetically congruent product ensembles will be perceived to be more effective than products that are part of aesthetically incongruent product ensembles.

A high effectiveness implies that at any given level of consumption, a product delivers a better performance than competitive offerings do. This superiority may be interpreted differently depending on whether people focus on the *process* of using a product or on the *outcomes* that its usage may provide (Escalas and Luce 2003, 2004; Taylor et al. 1998). The distinction between a process- and an outcome focus derives from the literature on mental simulation. In this context, it forms the basis for studies about the relative effectiveness of either simulating the process of reaching a goal or the outcomes of having reached a goal in supporting actual goal achievement (e.g., Pham and Taylor 1999). Escalas and Luce (2003, 2004) applied the distinction to advertising and used it to either emphasize the process of using a product or the benefits that would accrue from having used it (i.e., they created process- and outcome-focused advertisements). Building on their conceptualization, we use the process-outcome distinction to define process- and outcome-focused benefits of a high product effectiveness.

The 'process-focused benefit' refers to the benefit that a high effectiveness may provide to the process of using a product (i.e., the process of achieving one's consumption goal)—importantly, however, not in terms of hedonic value but in terms of required usage levels. Specifically, it highlights that effective products may require less usage than regular products to achieve a particular consumption result due to the former's superior efficacy (e.g., you need less cleaner to clean your kitchen). Accordingly, the natural behavioral response (i.e., 'benefit-consistent' behavior) may be a reduced product use. The 'outcome-focused benefit', in contrast, refers to the superiority of the results that effective products may produce. That is, it underscores that effective products may deliver results that regular

products may not be able to provide (e.g., the cleaner makes your kitchen cleaner than competitive products would). That promise of superior consumption outcomes may naturally stimulate an increased product use.

Whether people interpret a product's effectiveness in terms of the process- or the outcome-focused benefit may depend on the relative salience of the two benefits. Marketers may refer to either benefit to promote their products, for instance, and thereby make one of them particularly salient. In fact, slogans such as 'Thanks to our new power formula, you now need less of our hairspray than ever before to fix your hair!' (a slogan that emphasizes the process-focused benefit of a high product effectiveness) or 'Thanks to our new power formula, our hairspray now provides you with an infinitely strong and long-lasting hold!' (a slogan that emphasizes the outcome-focused benefit of a high product effectiveness) are very common in advertising. However, the two benefits may not only vary in salience but also in appeal. In this context, the nature of products may play a central role.

In this regard, marketing research has a long tradition in differentiating between hedonic and utilitarian products (Batra and Ahtola 1990; Dhar and Wertenbroch 2000; Hirschman and Holbrook 1982; Mano and Oliver 1993; Okada 2005; Voss, Spangenberg, and Grohmann 2003). In utilitarian consumption, the product only serves as a means to an end. The consumption act itself (e.g., cleaning) holds no inherent value; it is considered a vice rather than a virtue (Okada 2005). All the value of consumption lies in satisfying some external goal (e.g., having a clean kitchen). For the achievement of this goal, consumers set minimal standards of acceptance (i.e., cutoffs) that they try to achieve as smoothly as possible. That is, they are typically satisfied with meeting cutoffs and do not naturally attempt to exceed them. In this regard, consumers follow a 'satisficing' strategy (Chitturi, Raghunathan, and Mahajan 2007, 2008; Schwartz et al. 2002). This character of utilitarian consumption naturally involves a particular appeal of the process-focused benefit, as it speaks to the apparent utilitarian desire to keep the usage process to a minimum. In line with that,

previous research has already shown that consumers like to take advantage of that benefit in a utilitarian context. That is, they tend to make little use of effective (vs. ineffective) utilitarian products (Lin and Chang 2012; Scott et al. 2009; Zhu et al. 2012). Increasing the salience of the process-focused benefit (e.g., via a slogan) may thus simply fuel the existing utilitarian tendency to keep consumption volumes low by making the reduced need for product use even more explicit.

The outcome-focused benefit (i.e., superior consumption outcomes), in contrast, may not be consistent with classic utilitarian attitudes. It provides an incentive to increase product use, which conflicts with natural utilitarian tendencies. Yet, despite countering utilitarian predispositions, it may still stimulate benefit-consistent behavior (i.e., an increase of product use) by appealing to a more general human eagerness for utmost gratification and goal achievement (Bagozzi and Dholakia 1999; Freud 1975). Products that produce superior results may, after all, better serve consumers' consumption goals than competitive products would. They may provide for a higher degree of goal fulfillment (Huffman and Houston 1993; Venkatesh and Davis 2000), which makes them inherently desirable. As such, they also promise an increase in positive feelings. Even in utilitarian consumption, in which consumers tend to be satisfied with meeting cutoffs, superior consumption outcomes may produce such positive emotions as confidence or security (Chitturi et al. 2007, 2008). The explicit highlighting of superior consumption outcomes may thus address a basic human desire for ultimate delight (Freud 1975) and goal fulfillment and so provide the necessary motivational impetus for action (Bagozzi and Dholakia 1999; Pieters, Baumgartner, and Allen 1995). As such, consumers may increase their use of an effective product when its outcome-focused benefit is salient.

The reasoning that not only the congruent process-focused benefit may be appreciated in utilitarian consumption and thus encourage benefit-consistent behavior but also the incongruent outcome-focused benefit is also supported by a study of Gill (2008). In his

research, he showed that congruent benefits are commonly valued, as they fall in line with consumers' current consumption goal. Incongruent benefits, however, he finds may also be treasured in a utilitarian product's use, because in the utilitarian domain incongruent benefits refer to benefits that have a more pleasure-related nature (such as the outcome-focused benefit that emphasizes gratification and the positive outcomes of consumption), which may give consumption a more hedonic undertone—–that is, link it more to ideas of enjoyment and fun and thereby attenuate rather negative utilitarian connotations such as duty or necessity (Batra and Ahtola 1990; Dhar and Wertenbroch 2000; Gill 2008; Hirschman and Holbrook 1982; Okada 2005; Voss et al. 2003). Applied to the current context, these findings thus also support the argument that in utilitarian consumption both the congruent process-focused benefit as well as the incongruent outcome-focused benefit may encourage benefit-consistent behavior: the first by appealing to consumers' underlying consumption mindset and the latter based on its clear emphasis on gratification and the positives of a product's use (i.e., superior consumption outcomes).

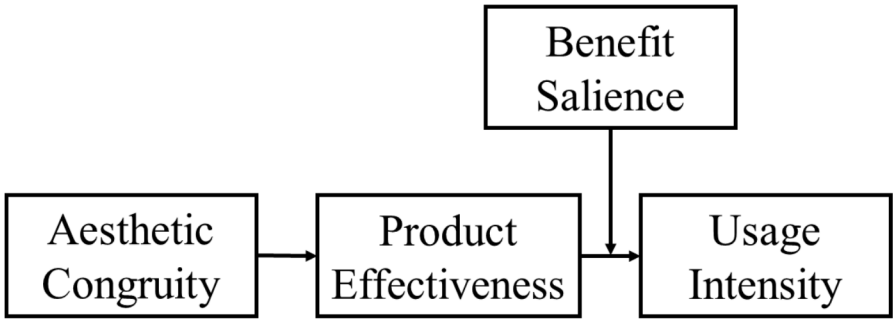
Following Gill's (2008) findings and the arguments presented before, benefit salience (i.e., process- vs. outcome-focused benefit) may thus moderate the mediated effect of aesthetic congruity on the extent of product use (see figure 1). The process-focused benefit matches natural utilitarian sentiments by highlighting that effective products do not require an intensive usage in order to produce satisfactory results (i.e., to meet cutoffs) and may thus fuel the preexisting utilitarian tendency to keep product use to a minimum. The outcome-focused benefit, in contrast, may provide the necessary incentive for a counterattitudinal extensive product use by stressing the experience of superior consumption outcomes which may shift the focus more onto the rewarding character of a product's use. Hence,

H2: Perceptions of product effectiveness will mediate the effect of aesthetic congruity on the intensity of product use.

H3a: Benefit salience (i.e., process- vs. outcome-focused benefit) will moderate (moderated mediation) the effect of aesthetic congruity on the usage intensity of utilitarian ensemble components. In particular, if the process-focused benefit is salient, aesthetic congruity will reduce the use of utilitarian ensemble components. If the outcome-focused benefit is salient, aesthetic congruity will increase their use.

FIGURE 1

MODERATED MEDIATION MODEL



Hedonic consumption is very different from consumption in the utilitarian domain (e.g., Alba and Williams 2012; Dhar and Wertenbroch 2000; Gill 2008; Hirschman and Holbrook 1982; Okada 2005). In hedonic consumption, consumers follow a maximizing strategy. That is, they do not settle for some minimum standard of goal fulfillment (i.e., cutoffs) but attempt to maximize their experience. After all, raising hedonic benefits beyond cutoffs provides substantial increases in positive feelings. Specifically, if standards for satisfaction are exceeded, hedonic products may evoke promotion emotions, such as cheerfulness and excitement, which may ultimately produce delight (Chitturi et al. 2008). As effective products promise to exceed cutoffs in some form (i.e., to provide for a higher degree of goal fulfillment), consumers' natural behavioral tendency may thus be to increase the use of effective hedonic products (Zhu et al. 2012). Given that the entire hedonic mentality

centers around ideas of gratification, pleasure, and reward (Chernev 2004; Chitturi et al. 2007, 2008; Hirschman and Holbrook 1982; Okada 2005; Patrick and Park 2006), hedonic products may involve a natural appreciation of the outcome-focused benefit because the outcome-focused benefit largely embodies those ideas with its distinct emphasis on the superior consumption outcomes (which promise maximum goal fulfillment) that a product's usage may provide. It may thus well-align with basic hedonic attitudes and hence strengthen the disposition to make intensive use of effective hedonic products.

The process-focused benefit, in contrast, may not be equally appealing to classic hedonic sentiments. Given that in hedonic consumption the consumption act itself is valued, the benefit of a high effectiveness allowing the act to be reduced may not intrigue consumers. In fact, it would be rather counter-intuitive to argue that consumers would prefer less of (e.g., shortening of) such hedonic experiences such as massages, concerts, or time spent in the theme park (Murray and Bellman 2011). As such, an important difference to utilitarian consumption may be that in hedonic consumption only one of the two benefits (i.e., the outcome-focused benefit) may be considered attractive, while the other may not offer any basis (such as an inherent attractiveness, as in case of the outcome-focused benefit, which accrues from a natural human eagerness for utmost gratification (Freud 1975) to become compatible with consumers' underlying mindset. Accordingly, the salience of process-focused benefit may not produce benefit-consistent behavior. Instead, consumers may stick with their natural hedonic disposition and continue using effective hedonic products intensively.

Again, these predictions are supported by findings of Gill (2008), because in addition to the results reported earlier, his research also showed that in hedonic consumption his observations from the utilitarian domain may not simply replicate. Specifically, although the positive perception of congruent benefits is found to persist, since congruent benefits, by nature, fall in line with consumers' consumption goal, incongruent benefits (in hedonic consumption these are benefits of a more utilitarian nature) are now identified as a source of

reduced pleasure. They may dilute the hedonic value of consumption by giving it a more utilitarian undertone that puts more emphasis on practicability and necessity rather than enjoyment and fun. As such, while the congruent (outcome-focused) benefit may again further existing behavioral tendencies (i.e., an intensive product use) the incongruent (process-focused) benefit may no longer command the necessary appeal to reverse them and produce benefit-consistent behavior (i.e., to reduce product use).

Taken together, the presented line of reasoning suggests that in hedonic consumption aesthetic congruity may increase a product's use regardless of which benefit is salient. In line with the hedonic mentality, the outcome-focused benefit stresses the gratifying character of consumption (i.e., superior consumption outcomes) and may so reinforce the existing hedonic tendency to make intensive use of effective products. The process-focused benefit, in contrast, may be disapproved by consumers so that they forego the opportunity to reduce consumption (i.e., they do not take advantage of the process-focused benefit) but stick with their original hedonic disposition to increase effective (vs. ineffective) products' use. Thus,

H3b: Aesthetic congruity increases the use of hedonic ensemble components regardless of benefit salience (process- vs. outcome-focused benefit).

EMPIRICAL ANALYSIS

Design, Participants, and Procedure

The purpose of the empirical analysis was to provide support for all four hypotheses. A 2 (aesthetic congruity: congruent, incongruent) X 2 (benefit focus: process-focused benefit, outcome-focused benefit) between-subjects design was used, supplemented by product type (utilitarian, hedonic) as within-subjects factor. A total of 101 German students participated in

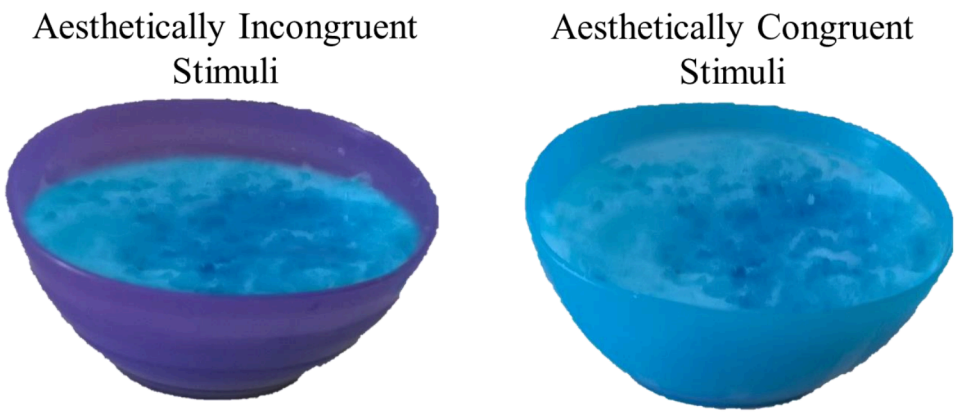
this study. One participant was eliminated due to deficient data, leaving 100 participants (M_{age} = 22.48 years, 33% female) for analysis.

As a cover story, participants were told that we would conduct a consumer survey for a company that intended to introduce a new yoghurt (called DexJo) that aimed at providing two benefits—first, an excellent taste and second, improved mental abilities. To this end, it would combine two elements. The first element would be the yoghurt itself (i.e., hedonic component). Its focal purpose would be to deliver an impeccable flavor. The second element would be dextrose (i.e., utilitarian component). Its sole function would be to improve concentration and cognition. To manipulate benefit salience, we used two different versions of a slogan that we told participants would be used to promote the new yoghurt. The slogan either directed attention to the process-focused benefit ('DexJo – one bite is all you need! A few spoonsful alone already produce such cognitive effects and taste experiences as similar products provide in a full cup!') or the outcome-focused benefit ('DexJo – every spoonful is worth it! Because every bite of DexJo gives you another mouthful of that unique taste experience and those superior cognitive effects that no competitive product could ever provide!') of a high product effectiveness.

The yoghurt and the dextrose that we used in this experiment were both turquoise (colored with food coloring) and offered in large transparent bowls. The color of the yoghurt and the dextrose was chosen so as not to arouse any associations to a particular flavor. To manipulate aesthetic congruity, participants were given bowls of a different color which they could use to take some of the yoghurt and the dextrose. The color of the bowl was either turquoise (i.e., aesthetically congruent with the color of the yoghurt and the dextrose) or violet (i.e., aesthetically incongruent with the color of the yoghurt and the dextrose) depending on the experimental condition (see figure 2). Deng, Hui, and Hutchinson (2010) have already shown that a high degree of color similarity (i.e., turquoise bowl and turquoise DexJo) well captures the concept of visual congruity and as such appeals to consumers.

FIGURE 2

MANIPULATION OF AESTHETIC CONGRUITY



Participants were first allowed an initial taste of the yoghurt (one teaspoon) to reduce reservations owed to its color and were then told to take as much of the yoghurt and the dextrose as they liked. We measured their consumption amounts of both the yoghurt and the dextrose at the end of the experiment without their notice. A questionnaire was filled out throughout the experiment which also included a section with brainteasers that allowed participants to evaluate the cognitive effects of the dextrose.

Measures

Dependent Variables. Perceptions of the dextrose`s effectiveness (i.e., beliefs about its cognitive effects) were measured on a two-item scale taken from Shiv, Carmon, and Ariely (2005) ('I believe that DexJo will improve my concentration', 'I believe that DexJo will improve my mental performance', $\alpha = .97$). Perceptions of the yoghurt's effectiveness (i.e., provision of an impeccable taste) were measured on a three-item scale developed by Poor, Duhachek, and Krishnan (2013) ('I liked the taste of DexJo', 'DexJo was delicious', 'I enjoyed eating DexJo', $\alpha = .98$). The consumption amounts of both the yoghurt and the dextrose were measured in grams by a kitchen scale.

Manipulation Check. The degree of aesthetic congruity between the bowl, the yoghurt and the dextrose was measured on a three-item scale developed by Lam and Mukherjee (2005) ('Visually, the bowl and DexJo appear high in unity', 'Visually, the bowl and DexJo appear well-coordinated', 'Visually, the bowl and DexJo appear consistent', $\alpha = .92$). Benefit salience was measured on a custom-formulated semantic differential with the two endpoints 'While I was taking of DexJo, I mainly thought that even small amounts of it would suffice to produce satisfactory results' and 'While I was taking of DexJo, I mainly thought that any bite of it would give me another mouthful of its unique taste and its superior cognitive effects'. Following Dhar and Wertenbroch (2000), we used two separate semantic differentials with the two endpoints 'utilitarian' and 'hedonic' to measure the extent to which the yoghurt and the dextrose were perceived as being utilitarian or hedonic. The scale included descriptions of the terms 'utilitarian' and 'hedonic' as specified by Dhar and Wertenbroch (2000). Specifically, utilitarian was defined as "useful, practical, functional, something that helps achieve a goal, e.g., a vacuum cleaner" (p.63), whereas hedonic was defined as "pleasant and fun, something that is enjoyable and appeals to the senses, e.g., perfume" (p.63).

All scales other than the semantic differentials were seven-point scales. All scales had been adapted to better fit the present research context.

Results

Manipulation Check. A 2 X 2 ANOVA indicated that aesthetic congruity was manipulated successfully. A significant main effect of aesthetic congruity was found ($F(1, 96) = 33.94$, $p < .01$). That is, the yoghurt, the dextrose and the turquois bowl appeared more aesthetically congruent ($M_{congruent} = 5.33$) than the yoghurt, the dextrose and the violet bowl ($M_{incongruent} = 3.59$). No other treatment effects were significant.

A second 2 X 2 ANOVA revealed that our manipulation of benefit salience had also been successful. The main effect of benefit salience was significant ($F(1, 96) = 38.29$, $p <$ .01). Depending on the benefits' (relative) salience, participants either focused more on the process-($M_{process} = 3.13$) or the outcome-focused benefit ($M_{outcome} = 5.31$) in relation to DexJo. No other treatment effects were significant.

Finally, confirming our selection of the dextrose and the yoghurt as a utilitarian and a hedonic product a paired t-test showed that the dextrose was perceived significantly more utilitarian (less hedonic) than the yoghurt ($M_{dextrose} = 2.70$, $M_{yoghurt} = 5.37$, $t(99) = -15.39$, $p <$ .01).

Hypotheses Testing. Two 2 X 2 ANOVAs were conducted to test H1 about the effect of aesthetic congruity on the perceived effectiveness of products. In both ANOVAs, only the main effect of aesthetic congruity proved significant (dextrose: $M_{congruent} = 4.65$, $M_{incongruent} = 3.87$, $F(1, 96) = 6.38$, $p < .05$; yoghurt: $M_{congruent} = 5.97$, $M_{incongruent} = 5.21$, $F(1, 96) = 8.60$, $p < .01$). That is, participants believed more strongly in the cognitive effects of the dextrose and perceived the yoghurt to be tastier when the two products were eaten from the visually congruent turquoise (vs. incongruent violet) bowl. This supports H1.

Two additional 2 X 2 ANOVAs were conducted to test H3a and H3b. The ANOVA on the consumption amount of the dextrose revealed no significant main effect for aesthetic congruity but one for benefit salience ($F(1, 96) = 9.34$, $p < .01$). More importantly, however, the interaction effect was significant also ($F(1, 96) = 9.46$, $p < .01$). To follow up on this interaction, two planned contrasts were performed. In support of H3a, the results showed that aesthetic congruity decreased the consumption of the dextrose when the process-focused benefit was salient ($M_{congruent} = 2.08$, $M_{incongruent} = 3.78$, $F(1, 96) = 2.79$, $p < .10$) and increased it when the outcome-focused benefit was emphasized ($M_{congruent} = 6.37$, $M_{incongruent} = 3.77$, $F(1, 96) = 7.36$, $p < .01$).

The ANOVA on the consumption amount of the yoghurt revealed a different pattern of results. Specifically, only the main effect of aesthetic congruity reached significance ($M_{congruent}$ = 62.84, $M_{incongruent}$ = 48.65, $F(1, 96) = 4.70$, $p < .05$). That is, participants ate more of the yoghurt regardless of which benefit was salient when it was eaten from the visually congruent turquoise (vs. incongruent violet) bowl. This finding supports H3b.

Mediation Analyses. To test H2, H3a and H3b, we performed two separate moderated mediation analyses (Model 14; Hayes 2013). Specifically, we tested the following sequence of effects conditional on benefit salience for both the yoghurt and the dextrose: aesthetic congruity ➔ perceived product effectiveness ➔ intensity of consumption. The two experimental factors were effect-coded for the analyses (i.e., -1 = incongruent; 1 = congruent; -1 = process-focused benefit; 1 = outcome-focused benefit). In line with H2 and H3a, a bootstrapping analysis (5,000 resamples) for the dextrose showed that the mediated effect of aesthetic congruity through perceptions of the dextrose's effectiveness on the intensity of product use was negative when the process-focused benefit was salient (indirect effect = -.17; 95% CI: [-.58, -.02]) and positive when the outcome-focused benefit was emphasized (indirect effect = .25; 95% CI: [.02, .72]).

The same moderated mediation analysis (bootstrapping 5,000 resamples) for the yogurt revealed a positive effect of aesthetic congruity on consumption both when the process-focused benefit was emphasized (indirect effect = 2.85; 95% CI: [.33, 7.21]) as well as when the outcome-focused benefit was salient (indirect effect = 2.16; 95% CI: [.39, 5.23]). These findings support H3b and also provide additional support for H2.

Discussion

The study supported all our hypotheses. Aesthetic congruity was found to strengthen participants' beliefs in the cognitive effects of the dextrose and to produce more favorable perceptions of the yoghurt's taste. Thereby, it influenced the intensity of product use. In the case of the dextrose, consumption either increased or decreased depending on whether the process- or the outcome-focused benefit was salient. In the case of the yoghurt, aesthetic congruity increased consumption regardless of the benefits' relative salience. These findings suggest that while in utilitarian consumption both benefits of a high product effectiveness may hold appeal and thus encourage benefit-consistent behavior, in hedonic consumption this may only be true of the outcome-focused benefit.

GENERAL DISCUSSION

The purpose of this research was to examine the relationship between aesthetic congruity and consumers' product perceptions and consumption behavior. Specifically, we sought to examine how aesthetic congruity among products affects consumers' perceptions of a product's effectiveness (i.e., its ability to serve its purpose) and thereby the intensity of its use. We found that products that are used as part of an aesthetically congruent product ensemble are perceived to be more effective (i.e., to better fulfill their individual function) than products of aesthetically incongruent product ensembles. This impression of a higher functional performance was found to either increase or decrease a product's use depending on the benefit of a high product effectiveness that was made salient (i.e., process- vs. outcome-focused benefit) and on the nature of the respective ensemble component (i.e., hedonic vs. utilitarian). Specifically, we found that in the case of utilitarian products, it may be necessary to highlight the superior consumption results that effective products may deliver (i.e., to

highlight the outcome-focused benefit) for aesthetic congruity in order to increase product usage. Otherwise, it may even reduce consumption (Lin and Chang 2012; Scott et al. 2009; Zhu et el. 2012). In case of the hedonic products, in contrast, aesthetic congruity was shown to have a consistently positive effect on the intensity of product use regardless of which benefit of a high product effectiveness is salient.

With these findings, we make several contributions to the literature. Most essentially, we advance the literature on aesthetic congruity. On a general level, we highlight that aesthetic congruity is a relevant, but to date, largely neglected field of research that deserves more research attention. Our findings demonstrate that it may not suffice to focus on the aesthetic appeal of individual products (e.g., Hagtvedt and Patrick 2008; Hoegg et al. 2010; Landwehr et al. 2013; Luchs et al. 2012) but that the appeal of impressions created by entire product ensembles may warrant equal consideration. As such, our study may help to promote a broader interpretation of design aesthetics in marketing research that is no longer limited to the visual appearance of single products.

Second, we show that ensemble effects are not limited to products that serve a decorative purpose. Previous research on aesthetic congruity has been limited to studies of fashion and furniture whose main function is beautification (Bell et al. 1991). That is, the focus has long been on products for which aesthetic congruity is an explicit concern. We, however, demonstrate that aesthetic congruity is relevant to other products as well. As such, we extend this field of research into new product categories.

Third, our findings illustrate that the effects of aesthetic congruity on consumers' perceptions and judgments have not yet been fully captured. By focusing exclusively on global product evaluations and perceptions of aesthetic appeal, previous research has remained very narrow. We show that other product impressions may be equally affected. Specifically, we demonstrate that aesthetic congruity may affect perceptions of products' effectiveness (i.e., their ability to fulfill their purpose) and as such, a wide variety of different

product impressions, as the specific notion of effectiveness may well differ with the function of a product (i.e., the effectiveness of a product may refer to a yoghurt's deliciousness or the strength of the cognitive effects of dextrose, for instance).

Fourth, we demonstrate that the effects of aesthetic congruity go beyond the level of perceptions and evaluations to affect actual behavior. While previous research did include measures of behavioral intent, it did not observe whether people's intentions would also translate into real action (for an exception, see Patrick and Hagtvedt 2011). Furthermore, it concentrated on behaviors related to products' acquisition (i.e., intention to purchase, intention to return; e.g., Lam and Mukherjee 2005; Patrick and Hagtvedt 2011). We, however, studied people's product usage behavior (i.e., intensity of product use). As such, we do not only demonstrate that aesthetic congruity may affect consumers' *actual* behavior but also shift the focus from the initial stage of preference formation and purchase to the time of consumption.

Fifth, while previous research has only focused on product ensembles at a global level (i.e., at the level of the entire ensemble) or the level of a single ensemble component (e.g., Bell et al. 1991; Lam and Mukherjee 2005; Patrick and Hagtvedt 2011; Veryzer and Hutchinson 1998), we looked at several individual ensemble components simultaneously. Doing so, we show that aesthetic congruity may have the same positive effect on the perceived effectiveness of every ensemble component, but that it may have opposing effects on the intensity of their use. As such, our study highlights the importance of analyzing the behavioral effects of aesthetic congruity for each ensemble component separately.

Besides contributing to the literature on aesthetic congruity, we also advance the literature on product effectiveness in several ways. Our study reinforces the notion that a high product effectiveness may offer different types of benefits to consumers (i.e., process- vs. outcome-focused benefit) and thereby promote different consumption behaviors (i.e., an increased vs. a decreased product use). As such, we also show that a high product

effectiveness may not necessarily reduce utilitarian consumption unlike previous research had indicated (Lin and Chang 2012; Scott et al. 2009; Zhu et al. 2012). Besides that, we also contribute to this field of research by extending it to the hedonic domain. Up until now, its effects have only been studied in a utilitarian context. We, however, show that products' effectiveness may also be relevant to the usage (intensity) of hedonic goods.

Related to the previous point, we also make a contribution to the literature on hedonic and utilitarian consumption. Previous research in this area has already mapped out the various differences between hedonic and utilitarian facets of consuming (Batra and Ahtola 1990; Dhar and Wertenbroch 2000; Hirschman and Holbrook 1982; Mano and Oliver 1993; Okada 2005; Voss et al. 2003). Adding to those findings, our study shows that utilitarian and hedonic products may also differ in how their usage varies with the degree of aesthetic congruity between their design and that of complementary items as well as with the benefit of a high product effectiveness (process- vs. outcome-focused benefit) that is salient.

Finally, we extend current theorizing on the distinction between process- and outcome-focused thinking (e.g., Escalas and Luce 2003, 2004; Taylor et al. 1998) by applying it to perceptions of products' effectiveness and by investigating its behavioral effects in this context. Specifically, we demonstrate that the process- and the outcome-focused benefit of a high product effectiveness may cue different consumption behaviors (i.e., an increased vs. a decreased product use) and that it may depend on perceptions of aesthetic congruity and the nature of the underlying product (i.e., hedonic vs. utilitarian) whether consumers behave in line with those cues (i.e., whether people show benefit-consistent behavior and increase product use when the outcome-focused benefit is salient and reduce product use when the process-focused benefit is salient).

MANAGERIAL IMPLICATIONS

Our findings have important implications for practice. The results of our study suggest that to foster perceptions of a high product effectiveness, companies need to ensure that their products are used as part of visually congruent product ensembles. That is, they may either adapt their own product's design to the appearance of complementary items that might be involved in their product's usage or they may try to shape the visual consumption environment of their product. To this end, they may offer free giveaways that match their product's appearance (e.g., offering a free mug when selling coffee machines), for instance, or consider a cooperation with producers of complementary items with whom to coordinate their design efforts (e.g., a company producing MP3 players cooperating with a company producing headphones). Another option would be to redesign packaging because in the case of many food (e.g., yogurt, drinks) and drugstore items (e.g., shampoo, soap), packaging is directly involved in the products' usage. As these products tend to be consumed straight from their packaging the aesthetic congruity between the products and their packaging may be important to manage strategically.

However, aesthetic congruity may not only be used to enhance product perceptions but also to increase postpurchase consumption. As such, it may also become an important means to increase sales, as repurchase cycles may be shortened (either due to increased wear and tear (durable items) or because the product has been used up (nondurable items)). To take advantage of these favorable effects, marketers may refer to the perceived benefits (i.e., process- vs. outcome-focused benefit) that may accompany aesthetic congruity (e.g., in slogans, in TV spots, on products' packaging etc.). Free choice between the process- and the outcome-focused benefit may only exist for marketers of hedonic items, though. In the case of utilitarian products, companies may be confined to the outcome-focused benefit; because in utilitarian consumption, aesthetic congruity may be a double-edged sword. While it may

increase consumption when the outcome-focused benefit is salient, it may also decrease it when consumers rely on the process-focused benefit (Lin and Chang 2012; Scott et al. 2009; Zhu et al. 2012). As such, marketers of utilitarian items are strongly encouraged to stress the outcome-focused benefit of effective products in order to encourage an intensive product use.

LIMITATIONS AND FUTURE RESEARCH

Like any research, this study too suffers from certain limitations that may become the starting point for future research. First of all, our findings demand further validation. Although the present study has provided some initial evidence in support of our hypotheses, additional studies are necessary to verify our reasoning. These studies, however, may go beyond a mere replication of our research to also test for other moderating factors that might be relevant in the present context. It may be interesting to examine, for instance, how the effects of aesthetic congruity vary with the degree of physical proximity between products. It may well be that the effects on consumers' perceptions and behavior are stronger in the case of a close (vs. far) physical proximity, because in this case the (lack of) visual congruity among products may be more salient (although all products may be in sight in both cases). In support of that reasoning, Lam and Mukherjee (2005) found that the effects of visual unity presuppose a concurrent perception of products. When study participants encountered products successively (i.e., only one product in sight at a given moment of time), the effects of aesthetic congruity were dampened.

Similarly, a high degree of functional interdependence among products may also contribute to the salience of (a lacking) aesthetic congruity. A high degree of functional integration may call for an equally strong visual unity (i.e., a high degree of aesthetic congruity). The visual appearance of an ensemble may be taken as a visual reflection of its (inner) functional relationships (i.e., 'functional unity' should translate into visual unity). As

such, a high functional interdependence may bring the idea of aesthetic congruity more to the fore and thereby strengthen its effects.

A third factor that may amplify the effects of aesthetic congruity is the subjective 'centrality of visual product aesthetics' (CVPA; Bloch, Brunel, and Arnold 2003). As the CVPA captures the importance that design aesthetics has for a particular consumer, it stands to reason that people high in CVPA may be more sensitive towards the concept of aesthetic congruity and therefore also be more affected by it. Future research may wish to investigate this in more detail.

Another interesting avenue for further research concerns the relative importance of design aesthetics at the level of an individual product and the level of an entire product ensemble. Research on aesthetic congruity tends to disregard the former level (i.e., the individual visual appeal of the products that make up an ensemble has not been taken into account in previous research on aesthetic congruity). As such, it remains unknown whether a unified appearance of unaesthetic products (i.e., *un*aesthetic congruity) is preferable to an incoherent appearance of aesthetic items (i.e., aesthetic *in*congruity). Additional research is necessary to provide marketers with appropriate guidelines on how to decide when they have the option between a product design that they consider aesthetic but that does not match the appearances of important complementary items and a design that may not be as attractive as the first design but that harmonizes well with the designs of complementary products.

Finally, it may be worthwhile to examine whether aesthetic congruity might also have a negative effect on consumers' product perceptions. One situation in which that might be the case is when the harmony and coherence expressed by aesthetic congruity conflict with the image of a product or a brand. A vibrant brand such as Red Bull, for instance, which stands for excitement, fun, and nonconformity may rather benefit from a distinct design that clashes with the appearances of other ensemble components (e.g., with the design of a drinking cup). Seeing it as part of a visually harmonic group of products may not fit the identity of the brand.

Likewise, aesthetic congruity may pose a problem for products of an ensemble that consumers want to 'stand out'. In this regard, Deng et al. (2010) have shown, for instance, that although consumers generally prefer a unified color scheme for a design, they may choose to accentuate individual design elements by coloring them with a very contrastive color. As aesthetic congruity requires ensemble components to create a visually coherent impression, it may impede comparable efforts to highlight individual ensemble components. Lastly, too much aesthetic congruity may also create boredom. A certain tension within a design may be necessary to sustain consumers' interest in the long run. Findings about the effects of simple versus complex designs or familiar versus unfamiliar designs give rise to this expectation (e.g., Berlyne 1971; Cox and Cox 2002).

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