Corporate Reputation Review
https://doi.org/10.1057/s41299-022-00145-9

ORIGINAL ARTICLE

Innovating the Archetype: Discovering the Boundaries of the Triangular Designer Space

Maaike Mulder-Nijkamp[1] · Mendel de Kok[2] · Viktor Klassen[3] · Wouter Eggink[1]

Abstract
The introduction of innovations can be more successful when launched under an established brand name, e.g. as a brand extension. However, the role of the appearance of the design is often underexposed, whereas the visual appearance of products is known as a critical determinant of consumer response and product success. Based on current literature, designers and design managers only know what to design, but suffer from a lack of knowledge how to design more successful brand extensions. When designing the visual appearance of these extensions we can rely on the strong and recognizable identity of the brand (typicality), but also have to create a completely new product (novelty) referring to the much-debated MAYA Principle (Most Advanced, Yet Acceptable). In this paper we recognize the limitations of the MAYA principle and claim that the success of brand extensions cannot be explained by a simple negative linear equation of opposites as typicality versus novelty. The results of two design case studies about speakers and headphones show that at least three determinants play an important role when designing the appearance of brand extensions; product typicality (does the design look like the archetype product), novelty (how novel is the design) and brand fit (does the design refer to the brand characteristics). Besides that we argue that the optimal balance between those three actors will also be determined by the type of product (archetype or multitype). The results indicate a higher importance of a novel visual styling for speakers and a stronger connection between typicality and brand fit for headphones. To support the design process even further, we will present our findings with the aid of the Triangular Designers space that helps designers and design managers to strategically make decisions to launch successful brand extensions.

Keywords Packaging innovation · Brand typicality · Novelty · Brand extension · Aesthetic preference · MAYA

Introduction

Are consumers able to recognize a Heinz tomato *juice* bottle or an Andrélon *soap* dispenser? Playing the game the other way around: what would be perceived as typical characteristics of the brand Heinz or Andrélon when launching new innovations in different product categories? It has been widely proven that the introduction of innovations can be more successful when launched under an established brand name, e.g. as a brand extension (Kapferer 2008; Keller 1998). However, stretching the brand by creating new products in a completely different product category, comes with uncertainties (Keller and Lehmann 2009). One of the most important antecedents of successful brand extensions in existing literature is the perception of 'fit' explained as the similarity between the brand extension and the parent brand (Aaker and Keller 1990; Bousch and Loken 1991; Völckner and Sattler 2006). However, it still remains unclear what exactly constitutes a 'perfect' fit. We identify a gap in literature which is currently barely addressed, namely the attribution of the visual appearance to this fit. The role of the appearance of a design is often underexposed in marketing literature, whereas the visual appearance of products is known as a critical determinant of consumer response and product success (Page and Herr 2002a; Radford and Bloch 2011; Homburg et al. 2015). When all other factors are

✉ Maaike Mulder-Nijkamp
m.mulder-nijkamp@utwente.nl

[1] Department of Design, Production and Management, Faculty of Engineering Technology, University of Twente, Drienerlolaan 5, 7522 NB Enschede, The Netherlands

[2] MENDL – Photo Editing & Visual Storytelling, Amsterdam, The Netherlands

[3] D'Andrea & Evers Design – Design agency, Hoge Bothofstraat 39W, 7511 ZA Enschede, The Netherlands

Published online: 06 July 2022

defined (like the chosen product to design, the quality of the parent brand, the appropriate retail channel, et cetera), the aesthetic appraisal of new brand extensions can have a large influence on acceptance. Based on current literature, most designers and design managers only know *what* to design, but suffer from a lack of knowledge *how* to design successful brand extensions.

This paper addresses two research questions, which will subsequently be addressed by two case studies.

1. How novel can a new brand extension be, compared to previous product-variants, in order to accomplish the desired recognition?
2. What is the effect of novelty used—for brand extensions—in archetype versus multitype products.

Our interpretation of previous studies is that at least three determinants play an important role when designing the appearance of brand extensions; (1) product typicality [does the design look like the archetype product, referred to as 'goodness of an example' (Veryzer and Hutchinson 1998)]; (2) novelty (how novel is the design, where novel refers to the amount of visual 'newness' in a design (Radford and Bloch 2011)) and; (3) brand fit (does the design refer to the brand characteristics) (Kreuzbauer and Malter 2007; Mulder-Nijkamp et al. 2021). As these three determinants are mutually influencing (Mulder-Nijkamp 2020), designing the trade-off between these three determinants in the most optimal way will possibly lead to more aesthetically preferred products. From there, as discussed by Homburg et al. (2015) more aesthetically preferred products will result in a higher willingness to pay and a higher consumer acceptance, thus in a more successful brand extensions.

Besides that we argue that the trade-off between those three determinants will also be influenced by the type of product that will be designed. For archetype products the effect of the forementioned factors are different compared to less archetypical products (so called multitype products). Furthermore, we claim that the effect of novelty used in archetype products is much more sensitive compared to multi typical products. Consumers prefer to stay closer to the archetypical product and are more extreme in their attitudes towards the product.

Theoretical Background

In order to discuss our case studies effectively, three topics require clarification: designing brand extensions, interplay of research domains and physical appearanc.

Designing Brand Extensions

The power of using brand extensions is evidenced by the sheer numbers that are launched every year (Aaker 1990; Gerrath and Biraglia 2021; Pontes and Pontes 2021; Goedertier et al. 2015). In 2019 Heinz launched 'tomato ketchup caviar' for Valentine's Day (Jonze 2019) and recently the Dutch textile discounter Zeeman has launched a perfume bottle and a Bluetooth speaker (Van Rompaey 2021). By launching these brand extensions brands hope to stand out from competitors and generate brand engagement (Gerrath and Biraglia 2021). However, it remains unclear how innovative these brand extensions can be, in order to still accomplish the desired acceptation (Gerrath and Biraglia 2021; Goedertier et al. 2015). Marketing managers face the problem of brand extension failures, which can reach rates between 80 and 90% (Batra et al. 2010; Marketing 2003). Moreover brand extensions form a risk, because they potentially can decrease or harm the equity of the core brand name (Degraba and Sullivan 1995; Simon and Sullivan 1993). A brand extension that evokes inappropriate associations could damage the brand, which can even demolish the overall identity of the brand (Aaker 1990). This is even a stronger argument to ensure the aesthetic appearance of the brand extensions should be designed finding the optimal balance between brand and innovation. When the appearance of the design is perceived as too novel, it will lead to inappropriate associations, which could easily harm the brand. After all, understanding the interplay of all determinants that effect the success of those brand extensions can inform but moreover support marketing managers and designers to *design* the right products and to improve the much-debated success rate. This delicate relation between brand and innovation integrated in a visual appearance raises the need for more insight in consumers' attitude towards these innovations (Brexendorf et al. 2015; Brexendorf and Keller 2017).

The appearance of the designed products is an important mediator in the communication towards consumers (Crilly et al. 2004) and acts as carrier of meanings when communicating the designers intent. This implies the process of 'semantic transformation' (Karjalainen 2004) in which brand characteristics get embodied in the physical design features of a product. For this reason, designers play a crucial role in translating the brand characteristics into specific visual cues. When done well this can influence the success of innovations. By synthesizing all different visual cues (like defining the volume, specific lines, materials, specific tactile features, the colours, et cetera) into the appearance of the product they 'communicate' with the consumer and try to evoke the right message towards the target group (Crilly 2005b).

Theories like the MAYA principle (Most Advanced, Yet Acceptable) (Loewy 1951; Hekkert et al. 2003) focus on

getting more insight in the attitudes of consumers, and guide designers in the process of finding the best solution. However, these theories are quite general and therefore limited in applicability. In this paper we recognize the limitations of the MAYA principle and claim that the success of brand extensions cannot be explained by a simple negative linear equation of opposites as typicality versus novelty.

This research will be centred around how design features in the physical domain are used to carry semantic references to the character of a brand (Karjalainen 2007; Karjalainen and Snelders 2010). We will show how specific explicit and implicit design cues influence recognition and to what extent brands should apply these brand specific design cues in new product (packaging) designs. We will present our findings with the aid of the Triangular Designers space (Mulder-Nijkamp et al. 2021), a framework we developed for designers and design managers to support them in finding the right appearance for their designs. To explain the theoretical foundations for this framework, we need to discuss the interplay between the involved research domains.

Interplay of Research Domains

A brand extension could be seen as a new product innovation from inside the brand which could revitalize the brand when accepted by consumers. Understanding the success of these new product *innovations* will decrease the risk of new product failures and together with the powerful effect of *branding*, this can lead to a more successful and acceptable innovation (Degraba and Sullivan 1995; Yacoub 2015). To reach that goal it is important to connect knowledge from different research domains. Designing brand extensions involves the research domain innovation management (it is a new product that is going to be launched) and brand management (it should fit to some extent to the brand). Besides these two areas, we also need to introduce a third domain: the field of Product aesthetics. Product aesthetics is part of a larger field referred to as 'Product design'. However, in the context of this paper we want to limit ourselves to the aesthetic appearance of products, which seems to determine to a large extent the success of products (Lidwell et al. 2003). When technical specifications tend to become less and less varied, the aesthetic appraisal of products seems to be crucial in distinguishing from competitors (Hekkert and Leder 2008a; Hekkert et al. 2003; Eger and Drukker 2010). We will briefly discuss the important literature from each research domain to give a clear explanation of our perspective and subsequently zoom in on the domain of product aesthetics.

Studies from the domain of innovation management describe the influence of the newness of innovations which evoke uncertainties among consumers (Claudy et al. 2014; Dewar and Dutton 1986; Luecke and Katz 2003; Veryzer 1998). The reason why consumers adopt certain innovations against others differs qualitatively and is hard to predict (Claudy et al. 2014). It also depends on whether the newly developed product is an incremental (continuous) or radical (discontinuous) innovation (Veryzer 1998; Dewar and Dutton 1986). These insights are of course very relevant to design more successful brand extensions. But in addition to these factors e.g. knowing whether to design a more incremental or radical innovation, it does not become clear *how to design* the physical appearance of these new product innovations. Multiple scholars point out the lack of research into the interplay between innovations and the design of new product development (Brexendorf et al. 2015; Hernández et al. 2018; Hultink 2010; Veryzer 2005). As discussed by Hernández et al. (2018) design has a crucial role in the acceptance process and "has become the language of innovation itself".

Taking a closer look at the domain of brand management reveals a similar picture. Current marketing literature on introducing brand extensions focuses on answering the question how successful a certain product-brand combination will be (Aaker 1990; Aaker and Keller 1990; Bottomley and Holden 2001; Völckner and Sattler 2006, 2007; Pontes and Pontes 2021; Albrecht et al. 2013), but do not provide guidance for new product development. The studies show successful brand extensions when there is a perception of fit between the parent brand and the extension product (Völckner and Sattler 2006). However, when the innovation that should be launched is known, the *design* of this new product innovation becomes the most important influencing factor. One of the important determinants to influence the appearance of the brand extension, is the brand identity and the current product- portfolio of the brand. The use of the brand can be elaborated more to increase the successfulness of brand extensions (Bottomley and Holden 2001; Broniarczyk and Alba 1994; Park et al. 1991). The connection with the core values of the brand and specific salient characteristics of the brand has shown to have an important impact as well (Kreuzbauer and Malter 2007; Leder et al. 2007; Martínez Salinas and Pina Pérez 2009; Page and Herr 2002b), but is often under exposed. The influence of the factor brand fit needs to be investigated in relation to the current body of literature regarding different translations of the term fit. To get a better understanding of the interplay between brand management and innovation management, we need to zoom in on the physical appearance of products which will be discussed in the next chapter.

Physical Appearance

Although product design and the aesthetics of consumer products are extensively researched (Berlyne 1974; Crilly 2005a; Crilly et al. 2004; Desmet 2002), the link with the fields of brand and innovation management remains

understudied. However, the physical appearance of a new product innovation is an important medium between consumers and designers to transceive the message of a brand (Bloch 1995; Crilly 2005a) and to improve the acceptation of those product innovations. Within the field of brand extensions, the delicate balance between brand recognition on the one side and the newness of the innovation at the other side seems to be crucial to develop successful designs (Brexendorf et al. 2015; Broniarczyk and Alba 1994). This builds on the much investigated relationship between typicality, novelty and aesthetic preference, called the Maya principle (Most Advanced, Yet Acceptable) as mentioned earlier. The term Maya principle was first coined by Loewy, who stated that: "the consumer is influenced in his choice of styling by two opposing factors: attraction to the new, and resistance to the unfamiliar" (Loewy 1951, 279). Hekkert et al. (2003) had a major breakthrough when they found that the two factors are not per definition each other's opposite, and that the combination of both a high level of typicality *and* a high level of novelty will lead to higher aesthetic preference among consumers. This addition by Hekkert et al. gave more insight how to deal with the MAYA principle. However, the applicability of the method for designers stays abstract. First of all, the theory claims to find the ultimate balance between two opposites (by maximizing both typicality and novelty). But this balance cannot be pointed out clearly for all different product categories and situations. The Maya principle cannot be compared with a linear equation by adding the 'right amount' of typicality and novelty to find the ultimate balance. Moreover, finding the balance in this delicate relation between the typicality of the brand at the one side and the novelty of new product innovation at the other side is difficult (Keller and Lehmann 2006; Broniarczyk and Alba 1994). In this situation the definition of typicality should be made more clear, because consumers can evaluate the term typicality as the connection to a certain product category (does it look like a juice bottle) or typicality referring to the connection with the brand (does it look like a Heinz bottle). The same is true for the definition of the term *novelty* which is also quite fuzzy (Hung and Chen 2012{Hsiao and Chen 2006 #129)} and is hard to measure. For brand extensions, the mechanism behind the MAYA principle (optimising both typicality and novelty) might be too difficult. This leads us to the following question: How novel can we design those new product innovations in order to still be accepted by consumers and how do consumers perceive the level of novelty in the appearance of products?

Previous studies found that the brand can be used in two directions: 1. The brand can act as the factor typicality ("Hey, I recognize specific explicit cues of Heinz in this juice bottle"), 2. It can also be explained as the factor novelty ("wow, I did not know that Heinz was also developing bottles with fresh tomato juice") (Mulder-Nijkamp 2020). This brings us to the second issue with respect to the MAYA principle: how does the brand impact this delicate balance. It does not take into account factors like the innovativeness of the brand. If a brand is known as a frontrunner or innovator (like Nike or Dyson), this theory of balancing the results will probably not lead to the expected outcome. Lastly, the MAYA principle does not give an answer to the question how to deal with products from different product categories. For example, when designing watches (more archetypical) versus designing lamps (less archetypical) the perception and adoption of novelty (Dewar and Dutton 1986; Veryzer 2005) will be different. In this research we predict that the balance point will shift towards typicality or novelty, based on the product classification.

All these factors are important to find the right positioning of the to be designed product, however, they are currently not integrated in the MAYA principle. As a matter of fact, designers just use their experience and their own gut feeling to make specific decisions (Dorst 2008) in the process towards creating successful brand extensions. A theory like the MAYA principle does not provide enough guidance to design for this situation. Nevertheless, the right choice of 'ingredients' influences the decisions of consumers directly (Blijlevens et al. 2012; Bloch 1995). Adding a specific design cue to reinforce the recognisability of the brand or just adding a striking colour to focus more on novelty could make the difference in success of failure of a brand extension (Leder et al. 2007).

We argue that brand specific associations (Broniarczyk and Alba 1994) what we call 'brand fit' also play an important role in this process. For this combination of factors, we shall use the term "brand typicality", which is a combination of 'product typicality' (Blijlevens et al. 2012; Loken and Ward 1990; Veryzer and Hutchinson 1998) and 'brand fit' or brand categorization (Kreuzbauer and Malter 2005, 2007). The determinant brand typicality (brand fit and product typicality) can be used as the counter pole of novelty of (packaging) innovations and will lead to more successful brand extensions. However, this balance needs to be seen in the relation of the newly designed product category.

The interaction of the two seemingly opposing factors as proposed in the Maya principle, might be too limited, when a brand comes into play (Mulder-Nijkamp 2020). In these specific situation we therefore state that the positioning between three main determinants is important to increase the success of brand extensions:

1. The *product typicality*: if the product is perceived as a typical design, or 'goodness of example' (Veryzer and Hutchinson 1998) with regard to the main product category it will be more successful (Loken and Ward 1990;

Meyers-Levy and Tybout 1989; Ghim and Shin 2021; Kumar and Garg 2010; Blijlevens et al. 2012).
2. The novelty—showing high levels of visual "newness" (Radford and Bloch 2011). Literature reveals that integrating novelty leads to more success in aesthetic appraisal (Bianchi 1998; Blijlevens et al. 2012; Simonson and Nowlis 2000).
3. Brand fit, in what way the brand extension is connected to the brand by specific explicit cues or brand specific associations (Karjalainen and Snelders 2010; Kreuzbauer and Malter 2005).

In order to do this we will take a designerly approach (Archer et al. 1976; Cross 1982). By experimenting and evaluating different versions of one brand extension we will investigate how to find the optimal positioning of new designs. In other words, it is important to know WHAT needs to be designed. However, it is even more important to know HOW it needs to be designed. In this paper we will therefore show how to combine the insights of all fields in a 'design-driven' way (Verganti, 2009) in order to create more valuable brand extensions.

For this purpose we will present two case studies: In case study 1 we will create two brand extensions (tomato juice bottle for Heinz and soap dispenser for Andrélon) to investigate how novel the visual appearance of new brand extensions can be, compared to previous variants, in order to still accomplish the desired acceptation. To measure the successfulness of the proposals we set up some operational definitions. With the term novel we refer to products with high levels of visual product "newness" (Radford and Bloch 2011). We argue that consumers' acceptance of brand-extensions can be increased by finding the balance between brand typicality and novelty, where brand typicality refers to the combination of product typicality and brand fit. Within this relation the term product typicality addresses only the fact if the new category is still seen as a reliable product from that category (does it look like a juice bottle/soap dispenser?), the second term brand fit refers to brand specific characteristics and associations (does it look like a Heinz bottle, or an Andrélon dispenser?). The term brand typicality refers to the designed product packaging fitting to the current brand (does it look like a Heinz *juice* bottle, or an Andrélon *soap* dispenser). We predict that the combination of both aspects appears to best predict the aesthetic evaluation and buying intention.

In case study 2 we create two brand extensions (headphones for Mercedes and Bluetooth speakers for Mercedes) to investigate the influence of archetype products versus multitype products in relation to the desired acceptation. In order to classify these two different product categories we use the term archetypically (or prototypicality) which refers to classifying things into groups of objects which share some properties (Veryzer and Hutchinson 1998; Whitfield 1983; Krippendorf 2005). Multitype products are categories were multiple archetypes exist for the same product at the same time. The intuitive response to innovation is expected to be more sensitive for archetype products than multitype products.

Case Study 1

Our first case study will investigate to what extent brands should display their brand characteristics in new product (packaging) designs in order to accomplish the desired brand recognition and acceptance towards the brand. We explore how specific design features (like form, colour, materials, et cetera) can be balanced into a design that perfectly integrates the explicit characteristics, to create a more meaningful (Hekkert and Leder 2008b) and congruent experience (van Rompay and Pruyn 2011) that will be perceived as more valuable by consumers (Mulder-Nijkamp et al. 2021). These meaningful experiences will be based on our general knowledge and previous experiences with respect to the brand and to some extent are rather consistent (Hekkert and Leder 2008b). These meaningful experiences can be measured by increasing consumer acceptance.

However, as stated earlier, it remains unclear how innovative a new design can be in order to still accomplish the desired acceptation? To what extent should a designer taken into account previous design variants of the brand?

We will focus on the fast moving consumer goods (FMCG) domain: brand extensions of packaging design and we will design two brand extensions; a packaging for Heinz tomato juice and a packaging for an Andrélon soap dispenser.

To answer the research question the hypotheses are stated as follows:

H1 The 'brand-typical packaging design with optimum use of brand characteristics' are rated as most typical and least novel.

H2 The 'novel packaging design with minimal use of recognisable brand characteristics' are rated as most novel and least typical.

H3 The designs 4, 5 & 6 (figure 3) are balanced between typicality and novelty and attain highest consumer acceptance.

Fig. 1 Heinz Ketchup bottle build up from structural, to visual, to verbal packaging cues

Methodology

In the case study we started with a pre-test to determine the most suitable brands to use for this case study by analysing the recognizable characteristics, followed by the real experiment to find the optimal balance for the chosen brands. For the pre-test we aimed to find the most suitable brands with recognizable characteristics. We analysed the explicit cues (Karjalainen 2004) of several brands by analysing current flagship products. In Fig. 1 we represented this the other way around and divided them in three main steps, the structural packaging (the main volume), visual packaging (colours, icons, labels, et cetera) and verbal packaging (text and brand name).

In this study, 242 respondents scored 11 products of 11 different brands, by means of an online survey. We had chosen an online study, to collect as many results as possible. The selected brands differentiated from archetypical packaging like Sportlife to more iconic packaging like Heinz tomato ketchup and varied between few competitors (Knorr) versus many competitors (Andrélon) as can be seen in Fig. 3. All eleven brands were edited and displayed in a similar way as the Heinz example above. The edited and surveyed brands included: Andrélon (shampoo), Sportlife (chewing gum), Heinz (ketchup), Ajax (detergent), Knorr (seasoning), Dreft (dish soap), Arla (Milk), Jack Daniels (Whiskey), Oral-B (toothpaste), Orangina (soda), Melvita (honey) and Bolletje (crackers).

Respondents were shown images of packagings with an increasing amount of brand characteristics. The scale of 'no recognisable brand characteristics' to 'optimum use of all recognisable brand characteristics' consisted of five to eight steps depending on whether the brand's product packaging could exhibit all characteristics. Showing an extra characteristic every step, respondents had to state their point of brand-recognition. The notoriety scores of the brands were also taken into account based on the EURIB TOP-100 essential brands (Riezebos and Verhorst 2015) and displayed in the grey scale (Fig. 2). The darker the colour the higher the notoriety score.

The results of the pre-test show that iconic packagings appear to need less brand characteristics than archetypical brands to be recognised. Iconic brands (like Andrélon, Heinz, Orangina) are mainly recognised by their overall shape and shape aspects (structural design) while archetypical brands (Bolletje, Ajax, Oral B) gain recognition through graphic detailing (visual and verbal design). Therefore we decided to proceed the next experiment with two of the most recognizable iconic brands: Heinz & Andrélon.

For the main experiment, we designed two brand extensions, respectively a soap dispenser for Andrélon and a tomato juice package for Heinz. The choice of these product-brand combinations was based on current literature about successful brand extensions (Aaker and Keller 1990; Völckner and Sattler 2006) taking into account the different levels of fit. In this case a high level of fit (substitute) for Andrélon and a low level of fit (transfer) for Heinz. The two brands also differentiate from each other in their looks, history, and values; Heinz promotes itself as being trustworthy and authentic. Andrélon on the other hand has a more flexible and modern image. When designing a novel look, the values of the two brands should be taken into account (Karjalainen 2004; Karjalainen and Snelders 2010).

To investigate the successfulness and the optimal balance of brand typicality and novelty, eight fictive proposals of new package innovations of the tomato juice package for Heinz and the soap dispenser for Andrélon (Fig. 3) were made. These eight proposals were slightly increasing in novelty and decreasing in branded design characteristics (Mulder-Nijkamp and Eggink 2016, 2014).

So the first design of a tomato juice package was really recognizable as a Heinz product using a lot of the striking

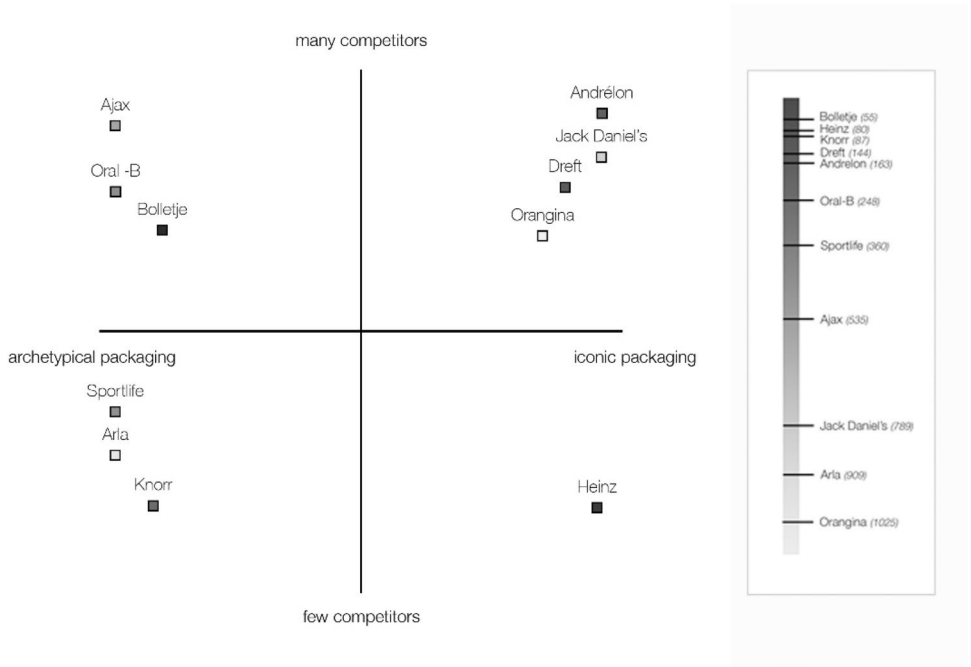

Fig. 2 Overview of investigated brands from archetypical to iconic packaging and from few competitors to many competitors including the brand notoriety (grayscale)

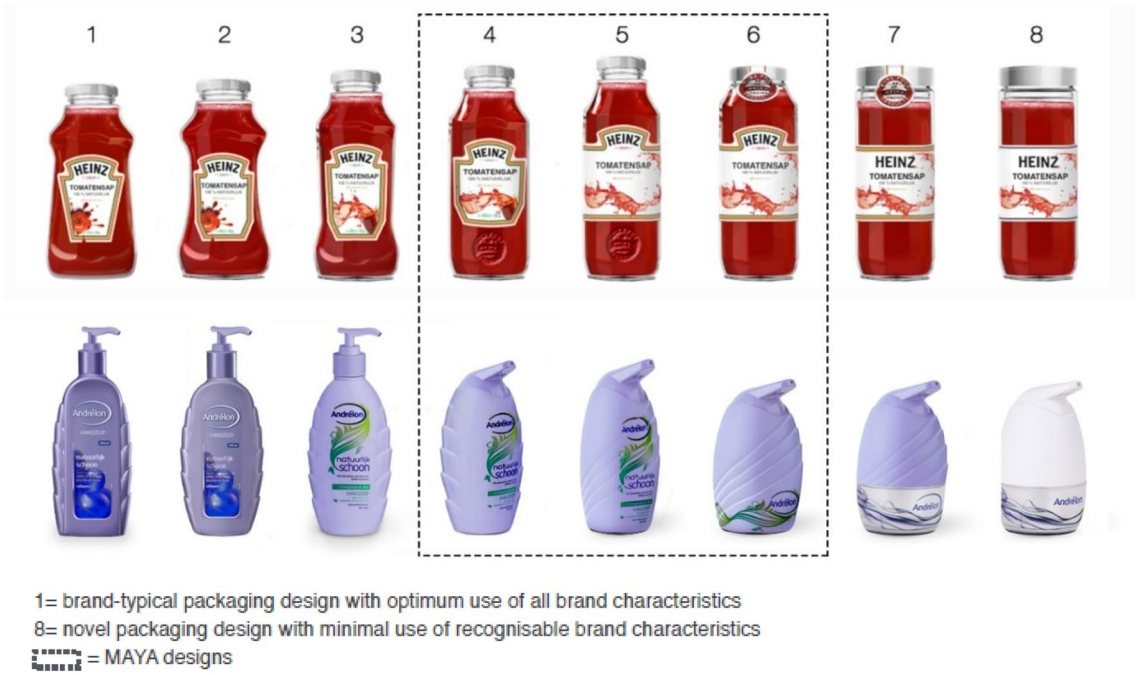

Fig. 3 Two times eight packaging designs for the fictive brand extensions for Heinz Tomato juice and Andrélon Hand soap (by Mendel de Kok)

design cues based on the structural packaging. The last one was a completely novel design only using the logo of Heinz. The designs in the middle of Fig. 3 (numbers 4, 5, and 6) show a balance between brand fit and novelty, presumably leading to more successful brand extensions.

Procedure

In total 80 respondents which were recruited via Facebook ranked the different product packaging designs of both brands by means of an online survey. After the actual ranking process, the respondents were also asked about their

attitude towards the brand, the perceptual fit, the expectation of the new brand extension and the ability to produce this brand extension. This was measured in order to test if the designed brand extension are reliable and follow the dimensions of fit defined by Aaker and Keller (1990).The respondents ranked the product packaging designs relatively to each other on purchase intention. Therefore the respondents were shown 8 images and were asked the question "Which bottle would you buy?". Subsequently, they had to rank on aesthetic preference (which design do you consider aesthetically the prettiest?), brand fit (which packaging do you consider the most typical '*Heinz or Andrélon*' design?), product typicality (which design resembles a "juice bottle" or "soap dispenser" the best?). In order to prevent sequence effects respondents where shown four of the eight designs at once (1,3 5, 7 or 2, 4, 6, 8) and presented them in a random order. The survey has been designed this way to reduce the survey time. Every number was skipped to increase visible differences between the designs.

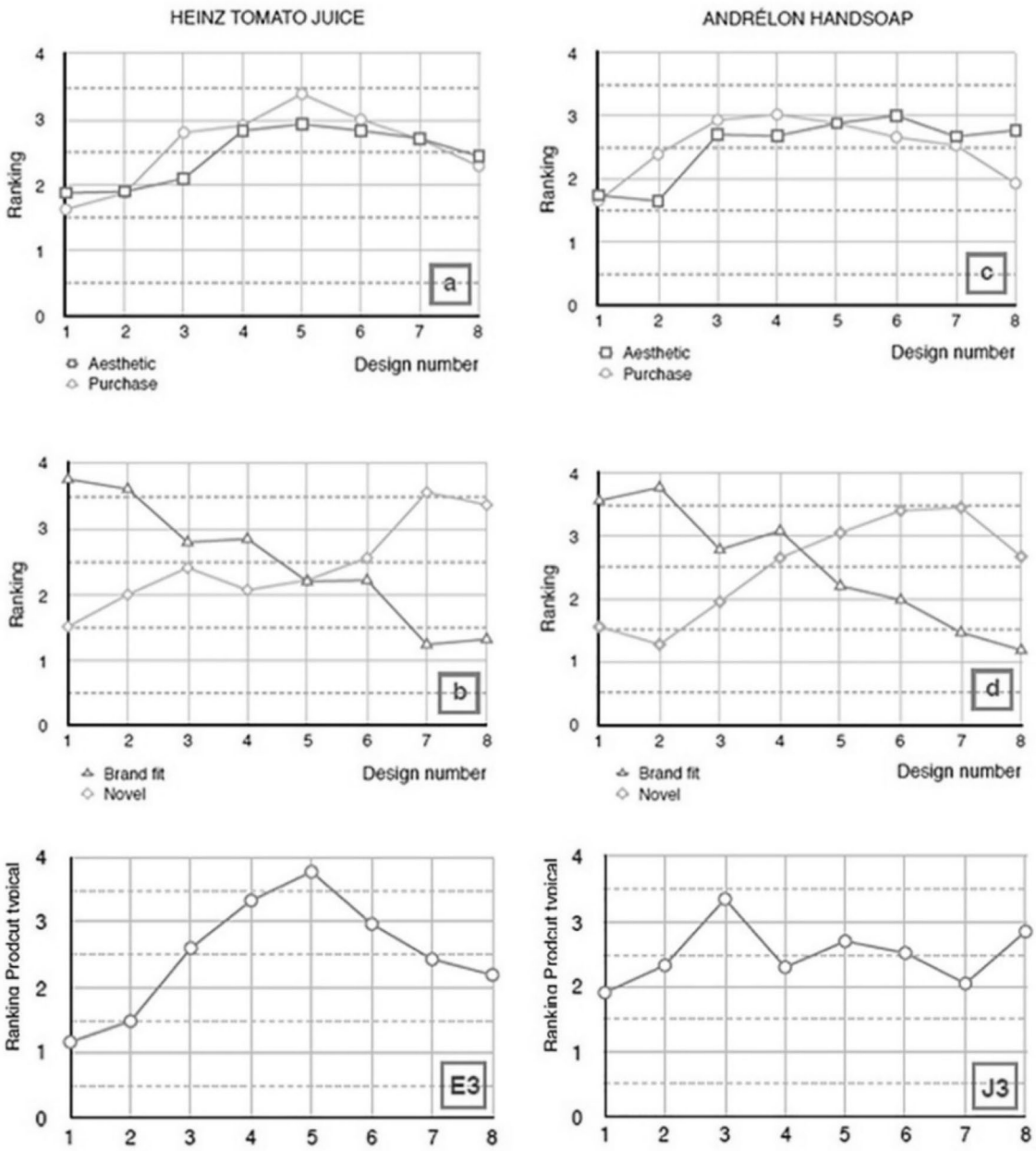

Fig. 4 Graphs showing the aesthetic preference and purchase intention (**a**, **c**) and the balance between brand fit and novelty (**b**, **d**). Graph **E3** and **J3** shows the results regarding prototypicality

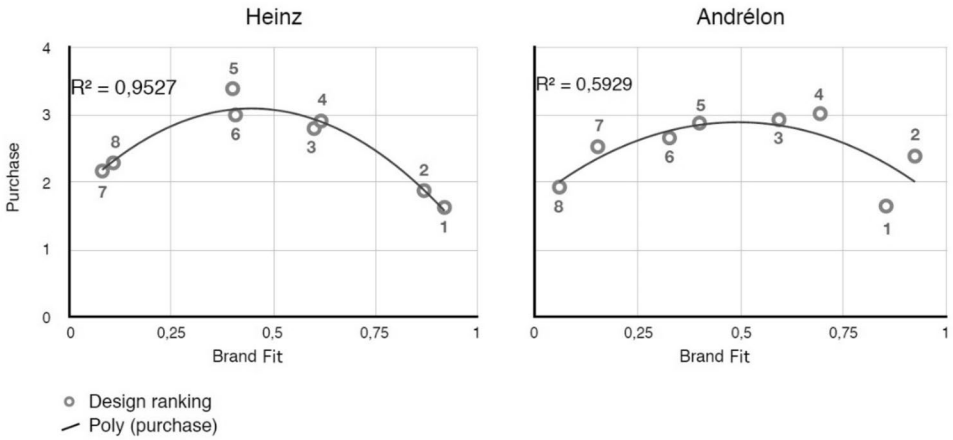

Fig. 5 Graphs showing a scatter chart of the Purchase data and standardised Brand Fit data for Heinz and Andrelon

Findings

Results where mapped in graphs for Heinz (Fig. 4—left) & Andrélon (Fig. 4—right). The numbers on the x-axis represent the 8 designs, the Y-axis shows the average scores of the rankings by respondents. The left graph [a] in Fig. 4 shows the combined scores for Aesthetics (dark grey) and Purchase (light grey) for Heinz. From the graph can be observed that designs 4, 5 and 6 gain the highest ratings on both Purchase behaviour and Aesthetics.

The Andrélon graph [c] shows the highest purchase behaviour for designs 3, 4 and 5. Aesthetic ratings are highest at designs 5 and 6, but does not show a clear peak. For designs 6, 7 and 8 Aesthetics are rated higher than those of designs 3 and 4, but design 3 and 4 are more likely to be purchased. Graph [b] in the middle shows the combined scores for Brand fit and Novelty for the brand Heinz. The lowest design numbers (most left) are rated with the highest brand fit and least novel. The highest design numbers are rated with least fit to the brand and most novel. Optimum balance was found in design 5, and to a lesser extent in designs 3, 4 and 6. Design 5 is both most balanced in its Brand fit and Novelty, and most likely purchased by consumers in graph [a]. We can also see that the product typicality plays an important role in graph [E3]. The peak of most recognizable bottle is on 5 which confirms the optimal balance between brand typicality (taking into account brand fit and product typicality) and novelty in relation to aesthetic preference and buying intention. In case of the Heinz packaging the most desirable design (number 5) resembles the intersection point between decreasing brand fit, and increasing product novelty and matches with the most optimal brand typicality as well (Fig. 5—left). For Andrélon this effect is the same, although the outcome is less obvious. Graph [d] shows the combined scores for Brand Fit and Novelty. Optimum balance was found in design 4, and to a lesser extent in designs 3, 5 and 6. Design 4 is both most balanced in graph [d] and most likely purchased by consumers in graph [c]. The peak of most recognizable soap dispenser [J3] is not consistent, designs 3, 8 and 5 are most recognizable as soap dispenser. In case of Andrélon packaging the most desirable design (number 4) resembles the intersection point between decreasing brand fit and increasing product novelty, but does not completely match the most brand typical design visualized in graph [J3]. When we compare product typicality and brand fit it shows that brand fit seems to be negatively correlated to novelty for both product categories. The results show that consumers indicate the first design as fitting the brand, but at the same time not as prototypical for its category. It can be concluded that the Maya principle (Hekkert et al. 2003; Loewy 1951) seems to work differently for brand extensions, whereas the combination of both brand fit and product typicality is a better determinant for desirability. The optimal balance of brand typicality (including brand fit and product typicality) seems to be packaging number 5 [E3] for Heinz and number 3 [J3] for Andrélon.

The graph in Fig. 5 shows a scatter chart of the Purchase data and standardised Brand Fit data for Heinz and Andrélon. For the Brand Fit score, 0 is the lowest possible score, 1 is the highest possible score. The purchase score is the actual and not-normalised score, where 1 is the lowest possible ranking and 4 the highest possible ranking score. For both graphs a second order polynomial trend-line (one hill) has been added to illustrate the relationship between Brand Fit and Purchase rankings. For Heinz, the R^2 value is 0.9527, which is a good fit of the line to the data. For Andrélon, the R-squared value is 0.5932, which is a moderate fit.

From the graph can be derived that when Brand Fit is averaged (0.5), Purchase scores peak. For Andrélon, the same finding can be observed, but, less strong.

Discussion

The results of this case study are promising, but we need to mention some limitations as well. The first point we want to

make is about the applicability of the outcome. We investigated the balance between brand typicality and novelty by trying to find the optimal intersection of new packaging design. In fact, this point of balance will be different in every product (Mulder-Nijkamp et al. 2021). It depends on the designers intent what mix of elements (product typicality, brand fit or novelty) will be used to come to the final result. Every designer can mix this balance between novelty, typicality and brand fit for their product category and can use this as a strategy tool to visualize the alternative solutions.

Secondly, we only tested this using two case studies so we cannot say that these conclusions are true for all brand extensions. More categories of products need to be investigated. The third limitation is about the number of participants and the process of ranking. As the sample of this survey is rather small, the empirical significance of the following results is to be validated in an extended survey. Furthermore the procedure of ranking the products needs to be explained. During testing we asked consumers to rank four designs at once, so they first rated 1, 3, 5 and 7 in relation to each other and after that they ranked numbers 2, 4, 6 and 8. Later we combined these outcomes in one graph. This way of testing might have influenced the results. We have deliberately chosen to perform the rankings in this way for two reasons. Testing all designs at once might lead to an unpleasant tedious experience. Besides that it is really hard for consumers to actually see differences between the designs that are visually similar to each other.

The fourth limitation is about the creation of the designs. For this case study we designed eight versions of brand extensions decreasing in brand fit and increasing in novelty. The steps in between the designs might not always be consistent in level of increase. In the case of Andrélon for example we saw that product typicality scores are not consistent. If we zoom in on the packaging of Andrélon we assume that the gap between packaging 3 and 4 is quite big. The use of a completely different pumping system changes the design a lot. This might have influenced the results. Different product categories and corresponding designs have to be verified to further deepen the understanding of such an extreme design change.

Conclusion: Case Study 1

From Fig. 4 it can be seen that the brand-typical packaging design with optimum use of brand characteristics are rated as most typical and least novel, which confirms hypothesis 1. However, consumers refer to product typicality in a different way. They score designs 1, 2 and 3 as less recognizable as a juice bottle. From the same graph we can conclude that novel packaging designs with minimal use of recognisable brand characteristics are rated as most novel and least typical can be confirmed.

Hypothesis 3: "The designs numbers 4, 5 and 6 are balanced between typicality and novelty and attain highest consumer acceptance" can be partly confirmed because the results for Andrélon show less strong results according to Fig. 5.

Case Study 2

While this new way of looking at the Maya principle gives the designer new insights about searching for the optimal balance between brand fit, product typicality and novelty, it does not take into account the degree to which a brand may be seen as innovative or say something about the kind of extension that will be designed. For instance the innovativeness of the brand, or the specific type of product that is going to be designed could possibly influence the optimal balance a lot.

If we take a chair (or headphones, a watch, a smartphone), as an example for a brand extension the optimal balance is expected to vary highly from brand extensions of lamps (or perfume bottles, speakers).

Archetypicality describes products with a single prevalent example of their category (i.e. when we think about the product 'chair' most people have a similar mental image of a chair in mind—four legs, straight etc.). Other products, with more than a single prevalent example of their category (i.e. when we think about the product 'perfume' people have a several mental images of a perfume in mind—cylindrical, cubical, colored etc.) consist of multiple coexisting archetypes. They are therefore classified as 'multitype' products.

In the second case study we will investigate the effect of novelty—for brand extensions—in archetype versus multitype products.

The intuitive response to innovation is expected to differ for either archetypical or multitype products. We argue that for watches a radical innovation seems riskier than for desk lights. To see if this holds true or if the degree of innovation is not related to the product typicality of a product, the tested hypotheses are stated as follows:

H4 The archetypical product is more appreciated for lower innovation degree.

H5 The multitype product is more appreciated for higher innovation degree.

Methodology

For this research headphones were chosen as the archetypical product and Bluetooth (BT) speakers as the multitype. Both products relate to each other as personal audio devices and serve the same main function: "to provide audio stimuli to its users". In a pre-test, similar to Hung and Chen's (Hung

Fig. 6 Six Bluetooth Speaker designs and six headphone designs as brand-extension for Mercedes-Benz (by Viktor Klassen)

and Chen 2012) approach, 10 industrial design students were asked to draw a pair of headphones and a BT speaker in a quick sketch. Despite the small number of sketches, the archetype for headphones is dominant and unambiguous. For BT speakers there seems to be more variety in the participants associations. Of all headphones, there is only one in-ear variant, there are six headphones without audio cable, and nine out of ten sketches show round or oval shaped shells. The archetype is therefore wireless and has round shells with a thick bridge. The assessment of the BT speakers shows four models that are at least partly spherical, four rectangular models and two versions with cylindrical shape. Thus there are at least three archetypes of which two seem to be more prevalent in this limited sample. This first assessment confirms the choice of products, as the definition of archetypical and multitype is applicable.

To further validate this first assessment, a market research was executed. A large number of novel products of the two product categories were collected and compared to the most popular products according to Amazons best seller listing (Amazon 2021a, b). A similar result as in the pre-test could be observed. Most Headphones of the list correspond with the headphone archetype, like the model QuitComfort from Bose or the wireless Beats Headphones. The list shows much more form variety for the speaker category. All the three archetypes could be identified in the list without a single dominant form.

The main study is based on the chosen archetypes per product category. An overall of six designs per category were investigated on various aspects. We created the first general archetype of each category in accordance with Mercedes-Benz styling. Mercedes-Benz has a strong brand image and values that are implemented into their design (high class, elegant cars with status). The general process is based on the chosen archetypes per product category. An overall of six designs per category will be investigated on various aspects. The designer created the first general archetype of each category in accordance to Mercedes-Benz styling. From here on five incremental innovations facilitate the required level of novelty and variety. The final design evolution of the 12 product proposals is shown in Fig. 6. The main objective during the design phase, was to create an attractive and brand fitting design for each iteration, while making sure the difference between each step still facilitates a reasonable evolution of the designs. We expected to find the optimal balance for headphones around designs 2&3 and for speakers around designs 4&5.

Procedure

An online survey was executed and distributed via Facebook to evaluate the developed proposals and to gather as many respondents as possible. In this survey we used the visual analogue scale for rating, ranking and paired comparison (Sung and Wu 2018) while this results in more reliable data compared to using Likert scales or semantic differential scales (Osgood et al. 1957). The respondents ranked six proposals (in random order) of two product categories (headphones, speakers). They first ranked the speakers and secondly the headphones. The first task for each participant was to rank the products category-intern from 1 (the best ranking) to 6 (the lowest raking), by dragging them to their preferred order until they match their personal preference based on the question "Rank the speakers according to your personal preferences based on the visual appearance. All the speakers have the same technical functionalities". The first two questions familiarized participants with the products and allowed for a category-intern comparison. Directly after the general ranking, participants rated all the 12 products in a mixed order. Respondents are asked to position the proposal based on specific attribute by answering an associated question. For instance product typicality was associated with the question "I think this product looks like a typical Bluetooth speaker". They had to answer the question on a scale from

0 (strongly disagree) to 100 (strongly agree) using a slider. The attributes that were to be ranked, in the original order: product typicality ("I think this product looks like a typical Bluetooth speaker"), innovativeness ("I think this product looks innovative"), purchase preference ("I would like to buy this product"), brand match (I think this product matches Mercedes Benz as a brand"), unusuality ("I think this product looks like an unusual Bluetooth speaker"), novelty ("I think this product looks novel"), and style appreciation ("I appreciate the styling of this product").

Unusuality served as a control question for product typicality just like the combination innovativeness–novelty and purchase preference-style appreciation. The instruction clearly stated that every rating had to be based on the visual attributes of the products, to avoid other factors to influence the outcomes (price, usability, et cetera). The questionnaire ended with general questions about the participants background and level of expertise in respect to Mercedes-Benz, BT speakers, and Headphones.

Findings

In total 60 respondents started with the survey. Every question of the survey was answered by at least 43 participants, while most of the questions had 50 or more responses. The average age of participating consumers was 25, with nearly all of them having an academic background in a technical field. 57% were male and 43% female.

The general ranking of dragging and dropping all designs, is actually the first introduction to the stimuli, so this gives insight into the preferences of the participants. It appears that product liking will be readily formed through a process that integrates design information only (Page and Herr 2002b), which makes this into a really important measure of the successfulness of the designed objective. A linear point system was used to evaluate the degree of preference. As a design was ranked, the rank would be added as numerical value to the total amount of ranking points. This way, the best ranking is detected by the design with the least amount of total points. For the speakers the ranking clearly shows,

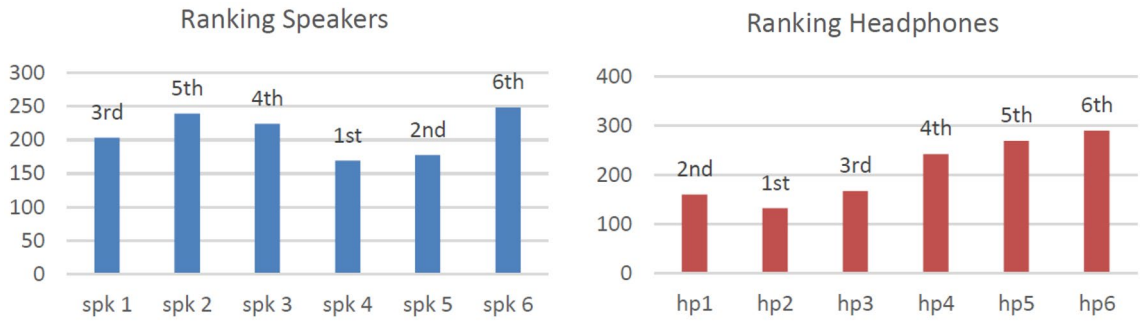

Fig. 7 Category intern ranking of the Bluetooth speakers (blue) and Headphones (red). Names as stated in this figure. (Color figure online)

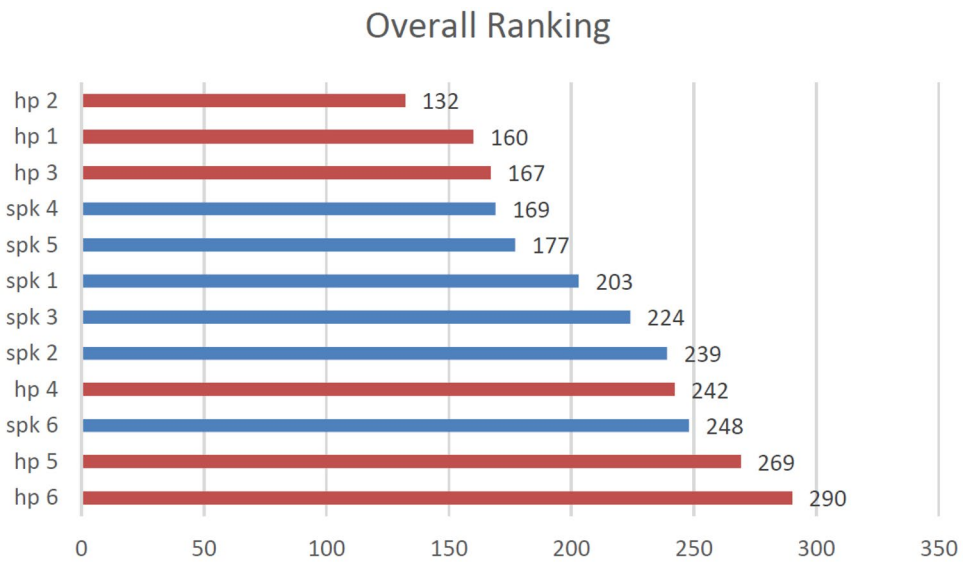

Fig. 8 Overall comparison between all products (speakers and headphones), where the lowest score means the highest preference

that more advanced iterations 4 and 5 are preferred above the rest (Fig. 7, left). Only after these iterations, the original archetype (spk1) is valued higher than speaker 2 and 3. The most advanced concept (spk6) is least liked.

For the archetypical product category of headphones, the ranking is distributed differently (Fig. 7, right). Here the 2nd iteration (hp2) is liked far more than the following hp1 and hp3. The designs with lower innovation degree clearly show higher preference than the more advanced designs. Iterations 4 to 6 are accordingly ranked with a substantial difference from the first three.

Looking at the combined rankings (Fig. 8) remarkable relations become clear. Overall, the first three headphones are appreciated more than the first five speakers. This indicates a very strong preference for the low innovation side (iterations 1–3) for the headphones and a wide gap between the third and fourth iteration. Further, there is almost no mix between the two product categories. It appears as if the speakers show a more moderate ranking, while the headphones tends to show more extreme results. The last iteration of both categories is least liked and the final headphones have by far the lowest ranking. The large gap between the rankings of heaphones 1,2 and 3 compared to 4,5 and 6 confirms the high level of risk in designing for archetypical product categories.

Rankings

Each iteration is rated as being less typical than the previous one (sp1 = highest, sp6 = lowest in Table 1). Equivalent results are found for innovativeness. Scores for the headphones are comparable with one exception, while design 4 seems to be perceived as being comparable innovative compared to design 5. This shows that an evolution towards high innovation and low product typicality could be achieved as intended. It is a confirmation of the designs and their usability in such an academic setting. We were able to create designs with increasing innovation and decreasing product typicality ratings.

Both purchase preference and style appreciation lead to the same ranking for each of the iterations, even though the range in which they apply is different. The style is generally more appreciated, than a purchase would be preferred by the participants. The comparison between the ranking in context of all speakers (Fig. 10) and the appreciation of the individual speakers differs rather strongly.

In Fig. 9 we see the visual ranking of both speakers and headphones for novelty and innovativeness. The results are comparable, indicating that the participants interpreted the words ‘innovativeness’ and ‘novelty’ correctly. It is remarkable to see there is a gap that appears between products of the same category as seen in Fig. 9.

Unless the fact we found an increasing level of product typicality in the designs as stated earlier, the gap might indicate that design differences are too big to create a solid “connection”. For the speakers, it might be a better solution, to keep iterations 4–6 also squarish, to stay closer to the original archetype. For the headphones, the loss of the bridge was the most dramatic change for participants, why they might not easily connect those designs to a uniform group. The results show a strong correlation between the control questions which means that consumers judged the

Table 1 Individual scores on speakers (top) and headphones (below)

	Typicality	Innovativenes	Purchase	Brand fit	Unusuality	Novelty	Style appreciation
spk1	69.98	40.57	51.4	58.86	31.5	45.02	55.23
spk2	64.96	42.78	49.14	49.71	36.28	46.5	51.44
spk3	47.94	53.28	47.28	44.69	50.36	51.93	50.32
spk4	40.13	71.69	66.8	64.31	61.98	69.36	71.81
spk5	30.06	75.63	66.14	59.53	67.82	71.28	76.35
spk6	21.69	80.96	55.98	59.98	77.25	78.28	66.25
	Typicality	Innovativenes	Purchase	Brand fit	Unusuality	Novelty	Style appreciation
hp1	85.72	38.33	61.15	61.98	23.48	45.2	63.18
hp2	80.56	43	62.65	63.38	25.81	47.09	66.15
hp3	72.37	45.51	60	66	33.14	49.32	66.94
hp4	43.24	59.35	40.49	49.2	57.27	58.96	46.6
hp5	54.56	58.79	48.12	61.9	51.18	56.2	58.88
hp6	23.83	77.69	34.37	53.83	76.89	69.88	51

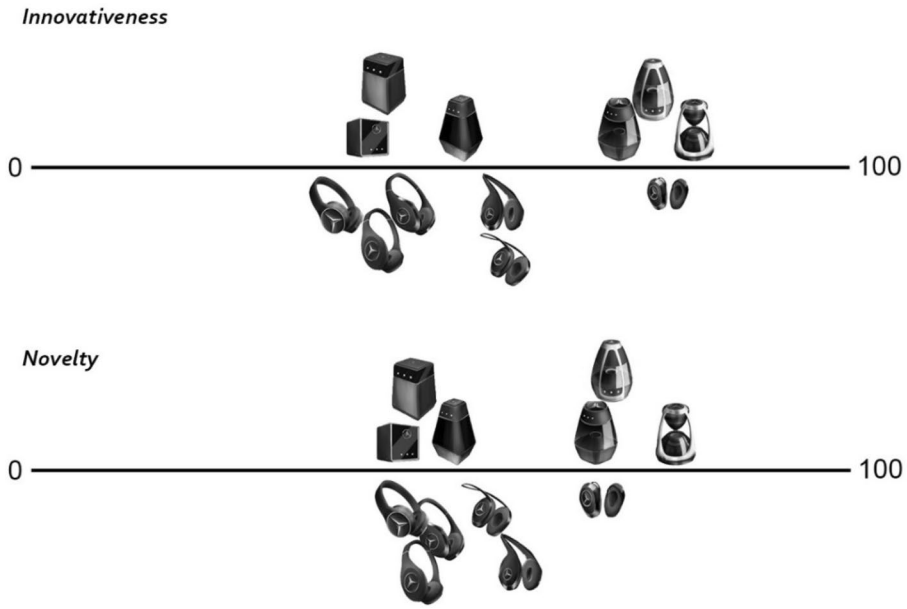

Fig. 9 Direct comparison of innovativeness & novelty of both categories and their relative positions on a scale from 0 to 100%

Table 2 Correlations between measured variables

Correlations							
Speakers	Typicality	Innovativeness	Purchase preference	Brandfit	Unusuality	Novelty	Style appreciation
Typicality	1						
Innovativeness	−0.97676	1					
Purchase preference	−0.5925	0.735822	1				
Brandfit	−0.38398	0.561779	0.806256	1			
Unusuality	−0.99666	0.988057	0.627021	0.443621	1		
Novelty	−0.96181	0.994662	0.733531	0.612858	0.978305	1	
Style appreciation	−0.73366	0.844994	0.966972	0.802327	0.757578	0.846545	1
Correlations							
Headphones	Typicality	Innovativeness	Purchase preference	Brandfit	Unusuality	Novelty	Style appreciation
Typicality	1						
Innovativeness	−0.98506	1					
Purchase preference	0.983375	−0.95447	1				
Brandfit	0.764905	−0.67431	0.843016	1			
Unusuality	−0.99756	0.991108	−0.98234	−0.74053	1		
Novelty	−0.99176	0.995722	−0.96738	−0.72069	0.994407	1	
Style appreciation	0.851829	−0.77298	0.922799	0.975038	−0.8371	−0.80651	1

Very strong = 0.8–1.0, strong = 0.6–0.79, moderate = 0.4–0.59, weak = 0.2–0.39, very weak = 0.0–0.19 based on Pearson

products correctly (Table 2). A very strong negative correlation exists between typicality and innovativeness for speakers (− 0.97) and for headphones (− 0.99). This confirms findings of previous studies, and shows how product typicality may be used as a counter predictor of innovativeness and vice versa.

A positive correlation between product typicality and brand fit of 0.76 exists for the category headphones. Furthermore, product typicality is related to the purchase preference and style appreciation. For the category speakers there is *no* correlation between brand fit and product

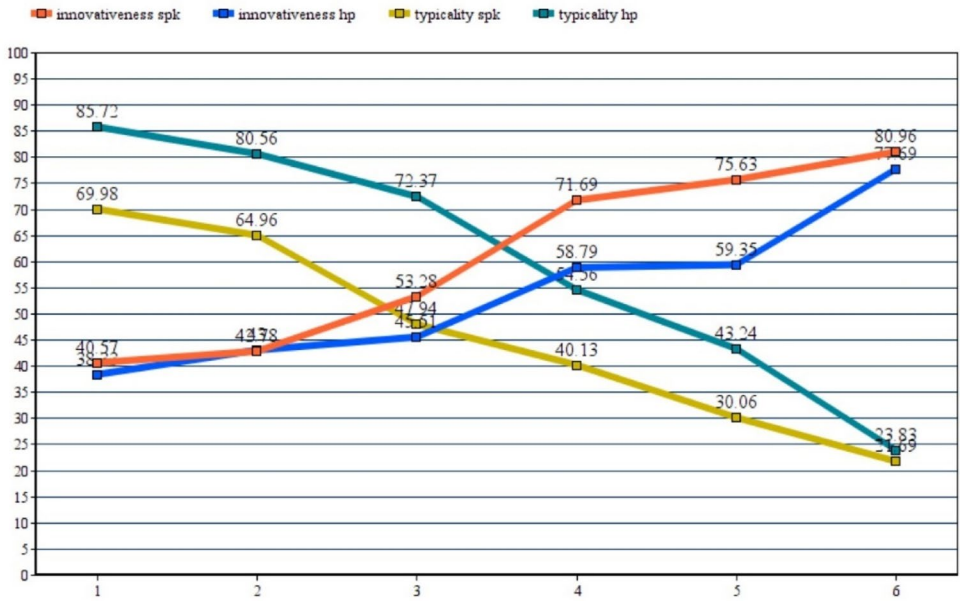

Fig. 10 Direct comparison between innovativeness and product typicality for both categories

typicality. There is very strong correlation between innovativeness and style appreciations (0.84).

The correlations indicate a higher importance of visual styling for *headphones* and a stronger connection between product typicality and brand fit. For speakers, higher degrees of innovation relate to more appreciation and higher purchase preferences, while a similar effect is created by increased product typicality for headphones.

Interpretation of Findings

The direct comparison between innovativeness and product typicality of both headphones and speakers is shown in Fig. 10. On the X-axis the numbers of the six designs are represented, on the Y-axis the individual ratings (betwen 0-100) are displayed based on the innovativeness (red and blue line) and product typicality (yellow and green line). It is visible that the innovativeness ratings begin and end at the same level. The difference grows towards higher degrees of innovation and considers iterations 3–5. The product typicality graph varies much stronger between both product categories. It is almost linear for speakers with an exception between spk2 und spk3. A similar slope increase appears between hp3 and hp5 and again between hp4 and hp6. This ultimately leads to a wider product typicality range for the headphones, which is overcome only at the last iteration between hp6 and spk6.

It is remarkable to see that the claim Loewy (1951) coined describing the Maya principle as finding the balance between the two opposites typically and novelty does not hold. According to the MAYA principle, combined with the work of Hekkert et al. arguing that product typicality and novelty are joint predictors for aesthetic preference (2003), the optimal balance of the category speakers

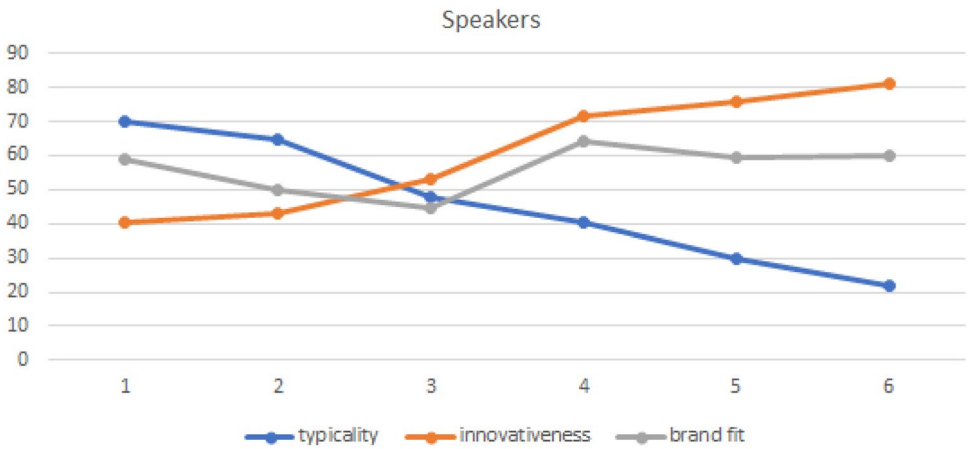

Fig. 11 Overview of three determinants product typicality, innovativeness and brand fit for the category of the speakers. (Color figure online)

seems to be at 3. The rankings clearly show a preference for 4&5. The same is true for the optimal balance of the category headphones. The optimal balance shows the fourth design as the best solution, while the consumers choose either 2 or 1 as the most preferred option. Based on the overall ranking, most advanced yet acceptable means something different for either speakers (high advancement) or headphones (low advancement). This observation relates to the expected outcome, that multitype products, like speakers are more likely to be accepted for higher innovation degrees, than archetypical products, like headphones.

This raises the following question: Could brand fit be added to this mechanism and explain why consumers react differently based on the current research of finding the preferred brand extension? We did not see a convincing correlation, but an interesting effect is present. If we take the brand fit into account we see that the overall rankings of the consumers do match the overall appreciation of consumers.

In Fig. 11 we plotted the three determinants (product typicality blue, innovativeness orange and brand fit in grey) for the category speakers in one figure, and we clearly see the bump for speaker 4. This underpins case study 1 where the combination of product typicality, novelty and brand fit was used to come to the best result.

The fact that almost none of the categories were mixed (see Fig. 8) might be due to a higher sensitivity to archetypical products amongst participants. It was the archetypical category of headphones that was ranked either extremely positive or extremely negative. As the stronger archetype is present in this category, minor changes may already trigger disliking or at least seek the attention of participants stronger than it is the case with the multitype category of speakers. Furthermore, it becomes easier to deviate from an archetype that is clearly defined.

Investigation of the relative positions for each rating showed, that almost none of the designs are directly and easily comparable with each other, as the degree of innovation and product typicality varies throughout the evolution. More specific, the degree of innovation between categories is around the same for the first three and the last iterations. The rated distance between spk2 and hp2 is smaller than 1 point. The ranking of those products with a similar degree of innovation is completely different. Hp2 is most preferred in its category, while spk3 is ranked 5th. This is compelling evidence for a product dependent preference for innovation. It means for the present example, the most attractive degree of innovation is not fixed, but depends on the product.

Discussion

The small sample size for this research requires validation with a bigger sample to make final conclusions. Further, results indicate strong category internal relations and effects. However, it may be helpful to have a wider product span of 20 or even 100 designs. Results may provide stronger evidence for a purchase preference than 6 designs. Having observed only a single archetype and a single multitype product hardly provides valid results for the entire classification of archetype and multitype products. Additional tests with new product categories that widen the perspective are therefore crucial. For this reason, it may become important to have products clearly classified. A comprehensive list of products and their archetypes would be beneficial. Furthermore, the two categories may not be fixed, but can also be seen as a spectrum from "very archetypical", via "somewhat archetypical", to "multitype". Last but not least, the classification of a product category can also change over time, for instance when a dominant archetype is prevailing over others (Eger and Drukker 2010).

One of the resulting assumptions is the higher sensitivity for changes of archetype products. To test if this assumption holds true, a follow-up test to measure the acceptability of changes in archetypical products could give relevant information. Another option would be to assess whether archetype products in other studies also have shown tendencies to more extreme rankings. The direct relation between Archetypicality and the measured variables may be a special case for the specific product types used. The current results show that headphones benefit from higher product typicality, while speakers have increased ratings for higher degrees of innovation. It is interesting to see if this is also the case for other product categories with a similar archetype or multitype characteristic. Furthermore, it is still necessary to identify if there is an actual maximum for multitypes and their product typicality rating and if archetypical products have generally a higher level of product typicality.

Conclusion: Case Study 2

Finding an answer to the question: "What is the effect of novelty used—for brand extensions—in archetype versus multitype products?" resulted in two main findings.

1. Based on this second case study we can conclude that the joint effect of product typicality and novelty as claimed by Hekkert et al. (2003) cannot not automatically be used to predict the aesthetic preference of consumers for all product categories. The well-known MAYA principle means something different for either speakers (high advancement) or headphones (low advancement). Based on the correlations scores (Table 2) and the graph (Fig. 11) we can confirm that multitype products, like speakers, are more likely to be accepted for higher innovation degrees, confirming hypotheses 5. Furthermore, archetype products like headphones are more sensitive to

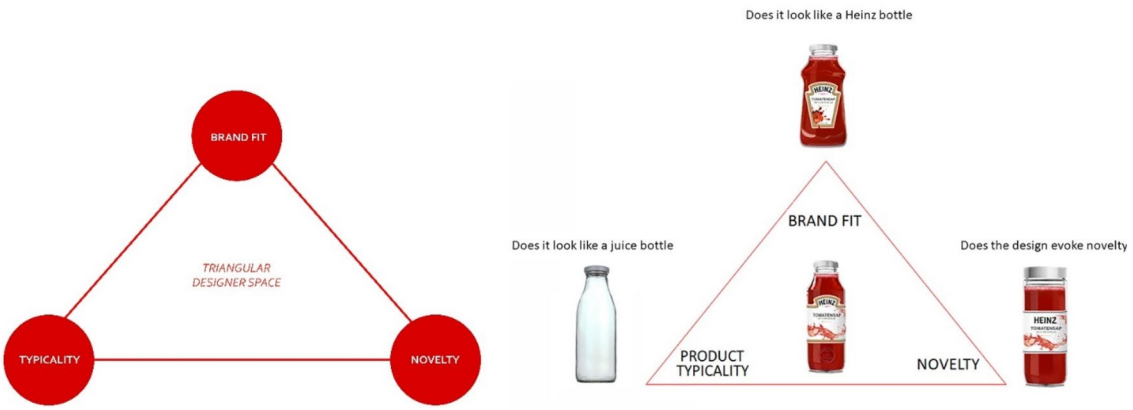

Fig. 12 (Left) Neutral version of the Triangular designer Space. (Right) visualising the interplay between brand fit, typicality, and novelty for the development of a Heinz tomato juice bottle

changes in the prototypicality of the design, confirming hypotheses 4.

2. Secondly, a positive correlation between product typicality and brand match of 0.76 exists for the headphones. Furthermore, product typicality is related to the purchase preference (0.98) and style appreciation (0.85). For the speakers we do not see a correlation with brand fit. However, we do see a strong correlation between novelty and purchase preference (0.99) and style appreciation (0.84). These results indicate a higher importance of a novel visual styling for speakers and a stronger connection between product typicality and brand fit for headphones.

General Discussion

The case studies show interesting results and provide designers with more in-depth knowledge on how the level of novelty in the creation of new brand extensions could make a difference. Some critical notes need to be made when interpreting these results. First of all we have to reemphasize that the cases are fictive and the designs are conceptual sketches made by students. This might influence the results, so we recommend to repeat the study with real mock-ups to have a better understanding of consumers behaviour toward the designs. Secondly, more research in the direction of creating novel designs is required. The presented results for the speakers comes with a higher level of uncertainty with regard to the dimension novelty, when we compare it to the results of the headphones. The designs of the more novel speakers presented in the second study could easily be completely in a different direction. The questions is raised why design 6 is the most novel one. As already mentioned in earlier work (Mulder-Nijkamp 2020), the level of novelty can vary a lot. It can be based on a more radical styling, but it can also be based on using a new material or an new way of using the design. We recommend to look into the dimension of novelty more thoroughly and try to discover different directions of novelty based on the current models. In a follow up study more pre-tests can be done to define how novelty is perceived in these designs.

Summarizing, the definition of the MAYA principle is not unambiguous. It becomes unclear whether a product fulfils the principle or not, while the level of advancement of the chosen product category is not taken into account. Looking at the headphones it still remains unanswered while hp2 is the most advanced yet acceptable version as it has the highest ranking? Or is it more wise to choose for hp3, because it is more advanced than the previous ranks and still has a high overall ranking?

That is why the MAYA principle by finding the balance between two opposites is not the ultimate tool to decide for the best choice for a new market introduction.

General Conclusions

The results of both case studies clearly show the complexity of designing new product innovations which cannot be ‘understood’ by a simple linear equation as proposed by multiple studies (Hekkert et al. 2003; Loewy 1951). Instead of that, we created a triangular space where brand typicality interacts with novelty and where designers can visualize their own design proposal by mixing the elements of novelty, product typicality and brand fit depending on their specific situation. The three elements (brand fit, product typicality and novelty) form a triangular interplay that show the possible solutions in a ‘designer space’ (Fig. 12). Presenting and using the abstract theory of Maya in a more visual way, could support designers and design managers in defining the future directions of their products.

The second study shows us, that (at least for the given example) archetype and multitype products also have this pronounced balance point. However, with the difference that this balance point shifts towards product typicality or novelty based on the product classification. This designer space is much smaller for archetype products (like headphones and watches) than for multitype products (like lamps and speakers). For the latter, much more 'space to design' is available to create innovative alternatives. The results of the case studies also showed that consumers are more sensitive towards changes in products with a stronger archetype.

Mastering the Triangular designer space by using this as a strategical tool to position and evaluate solution alternatives, will support designers and design managers in increasing the success rate of brand extensions.

Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

Aaker, D.A. 1990. Brand extensions: The good, the bad, the ugly. *Sloan Management Review* 31 (4): 47–56.

Aaker, D.A., and K.L. Keller. 1990. Consumer evaluations of brand extensions. *Journal of Marketing* 54 (January): 27–41.

Albrecht, C.M., C. Backhaus, H. Gurzki, and D.M. Woisetschläger. 2013. Drivers of brand extension success: What really matters for luxury brands. *Psychology and Marketing* 30 (8): 647–659. https://doi.org/10.1002/mar.20635.

Amazon, No Author. 2021b. Best sellers in portable bluetooth speakers. https://www.amazon.com/Best-Sellers-Cell-Phones-Accessories-Portable-Bluetooth-Speakers/zgbs/wireless/7073956011.

Amazon, No Author. 2021a. Best sellers in over-the-ear headphones. https://www.amazon.com/Best-Sellers-Electronics-Over-Ear-Headphones/zgbs/electronics/2266982011. Accessed 2018.

Archer, L.B., K. Baynes, and R. Langdon. 1976. *Design in general education: Part one summary of findings*. London: Department of Design Research London.

Batra, Rajeev, Peter Lenk, and Michel Wedel. 2010. Brand extension strategy planning: Empirical estimation of brand—category personality fit and atypicality. *Journal of Marketing Research* 47 (2): 335–347. https://doi.org/10.1509/jmkr.47.2.335.

Berlyne, D.E. 1974. *Studies in the new experimental aesthetics*. New York: Wiley.

Bianchi, M. 1998. Taste for novelty and novel tastes: The role of human agency in consumption. In *The active consumer: Novelty and suprise in consumer choice*, ed. M. Bianchi. London: Routledge.

Blijlevens, J., R. Mugge, and J.P.L. Schoormans. 2012. Aesthetic appraisal of product designs: Independent effects of typicality and arousal. *British Journal of Psychology* 103 (1): 44–57.

Bloch, P.H. 1995. Seeking the ideal form: Product design and consumer response. *Journal of Marketing* 59 (3): 16–29.

Bottomley, P.A., and S.J.S. Holden. 2001. Do we really know how consumers evaluate brand extensions? Empirical generalizations based on secondary analysis of eight studies. *Journal of Marketing Research* 38 (4): 494–500.

Bousch, D., and B. Loken. 1991. A process tracing study of brand extension evaluations. *Journal of Marketing Research* 28 (February): 16–28.

Brexendorf, T.O., B. Bayus, and K.L. Keller. 2015. Understanding the interplay between brand and innovation management: Findings and future research directions. *Journal of the Academy of Marketing Science* 43: 548–557.

Brexendorf, Tim Oliver, and Kevin Lane Keller. 2017. Leveraging the corporate brand. *European Journal of Marketing* 51 (9/10): 1530–1551. https://doi.org/10.1108/EJM-07-2017-0445.

Broniarczyk, S.M., and J.W. Alba. 1994. The importance of the brand in brand extension. *Journal of Marketing Research* 31 (May): 214–228.

Claudy, Marius C., Rosanna Garcia, and Aidan O'Driscoll. 2014. Consumer resistance to innovation—a behavioral reasoning perspective. *Journal of the Academy of Marketing Science* 43 (4): 528–544.

Crilly, N. 2005b. Product aesthetics: Representing designer intent and consumer response. Doctoral Dissertation, University of Cambridge.

Crilly, N. 2005a. *Product aesthetics: Representing designer intent and consumer response*. Cambridge: University of Cambridge.

Crilly, N., J. Moultrie, and P.J. Clarkson. 2004. Seeing things: Consumer response to the visual domain in product design. *Design Studies* 25 (6): 547–577.

Cross, Nigel. 1982. Designerly ways of knowing. *Design Studies* 3 (4): 221–227.

Degraba, P., and M.W. Sullivan. 1995. Spillover effects, cost savings, R&D and the use of brand extensions. *International Journal of Industrial Organization* 13 (2): 229–248.

Desmet, P.M.A. 2002. Designing emotions. Doctoral Dissertation, Industrial Design, Delft University of Technology.

Dewar, Robert D., and Jane E. Dutton. 1986. The adoption of radical and incremental innovations: An empirical analysis. *Management Science* 32 (11): 1442–2143.

Dorst, Kees. 2008. Design research: A revolution-waiting-to-happen. *Design Studies* 29 (1): 4–11.

Eger, Arthur O., and J.W. Drukker. 2010. Phases of product development: A qualitative complement to the product life cycle. *Design Issues* 26 (2): 47–58.

Gerrath, Maximilian HEE., and Alessandro Biraglia. 2021. How less congruent new products drive brand engagement: The role of curiosity. *Journal of Business Research* 127: 13–24. https://doi.org/10.1016/j.jbusres.2021.01.014.

Ghim, Y.G., and C. Shin. 2021. Ageless design: Interdependency between complexity and simplicity in visual perception of product aesthetics for product longevity. In *Advances in industrial design—proceedings of the AHFE 2021 virtual conferences on design for inclusion, affective and pleasurable design, interdisciplinary practice in industrial design, Kansei engineering, and Human factors for apparel and textile engineering*, ed. C.

S. Shin, G. Di Bucchianico, S. Fukuda, Y-G. Ghim, G. Montagna, & C. Carvalho. Lecture notes in networks and systems. Cham: Springer.

Goedertier, F., N. Dawar, M. Geuens, and B. Weijters. 2015. Brand typicality and distant novel extension acceptance: How risk-reduction counters low category fit. *Journal of Business Research* 68 (1): 157–165. https://doi.org/10.1016/j.jbusres.2014.04.005.

Hekkert, P., and H. Leder. 2008a. Product aesthetics. In *Product experience*, ed. H.N.J. Schifferstein and P. Hekkert, 259–285. San Diego: Elsevier.

Hekkert, Paul, and Helmut Leder. 2008b. Product aesthetics. In *Product experience*, ed. Hendrik NJ. Schifferstein and Paul Hekkert, 259–285. San Diego: Elsevier.

Hekkert, P., H.M.J.J. Snelders, and P.C.W. van Wieringen. 2003. 'Most advanced, yet acceptable': Typicality and novelty as joint predictors of aesthetic preference in industrial design. *British Journal of Psychology* 94 (1): 111–124.

Hernández, Ricardo J., Rachel Cooper, Bruce Tether, and Emma Murphy. 2018. Design, the language of innovation: A review of the design studies literature. *She Ji: THe Journal of Design, Economics, and Innovation* 4 (3): 249–274. https://doi.org/10.1016/j.sheji.2018.06.001.

Homburg, C., M. Schwemmle, and C. Kuehnl. 2015. New product design: Concept, measurement, and consequences. *Journal of Marketing* 79: 41–56.

Hultink, Erik. 2010. From the special issue guest editor: Special issue on branding and new product development. *Journal of Product Innovation Management* 27 (1): 3–5.

Hung, Wei-Ken., and Lin-Lin. Chen. 2012. Effects of novelty and its dimensions on aesthetic preference in product design. *International Journal of Design* 6 (2): 9.

Hsiao, K.A., and L.L. Chen. 2006. Fundamental dimensions of affective responses to product shapes. *International Journal of Industrial Ergonomics* 36 (6): 553–564.

Jonze, T. 2019. Heinz tomato ketchup caviar: Red sauce gets an upmarket makeover. https://www.theguardian.com/food/2019/feb/06/heinz-tomato-ketchup-caviar-red-sauce-gets-an-upmarket-makeover.

Kapferer, J.N. 2008. *The new strategic brand management. Creating and sustaining brand equity long term*. London: Kogan Page Limited.

Karjalainen, T.M. 2004. *Semantic transformation in design: Communicating strategic brand identity through product design references*. Helsinki: University of Art and Design.

Karjalainen, T.M., and D. Snelders. 2010. Designing visual recognition for the brand. *Journal of Product Innovation Management* 27 (1): 6–22.

Keller, A.I. 1998. *Strategic brand management*. Upper Saddle River: Prentice Hall.

Keller, K.L., and D.R. Lehmann. 2006. Brands and branding: Research findings and future priorities. *Marketing Science* 25 (6): 740–759.

Keller, Kevin Lane, and Donald R. Lehmann. 2009. Assessing long-term brand potential. *Journal of Brand Management* 17 (1): 6–17. https://doi.org/10.1057/bm.2009.11.

Kreuzbauer, R., and A.J. Malter. 2005. Embodied cognition and new product design. Changing product form to influence brand categorization. *Journal of Product Innovation Management* 22 (2): 165–176.

Kreuzbauer, R., and A.J. Malter. 2007. Product design perception and brand categorization. *Advances in Consumer Research* 34: 240–246.

Krippendorf, K. 2005. *The semantic turn: A new foundation for design*. Boca Raton: CRC Press.

Kumar, M., and N. Garg. 2010. Aesthetic principles and cognitive emotion appraisals: How much of the beauty lies in the eye of the beholder? *Journal of Consumer Psychology* 20 (4): 485–494. https://doi.org/10.1016/j.jcps.2010.06.015.

Leder, H., C. Carbon, and R. Kreuzbauer. 2007. Product-design perception and brand strength. *Marketing Review St Gallen* 24 (2): 4–7.

Lidwell, W., K. Holden, and J. Butler. 2003. *Universal principles of design*. Gloucester: Rockport Publishers.

Loewy, Raymond. 1951. *Never leave well enough alone*. Baltimore: The Johns Hopkins University Press.

Loken, B., and J. Ward. 1990. Alternative approaches to understanding the determinants of typicality. *Journal of Consumer Research* 17 (2): 111–126. https://doi.org/10.1086/208542.

Luecke, R., and R. Katz. 2003. *Managing creativity and innovation: Harvard business essentials*. Boston: Harvard Business School Press.

Marketing. 2003. Premium extensions are proving to be the most promising FMCG launches, as manufacturers look to counteract retailers' price cuts. 25.

Martínez Salinas, Eva, and José Miguel Pina. Pérez. 2009. Modeling the brand extensions' influence on brand image. *Journal of Business Research* 62 (1): 50–60. https://doi.org/10.1016/j.jbusres.2008.01.006.

Meyers-Levy, J., and A.M. Tybout. 1989. Schema congruity as a basis for product evaluation. *Journal of Consumer Research* 16 (1): 39–54.

Mulder-Nijkamp, M., and W. Eggink. 2014. Unraveling the secret of successful brand extensions: A casestudy to explore consumer response. In *Proceeding of 19th DMI: Academic design management conference*. London: International Design Management Research.

Mulder-Nijkamp, M., and W. Eggink. 2016. Innovating from inside the brand: (Re)searching the optimum strategy for brand and new product innovations. In *11th Global Brand conference*, Bradford, 27–29 April 2016.

Mulder-Nijkamp, M., W. Eggink, M. de Kok, and R. ten Klooster. 2021. The triangular designers' space: Methodical approach to balance brand typicality and novelty. In *The value of design in retail and branding*, ed. Katelijn Quartier, Ann Petermans, T. C. Melewar and Charles Dennis, 95–108. Bingley: Emerald Publishing Limited.

Mulder-Nijkamp, M. 2020. Bridging the gap between design and behavioral research: (Re)searching the optimum design strategy for brands and new product innovations. *Creativity and Innovation Management*. https://doi.org/10.1111/caim.12393.

Page, C., and P.M. Herr. 2002a. An investigation of the processes by which product design and brand strength interact to determine initial affect and quality judgments. *Journal of Consumer Psychology* 12 (2): 133–147.

Page, C., and P.M. Herr. 2002b. An investigation of the processes by which product design and brand strength interact to determine initial affect and quality judgments. *Journal of Consumer Psychology* 12 (2): 133–147.

Park, C.W., S. Milberg, and R. Lawson. 1991. Evaluation of brand extensions: The role of product feature similarity and brand concept consistency. *Journal of Consumer Research* 18 (2): 185–193.

Pontes, Nicolas, and Vivian Pontes. 2021. Spillover effects of competitive rivalry on brand extensions. *Journal of Brand Management* 28 (4): 402–412. https://doi.org/10.1057/s41262-021-00234-w.

Radford, S.K., and P.H. Bloch. 2011. Linking innovation to design: Consumer responses to visual product newness. *Journal of Product Innovation Management* 28 (S1): 208–220.

Riezebos, R., and J. Verhorst. 2015. EURIB Top-100 Onmisbare Merken 2015. http://www.eurib.org/onmisbaremerken2015.html. Accessed 14 Nov 2015.

Simon, C.J., and M.W. Sullivan. 1993. The measurement and determinants of brand equity: A financial approach. *Marketing Science* 12 (1): 28–52.

Simonson, I., and S.M. Nowlis. 2000. The role of explanations and need for uniqueness in consumer decision making: Unconventional choices based on reasons. *Journal of Consumer Research* 27 (1): 49–68.

van Rompay, T.J.L., and A.T.H. Pruyn. 2011. When visual product features speak the same language: Effects of shape-typeface congruence on brand perception and Price Expectations. *Journal of Product Innovation Management* 28 (4): 599–610.

Van Rompaey, S. 2021. This is how Zeeman revamps its store concept. *Fashion*, November 10.

Verganti, R. 2009. *Design driven innovation*. Boston, MA, United States: Harvard Business Press.

Veryzer, R.W. 1998. Discontinuous Innovation and the new product development process. *Journal of Product and Innovation Management* 15: 304–321.

Veryzer, R.W. 2005. The roles of marketing and industrial design in discontinuous new product development. *Journal of Product Innovation Management* 22: 22–41.

Veryzer, R.W., and J.W. Hutchinson. 1998. The influence of unity and prototypicality on aesthetic responses to new product designs. *Journal of Consumer Research* 24 (4): 374–385.

Völckner, F., and H. Sattler. 2006. Drivers of brand extension success. *Journal of Marketing* 70 (2): 18–34.

Völckner, F., and H. Sattler. 2007. Empirical generalizability of consumer evaluations of brand extensions. *International Journal of Research in Marketing* 24 (2): 149–162.

Whitfield, T.W.A. 1983. Predicting preference for familiar, everyday objects: An experimental confrontation between two theories of aesthetic behavior. *Journal of Environmental Psychology* 3 (3): 221–237.

Yacoub, I. 2015. The evaluation of brand extension: A proposition of a conceptual framework based on trust. *International Journal of Management and Science* 5 (10): 663–687.

Maaike Mulder-Nijkamp has been working for the University of Twente as a lecturer and researcher for 15 years now. She finished her master degree cum laude in 2012 and is involved in several courses in Industrial Design Engineering focusing on branding, design & product aesthetics. In 2016 she published a book 'Muses in design' about inspirations techniques in the process of designing new products. She is also involved in a research project about transdisciplinary collaboration in the field of sustainable packaging for which she received a Comenius Senior Fellowship award in 2020.

Mendel de Kok successfully finished her bachelor study Industrial Design Engineering at the University of Twente in 2016 and graduated for her master degree at Industrial Design Engineering in Delft in 2019. She is currently the founder of a strategic photo-editing service called MENDL, where she is creating 2D graphic content on demand.

Viktor Klassen graduated in 2019 from the University of Twente. Ever since he entered the design agency D'Andrea & Evers Design and is part of an internationally operating and globally awarded Design Team. He designs at the forefront of innovation in consumer technology, industrial machinery and medical appliances and works with clients like Philips, Universal Electronics and Vodafone.

Wouter Eggink is a design professional and assistant professor of Industrial Design Engineering at the University of Twente. He is coordinator of the master track "Human Technology Relations" and designer and Research Fellow of the DesignLab. His research approach is based on the collaboration between design research and philosophy of technology, for which he coined the term "the practical turn".