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The effects of benefit-based (vs. attribute-based) product categorizations on mental imagery and purchase behavior

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ABSTRACT

Retailers encounter consequential choices when categorizing products on a (virtual) shelf display. This research disentangles the impact of two of these categorization schemes, namely attribute-based and benefit-based product categorizations. In an attribute-based categorization, products are grouped based on similar product features; whereas in a benefit-based categorization, products are grouped based on their ability to solve various consumer problems. Across eight studies (two of which were conducted in field settings; N_{total} = 3418), we show that a benefit-based (vs. attribute-based) product categorization enhances mental imagery of product use, which in turn increases the anticipated consumption value, and ultimately the number of products that consumers choose to buy. Our findings also demonstrate that the effect of a benefit-based (vs. attribute-based) categorization is attenuated when consumers are already encouraged to engage in mental imagination (i.e., in the presence of imagery appeals in the store), or when they have high imagery abilities. Finally, we show that the effect of benefit (vs. attribute)-based categorization is stronger (weaker) for narrower (broader) categorizations. While this work contributes to a novel and extended view of research on product categorization and mental imagery, it also presents substantial managerial implications for retailers.

Introduction

Organization of the retail environment—online as well as offline—is one of the key determinants of consumer decision processes (e.g., Berkhout 2019; Sarantopoulos et al. 2019; Walter et al. 2020). According to Procter and Gamble's "First Moment of Truth" concept, the first few seconds when consumers encounter a product display have a critical role in their choice process (Procter & Gamble 2006). Researchers have studied various factors that influence these encounters, such as assortment size (e.g., Chernev & Hamilton 2009; Iyengar & Lepper 2000), shelf displays (e.g., Castro, Morales, & Nowlis 2013), or horizontal (vs. vertical) product presentation (Deng et al. 2016). A key factor concerns the proper categorization of products (i.e., classifying products into different groups). Product categorization can facilitate preference identification (e.g.,

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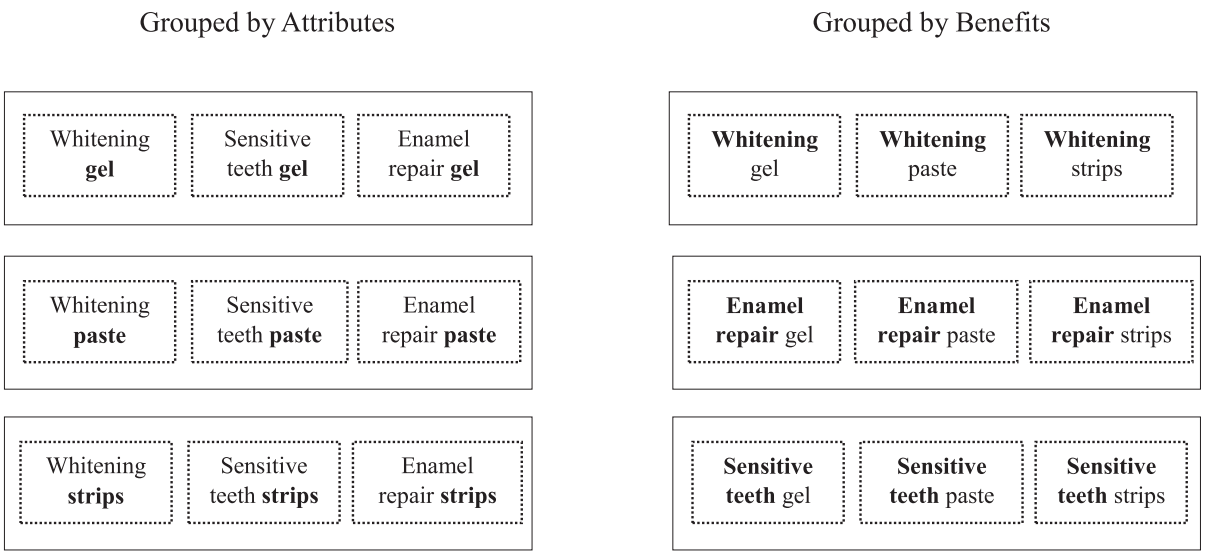

Fig. 1. Example of a toothpaste assortment organized by attributes or benefits. *Note:* we focus on situations in which attributes and benefits are uncorrelated such that one benefit can be provided by different attributes (e.g., both gel and paste toothpastes are effective in aiding enamel repair).

Alba, Hutchinson & Lynch 1991), and help consumers to identify differences between items and find the right choices (e.g., Mogilner, Rudnick & Iyengar 2008; Poynor & Wood 2010; Rooderkerk & Lehmann 2021; Rosch 2002).

To categorize products, retailers have different organizational strategies at their disposal. Past research studied different types of product categorization including categorization by brand, product type, or consumer goals (Diehl, Van Herpen & Lamberton 2015; Felcher, Malaviya & McGill 2001; Morales et al. 2005). The present research focuses on two of these strategies: *attribute-based* vs. *benefit-based* product categorizations (Lamberton & Diehl 2013). On the one hand, retailers might group products based on similar product features (e.g., the physical characteristics that products share) and thus rely on an *attribute-based product categorization* (Lamberton & Diehl 2013). Attributes are intrinsic properties and tangible characteristics of products that can be identified by consumers (e.g., Lancaster 1971; Wu, Day & McKay 1988). For example, in some Tesco stores, laundry detergents are categorized based on their actual product features (e.g., grouping the liquid bottles together in one category and powder boxes together in another category). On the other hand, retailers might categorize their products based on the benefits they offer (e.g., solutions that consumers seek by purchasing the products), and hence implement a *benefit-based categorization* (Lamberton & Diehl 2013). In such a categorization, products are grouped based on their ability to solve various consumer problems or help them meet certain needs. For example, most Tesco stores organize their supplements based on the benefits they offer (e.g., relaxation, energy, weight loss). Fig. 1 depicts the possible categorization of a toothpaste assortment based on their benefits or attributes.

To assess the extent of implementation of benefit and attribute-based categorizations in the marketplace, we examined product categorization schemes for ten common fast-moving consumer goods (e.g., yogurt, laundry detergent, tea, nutrition bar) in five prominent grocery retail stores within Europe and the USA. Overall, our investigation shows that retailers implement attribute-based categorizations for organizing the majority of their products (54%), although benefit-based categorizations are also a fairly common practice (31%) (see Web Appendix A for additional information). Despite the use of these two categorization schemes in the retail environment, there is, however, only scant research on how a benefit (vs. attribute)-based categorization of a product category can impact consumer purchase behavior (e.g., Lamberton and Diehl (2013) demonstrated the effect of these categorizations on consumer perceptions (i.e., abstract vs. concrete construal); for an overview of past research, see Table 1). Several researchers have examined the effect of product categorization on consumer perception but in most studies, categories have been organized based on attributes (e.g., Drèze, Hoch & Purk 1994; Mogilner, Rudnick & Iyengar 2008; Rooderkerk & Lehmann 2021; Walter et al. 2020). However, the categorization of products based on their benefits (rather than attributes) offers strategic advantages and represents an important factor for leveraging the product positioning (Fuchs & Diamantopoulos 2010; Kotler 2002; Lamberton & Diehl 2013). Hence, the purpose of this research is to answer the following research questions: what are the effects of benefit (vs. attribute)-based product categorizations on consumer purchase behavior, and what are the underlying mechanisms driving these effects? What are the boundary conditions that influence the effectiveness of these categorization schemes?

We extend research on product categorization and contribute to the literature and managerial practice in several major ways. Our research contributes to the limited empirical work on the effect of benefit-based and attribute-based categorizations, notably by investigating their impact on consumer in-store purchase behavior. While past research has mostly studied how the number, type, and congruency of categories impact consumer attitudes and perceptions, we investigate the global structure of product categories with a focus on the behavioral implications of benefit (vs. attribute)-based cate-

Table 1
Selection of related previous research on product categorization.

Reference	Assortment level	Type of categorization	Empirical setting	Main DV	Key findings
Rooderkerk and Lehmann (2021)	Within category	Categorization by brand, type, flavor	Laboratory and field	Purchase intention	Congruency between a consumer's internal categorization and the external categorization increases the perceived variety and purchase intention
Simonson, Nowlis, and Lemon (1993)	Within category	Categorization by brand vs. feature	Laboratory	Product choice	The choice share of a low-price, low-quality brand is greater when products are classified by brand (vs. feature)
Poynor and Wood (2010)	Within category	Expected vs. unexpected categorization	Laboratory	Satisfaction	Consumers are more (less) satisfied with unexpected product organizations when they have higher (lower) prior knowledge
Mogilner, Rudnick, and Iyengar (2008)	Within category	No categorization vs. categorization of any type	Laboratory and field	Choice satisfaction	The mere presence of categories, irrespective of their content, increases choice satisfaction among consumers who are unfamiliar with the product assortment
Ülkümen, Chakravarti, and Morwitz (2010)	Within category	Broad vs. narrow categorization	Laboratory	Consumer decision-making.	Exposure to broad versus narrow categorizations leads individuals to base their decisions on fewer vs. multiple pieces of information
Lamberton and Diehl (2013)	Within category	Benefit-based vs. attribute-based	Laboratory	Choice satisfaction	When choosing from a benefit (vs. attribute)-based categorization, consumers are more likely to select lower-priced items and are more satisfied with their top choice
Kwon and Mattila (2017)	Within category	Benefit-based vs. attribute-based	Laboratory	Perceived variety	When choosing from single-page menus, consumers will perceive greater variety from attribute-based organization than benefit-based organization
Ratneshwar, Pechmann, and Shocker (1996)	Across categories	Goal-derived categories	Laboratory	Across-category consideration	Across-category consideration is high when there is either goal conflict or goal ambiguity
Diehl, Van Herpen, and Lamberton (2015)	Across categories	Complement versus substitute-based	Laboratory	Store choice	Complement (vs. substitute)-based assortment organizations are perceived as more effortful and attractive
Sarantopoulos et al. (2019)	Across categories	Complement versus substitute-based	Laboratory and Field	Purchases and expenditure	Complement (vs. substitute)-based assortment organizations lead to increased purchases and expenditures
This research	Within category	Benefit-based vs. attribute-based	Laboratory and field	Purchase quantity	Consumers buy more (fewer) products when choosing from a benefit-based (attribute-based) categorization

gorizations. Furthermore, we contribute to the literature on categorization and mental imagery (Adaval 2018; MacInnis & Price 1987) by studying the underlying process at play. We show that being exposed to a benefit (vs. attribute)-based product categorization can enhance consumers' tendency to envision using the products, which in turn positively impacts the anticipated consumption value and their purchase quantity. To the best of our knowledge, no research has examined the effect of these product categorizations on mental imagery. In line with this reasoning, we also investigate the moderating role of two key variables. First, we show that the presence of imagery appeals in the store can mitigate the effect of benefit (vs. attribute)-based categorizations on consumer purchase behavior. More specifically, we demonstrate that incorporating an imagery appeal can help to enhance the effect of an attribute-based categorization, aligning it with a benefit-based categorization. Hence, we contribute to research on the strategic use of imagery appeals (e.g., Ostinelli & Böckenholt 2017) by showing the impact of product categorization in combination with imagery appeals on consumer purchase behavior. Second, we show that individual differences in imagery abilities also serve as a boundary condition for the effect of benefit (vs. attribute)-based categorizations. We demonstrate that the effect of benefit (vs. attribute)-based categorizations on consumer purchase behavior will be attenuated among consumers with high imagery abilities. By doing so, we illustrate the importance of individual cognitive traits in shaping consumer responses to product categorization. Finally, we qualify past research (Mogilner, Rudnick & Iyengar 2008) by showing that it is not merely the number of categories that influences consumer purchase behavior. We suggest that the type of categorization (benefit- vs. attribute-based) may interact with the effect of the number of categories (broader vs. narrower categorizations) on consumer purchase behavior. Our research highlights the scope of the role that categorization can play in how consumers mentally process information and behave in stores. Our findings, gathered from a mix between field data and controlled experiments, present valuable insights for retailers who wish to enhance and leverage consumer shopping behaviors.

Theoretical background

Behavioral consequences of benefit-based vs. attribute-based product categorizations

Retailers often categorize products based on product feature similarities (i.e., attribute-based categorization) leading consumers to expect to see products that look alike grouped together (Lamberton & Diehl 2013; Mervis & Rosch 1981; Poynor & Wood 2010; Rosch 1978). Our primary field investigation also confirmed the widespread use of this categorization scheme within the marketplace (see Web Appendix A). Despite this long-standing focus on attribute-based categorizations, we contend that benefit-based categorizations might exert a stronger impact on consumer purchase behavior. More specifically, we argue that benefit (vs. attribute)-based categorization will enhance mental imagery of product use which will, in turn, increase the anticipated consumption value, and ultimately the number of products that consumers choose to buy.

Mental imagery has been defined as a mental simulation process that involves generating mental images representing product experiences (Herd & Metha 2019; Pearson et al. 2015). Research has studied different cues in the shopping environment that can impact mental imagery. For example, product presentation (text vs. picture) (Yoo & Kim 2014), website characteristics (Lee & Gretzel 2012), portrayal type (static vs. dynamic images/videos) (Roggeveen et al. 2015), or the use of augmented reality in the retail store (Heller et al. 2019) can all impact mental imagery. We argue that the categorization of products (i.e., benefit- vs. attribute-based categorizations) can also elicit mental imagery. Indeed, presenting products based on a benefit-based categorization conveys cues about the benefits derived from using those products, whereas an attribute-based categorization highlights product features for consumers (e.g., Lamberton & Diehl 2013; Sloutsky 2003). Providing information about product benefits enables consumers to identify how using those products would help them meet certain needs (Lamberton & Diehl 2013), and this could help them to imagine the potential consumption experience of these products. Prior research has also confirmed that greater accessibility of thoughts about a product's benefits promotes mental imagery of its use (e.g., Hildebrand, Häubl & Herrmann 2014). Therefore, we contend that a benefit (vs. attribute)-based categorization is more likely to enhance mental imagery of product use.

Furthermore, we argue that, in a second step, mental imagery of product use will positively impact the anticipated consumption value. Mental imagery of product use can enhance the desirability and attractiveness of the product (Hildebrand, Häubl & Herrmann 2014; Thompson, Hamilton & Petrova 2009), resulting in more favorable product evaluations, and greater purchase intentions (Roggeveen et al. 2015; Yoo & Kim 2014; Zhao, Hoeffler & Dahl 2009). Mental imagination of products' use can then lead consumers to recognize the value they anticipate gaining from using those products (Elder & Krishna 2021; Hildebrand, Häubl & Herrmann 2014). Building on this premise, we argue that a benefit (vs. attribute)-based categorization will increase mental imagery of product use and consequently the anticipated value of using those products. Moreover, it has been shown that when consumers anticipate higher values from using a product, they are more likely to increase purchase quantity (e.g., Kahn & Wansink 2004).

Based on the arguments above, we propose that benefit (vs. attribute)-based product categorizations can increase the number of products consumers buy due to enhanced mental imagery of product use and anticipated consumption value. This leads to our first two hypotheses:

H1. Benefit (vs. attribute)-based product categorizations increase the number of products consumers buy.

H2. The effect of benefit (vs. attribute)-based categorizations on the number of products consumers buy is mediated by enhanced mental imagery of product use and anticipated consumption value.

Moderating role of imagery appeals and individual differences in imagery ability

If, as we argue, enhanced mental imagery of product use is the underlying reason for the effect of benefit (vs. attribute)-based categorizations on consumer purchase behavior, then this effect should be attenuated when individuals are already engaged in mental imagination, or they possess a high level of mental imagery resources. More specifically, we contend that by encouraging consumers to imagine the experience (i.e., in the presence of imagery appeals in the store), retailers should be able to enhance the effect of an attribute-based categorization aligning it with a benefit-based categorization. Similarly, if consumers already have high imagery abilities, the nature of the categorization itself should not make a significant difference in their mental imagination and thus their purchase behavior.

Past research demonstrated how marketing practitioners can leverage consumer mental imagination as a persuasion tactic (Petrova & Cialdini 2005; Roy & Phau 2014). Marketers might notably employ imagery appeals, which involve cues like pictures or taglines (e.g., "Imagine yourself") that ask consumers to imagine a product use or a consumption experience (MacInnis & Price 1987; Ostinelli & Böckenholt 2017). For example, Apple used the "Imagine the Possibilities" tagline when they introduced Intel chips into their computers, and Samsung relied on a simple slogan "Imagine" to motivate consumers to imagine themselves using their products. Imagery appeals are indeed a powerful tactic in marketers' communication toolbox and their effectiveness has been well documented in the literature. The presence of imagery appeals can make consumers behave as if they were actually experiencing the product (Schlosser 2003), which can then enhance perceived psychological ownership (Kamleitner & Feuchtl 2015), and positively impact brand attitudes and purchase intention (Petrova & Cialdini 2005). We contend that when consumers are exposed to imagery appeals in the store, and thus primed to imagine themselves in the experience, they will exert an enhanced imagination of the product use regardless of the categorization type (benefit-based or attribute-based) they are exposed to. As a result, in the presence of imagery appeals, the difference in consumer purchase behavior between benefit and attribute-based categorization will be reduced. We notably expect that consumers choosing from an attribute-based categorization will show an enhanced purchase behavior in the presence (vs. absence) of imagery appeals. Thus, we argue that the presence of imagery appeals will moderate the effect of benefit (vs. attribute)-based categorizations on consumer purchase behavior:

H3a. Benefit (vs. attribute)-based categorizations increase the number of products consumers buy when there is no imagery appeal, but this effect will be attenuated in the presence of an imagery appeal.

Furthermore, for consumers who already have high resources to engage in mental imagination, we expect the effect of the categorization type to be attenuated as well. Prior research shows that people are different in their imagery abilities (Pham, Meyvis & Zhou 2001). Imagery ability is an individual difference which involves people's capacity to generate mental images that reflect product experiences (MacInnis & Price 1987; Marks 1973). Walker and Olson (1997, p.159) demonstrate that when consumers make product decisions, they often form "visual images of certain product-related behaviors and their consequences". Individuals with high imagery ability can simulate a product experience and understand the consequences of product usage (e.g., Ostinelli & Böckenholt 2017). We expect that when consumers have low imagery abilities, benefit-based categorizations will help them to engage in mental imagery in comparison to the attribute-based categorizations and thus impact their purchase behavior. In contrast, consumers who already have high imagery abilities will be able to engage in mental imagination regardless of which categorization types they are exposed to. Thus, we hypothesize that mental imagery ability will moderate the effect of product categorization on consumer purchase behavior:

H3b. Benefit (vs. attribute)-based categorizations increase the number of products consumers buy when they have lower imagery abilities, but this effect will be attenuated for consumers with higher imagery abilities.

Moderating role of categorization breadth

At the same time as determining the type of categorization to implement, retailers must also decide into how many categories these benefit-based or attribute-based categories will be classified (e.g., Mogilner, Rudnick & Iyengar 2008). In broad categorizations, products are classified into only few categories, whereas in narrow categorizations, products are classified into many categories (Mogilner, Rudnick & Iyengar 2008; Ülkümen, Chakravarti & Morwitz 2010). Thus, for the same set of products, each broad (vs. narrow) category would consist of a great (vs. small) number of category members. For example, a set of 20 teas could be classified into two broad attribute-based categories such as "spiced tea" and "herbal tea" with 10 products in each category. Alternatively, they may be classified into five narrow categories of "ginger," "cinnamon," "mint," "chamomile," and "hibiscus" with four products in each category. The same products could be also classified into broad vs. narrow benefit-based categories. For example, the teas could be classified into two broad categories of "relaxing teas" and "health boosting teas". Alternatively, they could be classified into five narrow categories of "stress relief", "immune boosting", "calming", "digestive", and "detox" teas. Exposure to broad vs. narrow categorizations impacts consumer information processing differently (e.g., Ülkümen, Chakravarti & Morwitz 2010). Prior research has suggested that the number of categories, irrespective of the type of categorization implemented, impacts consumer choice satisfaction. Indeed, Mogilner, Rudnick, and

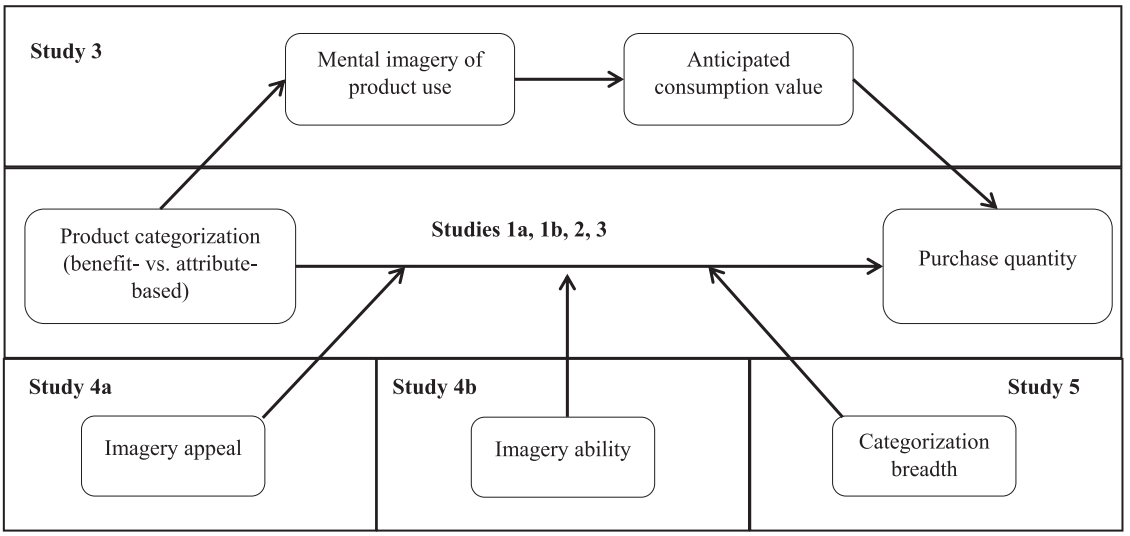

Fig. 2. Conceptual model and key studies.

Iyengar (2008) demonstrated an effect of changing the number of categories, but found no effect of category content. They argued that, as long as the number of categories is constant, the nature of categories may not matter in consumer satisfaction. However, we argue that the type of categorization (benefit-based vs. attribute-based) may interact with the effect of the number of categories (broad vs. narrow categorization) on consumer purchase behavior.

As we hypothesized, consumers may buy more products from a benefit-based (vs. attribute-based) categorization because of enhanced mental imagery and anticipated consumption value. This process may be influenced by the amount and type of information provided to consumers. Exposure to detailed (vs. limited) information about the products can assist consumers in learning about the value they receive from using the products. A narrow categorization provides multiple detailed pieces of information about the products, whereas a broad categorization provides fewer pieces of information (Ülkümen, Chakravarti & Morwitz 2010). Thus, we expect a broader (vs. narrower) categorization to make it more difficult for people to recognize how the use of those products can offer them value and thus to mitigate the effect of benefit (vs. attribute)-based categorizations on consumer purchase behavior. We therefore hypothesize that categorization breadth (broad vs. narrow) moderates the effect of benefit (vs. attribute)-based categorizations on consumer purchase behavior. Hence:

H4. Benefit (vs. attribute)-based categorizations increase the number of products consumers buy when they choose from a narrower categorization, but the effect will be attenuated when they choose from a broader categorization.

Overview of studies

We test our hypotheses across eight studies (see Fig. 2). In the opening field studies (Studies 1a–b), we investigate whether consumers choose to buy more products from a store that implements a benefit (vs. attribute)-based product categorization (H1). In a supplemental study (reported in Web Appendix B), we examine the effect of benefit (vs. attribute)-based categorization on consumer shopping basket size when they buy from an online store. Study 2 replicates this finding (H1) and rules out an alternative explanation related to the presence (vs. absence) of category labels in an attribute-based categorization. Study 3 provides a detailed examination of our proposed mechanism, the mental imagery of product use, and anticipated consumption value (H2). Study 4a tests the moderating effect of the presence of imagery appeals on consumer purchase behavior when choosing from a benefit (vs. attribute)-based categorization (H3a). Study 4b tests the moderating effect of individual differences in imagery ability (H3b). Finally, Study 5 examines the moderating role of categorization breadth (broad vs. narrow) on the predicted effects on consumer purchase behavior (H4).

Study 1a

The purpose of this first field study is to examine our main theorizing about the effect of benefit (vs. attribute)-based product categorization on consumer in-store purchase behavior. Consistent with prior research (Dagger and Danaher 2014; Sarantopoulos et al. 2019), one store of a national supermarket chain implemented a benefit-based product categorization and another store from the same chain implemented an attribute-based product categorization. We expected the benefit (vs. attribute)-based categorization to increase the number of products consumers chose to buy (H1).

Method

The data were collected from two stores in a metropolitan area. The focus of the study was on the general assortment of yogurts. The same assortment of yogurts (e.g., number of products, brands, price) was presented in both stores but with different categorization schemes. In the benefit-based categorization condition store, products were grouped into categories based on their functional similarities, in a way that each category would help consumers to achieve the intended benefit by using the products (e.g., Lamberton & Diehl 2013). Products were classified into six main categories with labels presented on the top of the shelves (e.g., health-boosting, mood-boosting, family well-being). In the attribute-based categorization condition store, the same set of products was categorized into six main categories based on different ingredients (which were also represented in the package color) and were displayed on the shelves with distinct colors (see Web Appendix C1). The effectiveness of these two categorization schemes was tested in a manipulation check. Both stores featured similar space, assortment, and consumer socioeconomic properties (e.g., around 60% female consumers). The data were collected on the same weekday over two hours in the yogurt products section of both stores.

The data in both stores were collected using external cameras installed in the stores. Approximately five to eight cameras per shelf, one to two cameras in the main aisle, and one camera at the entrance were installed. Multiple cameras were utilized to cover multiple angles with overlap. All data were recorded in embarked memory storage. Once the data were converted into the analysis system, the cameras were set to the closest frame to ensure consumer behavior could be observed from multiple viewpoints.

The first step of the analysis identified when a consumer entered the aisle from one of the predefined directions. Basic demographic information (e.g., gender) was detected and assigned to the consumer. There was no identification of the consumer beyond these measures. When a consumer was stationary in front of a shelf, a human analyst observed the actions occurring at the shelf and tagged the corresponding frames, providing one from among a list of predetermined labels (e.g., "Picks up product", "Puts back on shelf"). Once the consumer had exited the area covered by all cameras, the visit was considered terminated, and the consumer trajectory within the aisle, action list, and basic demographic data were added to the dataset. If a person entered the aisle and interacted with the shelf in a non-standard way (e.g., started sorting products, re-filling the shelf, marking down prices), the human analyst identified the person as "store personnel" and removed them from the dataset. Consumer data were collected on the number of products they put in their shopping basket.

Results

In our field data collection, we included data from every consumer who entered the aisle and interacted with the products within the recording timeframe. Data from 168 consumers were thus collected.

Number of selected products. The results show that the number of products consumers chose to buy was significantly higher in the benefit (vs. attribute)-based categorization store ($M_{\text{benefit}} = 2.89$ vs. $M_{\text{attribute}} = 1.94$; $F(1, 166) = 4.57$, $p = .03$, $\eta_p^2 = .03$).

A separate Mechanical Turk (MTurk) study was conducted to examine the effectiveness of the product categorization as benefit- vs. attribute-based (i.e., a manipulation check) and to assess perceptions of choice difficulty, effort and perceived dimensionality (no differences emerged). See Web Appendix C2 for more details.

Discussion

This opening field study provides initial evidence that a benefit (vs. attribute)-based categorization may increase the number of products consumers choose to buy. Although in this study the product assortments were similar and that the supermarkets were carefully selected, it could be argued that other factors might have influenced our results since the stores were located in two different geographical areas. To control for these factors in the next field study, the data were collected in the same store where the two categorizations were successively implemented. Moreover, the effects of benefit (vs. attribute)-based categorizations were tested with a different product category.

Study 1b

In this study, we further examine the effect of a benefit (vs. attribute)-based categorization on the number of products consumers choose to buy. We expected consumers to buy more products when exposed to a benefit (vs. attribute)-based categorization (H1). Additionally, to gain a better understanding of consumer reactions toward the different types of categorizations, a random selection of consumers completed a survey at the end of their shopping trip and indicated their opinion about the organization of products.

Method

The data were collected in two phases in a large supermarket in a metropolitan area. The focus of the study was on the bread spreads product category (e.g., jam). First, an attribute-based categorization was implemented, and the data were collected on a weekday. A few weeks later, the benefit-based categorization was implemented, and the data were collected

on the same day of the week as the attribute-based categorization. The same set of products (e.g., number of products, brands, price) were presented in both conditions but with different categorization schemes. In the benefit-based categorization condition, products were classified into different categories based on the benefit they offered, which were identified by labels on the top of the shelves (e.g., mood-boosting, healthy diet). In the attribute-based categorization condition, the same assortment of products was grouped together based on the product feature similarities (e.g., the ingredients; see Web Appendix D1). The effectiveness of these categorization schemes was tested in a manipulation check. The data collection procedure was similar to Study 1a and a professional coder counted the number of products consumers put in their shopping baskets.

Furthermore, a random selection of 160 consumers was approached and asked to fill out a paper and pencil questionnaire about their perception of the product assortment and shopping experience (141 consumers responded). First, the respondents were asked their opinion about the organization of the spread product category (1= *poor*, 10 = *excellent*). Next, they were asked, among other questions, about their agreement with the following statements: "The assortment motivated me to discover more products", "The assortment helped to differentiate between various types of products" (1 = *not at all*, 5 = *very much*). Finally, consumers responded to basic demographic questions. Importantly, because the data collection was completely anonymous, the data from the questionnaire could not be linked to individual data collected within the store via cameras.

Results

Number of selected products. Data from 474 consumers were collected using the external tracking cameras in the store. Data were recorded for every consumer who interacted with the products even if they did not choose any product. The results show that the number of products consumers chose to buy was significantly higher in the benefit (vs. attribute)-based categorization condition ($M_{benefit}$ = .63 vs. $M_{attribute}$ = .40; $F(1, 472) = 10.09$, $p = .002$, $\eta_p{}^2 = .02$).

Survey. A total of 141 consumers (99 female; M_{age} = 49.79) completed the survey by responding to all questions. The results show that consumers evaluated the benefit (vs. attribute)-based product categorization more positively ($M_{benefit}$ = 8.71 vs. $M_{attribute}$ = 7.59; $F(1, 139) = 23.65$, $p < .001$, $\eta_p{}^2 = .14$). In addition, the benefit (vs. attribute)-based categorization was perceived to encourage consumers to discover more alternatives ($M_{benefit} = 3.63$ vs. $M_{attribute} = 2.95$; $F(1, 139) = 6.91$, $p = .01$, $\eta_p^2 = .05$), and helped them to better differentiate between various types of products ($M_{benefit}$ = 4.62 vs. $M_{attribute}$ = 4.11; $F(1, 139) = 14.71$, $p < .001$, $\eta_p{}^2 = .1$).

A separate MTurk study was conducted to examine the effectiveness of the product categorization as benefit- vs. attribute-based (i.e., a manipulation check) and to assess perceptions of choice difficulty, effort and perceived dimensionality (no differences emerged). See Web Appendix D2 for more details.

Discussion

Using an alternative design in a single store, we replicated the findings from the first field study and showed that a benefit (vs. attribute)-based categorization impacts consumers' in-store purchase behavior by increasing the number of products they choose to buy. The complementary survey enabled us to better understand consumers' perceptions of the categorizations. The findings suggest that a benefit (vs. attribute)-based categorization is perceived to encourage consumers to discover more alternatives.

There were some constraints in these field studies. In particular, our access was restricted to specific sets of products, limiting us to use certain categories, benefits and attributes, based on the available assortment. In the next series of experiments, we study the effect of benefit (vs. attribute)-based categorizations in more controlled settings by examining consumer shopping behavior in online retail stores using different types of product categories.

Study 2

The purpose of this study is to confirm that our proposed effect is consistent in the presence (vs. absence) of labels in the attribute-based categorization. The findings of the field studies suggest that a benefit (vs. attribute)-based categorization increases the number of products that consumers choose to buy. We focused on a type of attribute-based categorization in which products are classified on the basis of tangible product features in which consumers can identify the categories without the need of a label (e.g., Gregan-Paxton, Hoeffler & Zhao 2005). Nevertheless, it could be argued that because the benefit-based categorization included an explicit label and the attribute-based categorization did not, our results might be driven by the influence of labeling, and not by the effect of categorization type. One of the aims of this study is therefore to ascertain that the effect of categorization type does not depend on the presence or absence of labels. To do so, we incorporated an additional condition in our experimental design (an attribute-based categorization with labels). We expected that consumers would buy more products when choosing from a benefit (vs. attribute)-based categorization regardless of the presence or absence of category labels in the attribute-based categorization.

Method

Study 2 involved three categorization conditions (benefit-based vs. attribute-based no labels vs. attribute-based with labels). A total of 384 participants (196 female, $M_{age} = 42.25$) from MTurk (via the cloudresearch.com platform) completed the study in exchange for a standard payment. They were randomly asked to engage in a shopping task from one of the three online stores we had designed, which offered 20 different teas. In the benefit-based categorization store, products were classified into five categories based on the different benefits they offered (i.e., energy-boosting, stress relief, weight loss, immune-boosting, digestive). In the attribute-based categorization store, the same products were classified into five categories based on their attributes (i.e., type of teas: black tea, chamomile, green tea, mint tea, ginger tea). In the attribute-based categorization with labels, we added a label for each of the five attribute-based categories identifying the type (i.e., black tea, chamomile, green tea, mint tea, ginger tea; see Web Appendix E). We asked participants to choose as many products as they would buy. We then measured the number of items in their shopping basket (i.e., the shopping basket size). After making their choices, we asked manipulation-check questions to examine the effectiveness of the categorization manipulation. To measure the perceptions of the benefit-based categorization, participants were asked to respond to a five-item scale ("Products with similar benefits were grouped together"; "Products were grouped together based on the reasons they are used"; "Products were grouped together based on their shared benefits"; "Products were classified based on their functionalities"; "Products were grouped together based on the solution they offer"; 1 = *strongly disagree*, 7 = *strongly agree*; Cronbach's alpha = .96). We also measured perceptions of the attribute-based categorization using another five-item scale ("Products with similar attributes were placed next to each other"; "Products with the same features were placed side by side"; "The same type of products were grouped together", "Products were grouped together based on the characteristics that represent them"; "Products that were made of the same ingredients were grouped together"; 1 = *strongly disagree*, 7 = *strongly agree*; Cronbach's alpha = .91). Furthermore, we measured participants' perceptions of dimensionality (i.e., how many distinct categories of products they saw in the store). Finally, participants responded to demographic questions.

Results

Manipulation checks. The findings of a one-way analysis of variance (ANOVA) on our benefit-based manipulation check scale showed that the benefit-based categorization was perceived to be more focused on similar benefits in comparison to the attribute-based categorizations ($F(2, 381) = 20.9$, $p < .001$, $\eta_p^2 = .1$). Specifically, the benefit-based categorization was perceived to be more focused on grouping the products based on their benefits in comparison to the attribute-based categorization without labels ($M_{benefit} = 5.96$ vs. $M_{attribute\ no\ label} = 5.13$; $t(381) = -5.16$, $p = .002$, $d = -.64$), and the attribute-based categorization with labels ($M_{benefit} = 5.96$ vs. $M_{attribute\ label} = 4.98$; $t(381) = -5.95$, $p < .001$, $d = -.75$). There was no difference in perceptions between the attribute-based categorizations with or without labels ($M_{attribute\ no\ label} = 5.13$ vs. $M_{attribute\ label} = 4.98$; $t(381) = -.87$, $p > .2$).

Moreover, the findings of a one-way ANOVA on our attribute-based manipulation check scale showed that the attribute-based categorization was perceived to be more focused on grouping products based on similar attributes in comparison to the benefit-based categorization ($F(2, 381) = 119.49$, $p < .001$, $\eta_p^2 = .38$). Specifically, the benefit-based categorization was perceived to be less focused on grouping the products based on their attributes in comparison to the attribute-based categorization without labels ($M_{attribute\ no\ label} = 6.03$ vs. $M_{benefit} = 4.25$; $t(381) = 13.78$, $p < .001$, $d = 1.71$) and the attribute-based categorization with labels ($M_{attribute\ label} = 5.94$ vs. $M_{benefit} = 4.25$; $t(381) = 12.93$, $p < .001$, $d = 1.63$). There was no difference in perceptions between the attribute-based categorizations with or without labels ($M_{attribute\ no\ label} = 6.03$ vs. $M_{attribute\ label} = 5.94$; $t(381) = -.67$, $p > .2$).

Shopping basket size. The results of a one-way ANOVA revealed a significant effect of product categorization on shopping basket size ($F(2, 381) = 4.14$, $p = .01$, $\eta_p^2 = .02$). Participants added more products to their shopping baskets when choosing from the benefit (vs. attribute)-based categorizations, both when the attribute-based categories had no labels ($M_{benefit} = 4.91$ vs. $M_{attribute\ no\ label} = 3.98$; $t(381) = -2.74$, $p = .006$, $d = -.34$), and when they had labels ($M_{benefit} = 4.91$ vs. $M_{attribute\ label} = 4.18$; $t(381) = -2.13$, $p = .03$, $d = -.27$). Moreover, there was no difference in the shopping basket size when choosing from attribute-based categorizations with or without labels ($M_{attribue\ no\ label} = 3.98$ vs. $M_{attribute\ label} = 4.18$; $t(381) = .57$, $p > .2$).

The findings also show that there was no effect of categorization type on perceived dimensionality ($M_{attribute\ no\ label} = 4.48$ vs. $M_{attribute\ label} = 4.48$ vs. $M_{benefit} = 4.50$; $F(2, 381) = .06$, $p > .2$).

Discussion

The findings of Study 2 once again support H1 and confirm that benefit (vs. attribute)-based categorization increases the number of products consumers buy. More importantly, the data confirm that this effect holds regardless of the presence or absence of labels in the attribute-based categorizations.

Study 3

The purpose of this study is to examine the underlying mechanism of the effect of benefit (vs. attribute)-based categorizations on the number of products consumers buy (H2). We expected that consumers would buy more products when choosing from a benefit (vs. attribute)-based categorization because of the enhanced mental imagery of product use and the anticipated consumption value of these products.

Method

Study 3 involved two categorization conditions (benefit-based vs. attribute-based). A total of 474 participants from MTurk (via the cloudresearch.com platform) completed the study in exchange for a standard payment (266 female, M_{age} = 40.99). They were asked to engage in a shopping task from one of the two online stores that offered 20 different teas. In the benefit-based categorization store, products were classified into five categories based on the different benefits they offered (i.e., energy-boosting, stress relief, weight loss, immune-boosting, digestive). In the attribute-based categorization store, the same products were classified into five categories based on their attributes (i.e., type of teas: black tea, chamomile, green tea, mint tea, ginger tea; see Web Appendix F1). We asked participants to choose as many products as they would buy. We then measured the number of items in their shopping basket (i.e., the shopping basket size). After making their choices, we measured participants' mental imagery of product use by asking two questions ("To what extent could you imagine yourself using the teas?"; 1 = *strongly disagree*, 7 = *strongly agree*; and "To what extent could you form a picture of yourself using the teas you selected?"; 1 = *Not at all*, 7 = *To a great extent*; adapted from Hildebrand, Häubl & Herrmann 2014). We also measured their perceptions of anticipated consumption value using the four-item scale from Kahn and Wansink (2004). We asked participants the extent to which they agreed with items such as: "I thought that by drinking my selected teas, I would feel satisfied", "I thought that by drinking my selected teas, I would feel positive" (1 = *strongly disagree*, 7 = *strongly agree*; Cronbach's alpha = .88).

We also asked two five-point manipulation check questions similar to the previous study to examine whether the implementation of benefit-based (Cronbach's alpha = .93) and attribute-based (Cronbach's alpha = .89) categorizations was effective. Participants also responded to seven-point-scale questions about their perceptions of the product categorization including perceived difficulty ("How difficult would it be for you to make your decision if you wanted to choose a product from this assortment?") and perceived effort ("How much effort would it take to make choices from this assortment?"). We additionally measured perceived dimensionality by asking them how many distinct categories of products they saw in the store. Finally, participants responded to demographic questions.

Results

Manipulation checks. The findings show that the benefit-based categorization was perceived to be more focused on grouping the products based on their benefits in comparison to the attribute-based categorization ($M_{benefit}$ = 5.90 vs. $M_{attribute}$ = 5.08; $F(1, 472) = 65.36$, $p < .001$, $\eta_p^2 = .12$). Whereas the attribute (vs. benefit)-based categorization was perceived to be more focused on grouping products based on their attributes ($M_{benefit}$ = 4.50 vs. $M_{attribute}$ = 5.86; $F(1, 472) = 187.49$, $p < .001$, $\eta_p^2 = .28$).

Shopping basket size. The results revealed that participants added more products to their shopping basket when choosing from the benefit (vs. attribute)-based categorization ($M_{benefit}$ = 5.60 vs. $M_{attribute}$ = 4.80; $F(1, 472) = 8.23$, $p = .004$, $\eta_p^2 = .02$).

Mental imagery of product use. The results revealed a significant effect of product categorization on the mental imagery of product use. Benefit (vs. attribute)-based categorization significantly enhanced consumer imagination of product use ($M_{benefit}$ = 5.57 vs. $M_{attribute}$ = 5.22; $F(1, 472) = 13.44$, $p < .001$, $\eta_p^2 = .03$).

Anticipated consumption value. The results revealed a significant effect of product categorization on anticipated value. Benefit (vs. attribute)-based categorization significantly increased the anticipated consumption value ($M_{benefit}$ = 5.90 vs. $M_{attribute}$ = 5.76; $F(1, 472) = 4.60$, $p = .03$, $\eta_p^2 = .01$).

Mediation analysis. We predicted that benefit (vs. attribute)-based categorization would enhance mental imagery of product use, which in turn would elevate anticipated consumption value and ultimately result in a greater number of purchased products. We tested for serial mediation using Model 6 in PROCESS (Hayes 2018; 10,000 bootstrapping samples), which revealed a significant indirect effect through mental imagery of product use and anticipated consumption value (B = .07, SE = .03, 95% CI = [.0219, .1396]; see Fig. 3)

As a further check, we also conducted single and parallel mediation analyses using mental imagery and anticipated consumption value (see Web Appendix F2 for more details).

Alternative accounts. The findings show that there was no difference between benefit-based and attribute-based categorizations in terms of perceived difficulty ($M_{benefit}$ = 2.64 vs. $M_{attribute}$ = 2.83, $p > .2$), perceived effort ($M_{benefit}$ = 3.81 vs. $M_{attribute}$ = 3.67, $p > .2$), and perceived dimensionality ($M_{benefit}$ = 3.86 vs. $M_{attribute}$ = 3.81, $p > .2$). These findings again rule out the alternative explanations about the effect of perceived difficulty or effort in making a choice (e.g., ease of making a choice) and differences in dimensionality across benefit-based and attribute-based categorizations.

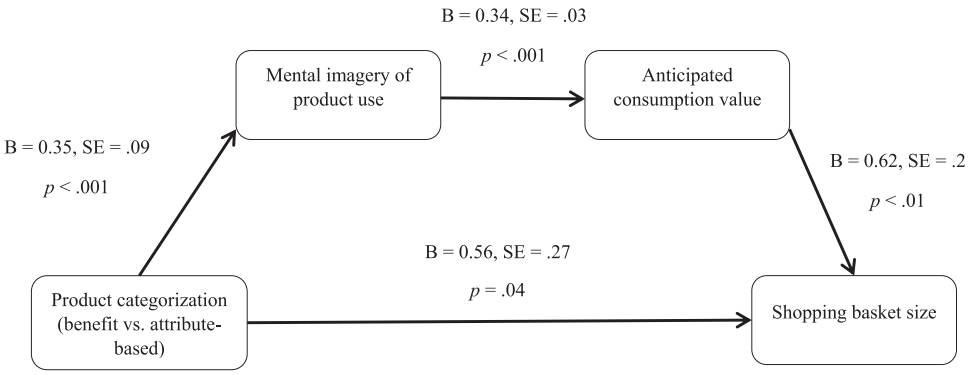

Fig. 3. Study 3: Serial mediation using 10,000 bootstrapping samples.

Discussion

The findings of this study support H2: The effect of benefit (vs. attribute)-based categorizations on the number of products consumers buy is mediated by enhanced mental imagery of product use and anticipated consumption value. The findings also help to rule out several alternative explanations. In the next studies, we examine the boundary conditions for the effect of benefit (vs. attribute)-based categorization on consumer purchase behavior.

Study 4a

The purpose of this study is to examine the moderating role of the presence of an imagery appeal on the effect of benefit (vs. attribute)-based categorizations on consumer purchase behavior (H3a). The findings of Study 3 confirmed that enhanced mental imagery of product use is an underlying reason for the effect of benefit (vs. attribute)-based product categorization. In this study, we expected the positive effect of benefit-based categorization to be attenuated when consumers are already engaged in mental imagination via the presence of imagery appeals.

Method

Study 4a was a 2 (product categorization: benefit-based vs. attribute-based) × 2 (imagery appeal: present vs. absent) between-subjects design. A total of 412 participants (201 female, M_{age} = 39.33) from Prolific completed the study. Participants were asked to engage in a shopping task from one of the four online stores we had designed. The online stores offered 20 different types of teas similar to Study 3. In the benefit-based categorization conditions, products were classified into five categories based on their benefits (i.e., weight loss, energy boost, stress relief, immune boosting, digestive). In the attribute-based categorization conditions, products were classified into five categories based on tea type (i.e., green, black, mint, chamomile, ginger; see Web Appendix F1). In the imagery appeal present conditions, an imagery appeal was presented on the top of the assortment instructing participants to imagine drinking tea (i.e., "imagine yourself drinking from the selection of tea offered in this online store"). This information was not provided in the imagery appeal absent conditions. Participants were asked to select as many products as they would buy and we measured the number of items in their shopping basket (i.e., shopping basket size). We then asked two five-item manipulation check questions similar to previous studies to examine whether the implementation of benefit-based (Cronbach's alpha = .96) and attribute-based (Cronbach's alpha = .89) categorizations was effective. To verify the effectiveness of our imagery appeal manipulation and to ensure that participants followed the instruction for imagination, we asked them to rate, on a seven-point scale, the extent to which they were instructed to imagine themselves drinking from the selection of teas offered in the online tea store. To rule out some alternative explanations, we asked a series of questions about participants perception of the product assortment. We measured whether the assortment of the products was perceived as "realistic", "artificial", and "novel" on seven-point scales. Finally, participants answered demographic questions.

Results

Manipulation checks of benefit vs. *attribute-based categorizations.* The results of a two-way ANOVA on our benefit-based manipulation check scale showed a significant main effect of categorization type ($M_{benefit}$ = 5.96 vs. $M_{attribute}$ = 5.04; $F(1, 408) = 61.22$, $p < .001$, $\eta_p^2 = .13$), but no significant main effect of imagery appeal ($F < 1$), and no interaction effect ($F < 1$). The findings also showed that in both imagery appeal present and absent conditions, the benefit (vs. attribute)-based categorization was perceived to be more focused on grouping the products based on their similar benefits (*present:* $M_{benefit}$ = 5.94 vs. $M_{attribute}$ = 5.11; $F(1, 408) = 25.44$, $p < .001$, $\eta_p^2 = .06$; *absent:* $M_{benefit}$ = 5.97 vs. $M_{attribute}$ = 4.98; $F(1, 408) = 36.2$, $p < .001$, $\eta_p^2 = .08$).

The findings of a two-way ANOVA on our attribute-based manipulation check scale showed a significant main effect of categorization type ($M_{benefit}$ = 4.54 vs. $M_{attribute}$ = 5.90; $F(1, 408) = 145.91$, $p < .001$, $\eta_p^2 = .26$), but no significant main effect of imagery appeal ($F < 1$), and no significant interaction effect ($F < 1$). The findings also show that in both imagery appeal present and absent conditions, the attribute (vs. benefit)-based categorization was perceived to be more focused on grouping products based on their attributes (*present:* $M_{benefit}$ = 4.51 vs. $M_{attribute}$ = 5.95; $F(1, 408) = 82.16$, $p < .001$, $\eta_p^2 = .17$; *absent:* $M_{benefit}$ = 4.57 vs. $M_{attribute}$ = 5.85; $F(1, 408) = 64.38$, $p < .001$, $\eta_p^2 = .14$).

Manipulation checks of the presence of the imagery appeal. The findings of a two-way ANOVA showed a significant main effect of imagery appeal ($M_{present}$ = 6.32 vs. M_{absent} = 4.72; $F(1, 408) = 105.78$, $p < .001$, $\eta_p^2 = .21$), but no significant main effect of categorization type ($F < 1$), and no significant interaction effect ($F < 1$). In both categorization conditions, participants reported following our imagination instruction in the presence (vs. absence) of an imagery appeal (*attribute-based:* $M_{present}$ = 6.27 vs. M_{absent} = 4.73; $F(1, 408) = 49.83$, $p < .001$, $\eta_p^2 = .11$; *benefit-based:* $M_{present}$ = 6.37 vs. M_{absent} = 4.72; $F(1, 408) = 56.02$, $p < .001$, $\eta_p^2 = .12$).

Shopping basket size. The results of a two-way ANOVA on the shopping basket size showed no main effect of imagery appeal ($M_{present}$ = 6.65 vs. M_{absent} = 6.20; $F(1, 408) = 1.35$, $p > .2$), and no main effect of categorization type ($M_{benefit}$ = 6.64 vs. $M_{attribute}$ = 6.22; $F(1, 408) = 1.19$, $p > .2$). Importantly, the results revealed a marginally significant interaction effect of the imagery appeal and categorization type on shopping basket size ($F(1, 408) = 3.31$, $p = .07$, $\eta_p^2 = .008$). In the absence of an imagery appeal, participants added significantly more products to their shopping basket when choosing from the benefit (vs. attribute)-based categorization ($M_{benefit}$ = 6.77 vs. $M_{attribute}$ = 5.63; $F(1, 408) = 4.23$, $p = .04$, $\eta_p^2 = .01$) replicating our previous findings. However, when an imagery appeal was present, there was no difference in shopping basket size when choosing from the benefit (vs. attribute)-based categorization ($M_{benefit}$ = 6.51 vs. $M_{attribute}$ = 6.80; $F(1, 408) = 0.28$, $p > .2$). Notably, participants choosing from the attribute-based categorization added significantly more products to their shopping basket when an imagery appeal was present (vs. absent) ($M_{present}$ = 6.80 vs. M_{absent} = 5.63; $F(1, 408) = 4.46$, $p = .03$, $\eta_p^2 = .01$). However, for participants choosing from the benefit-based categorization, there was no difference in the shopping basket size between the imagery appeal present (vs. absent) conditions ($M_{present}$ = 6.51 vs. M_{absent} = 6.77; $F(1, 408) = .21$, $p > .2$).

Alternative accounts. The findings showed no significant main effects of categorization type, no significant main effects of imagery appeal, and no significant interaction effects between the two on consumer perception of the assortment to be realistic, artificial, and novel (all p values > 0.2).

Discussion

The findings of Study 4a support our argument that the presence of imagery appeal impacts the relationship between benefit (vs. attribute)-based categorizations and consumer purchase behavior. The findings show that in the presence of an imagery appeal there is no difference between the benefit-based and attribute-based categorization on the number of products consumers choose to buy. The findings also support our argument that the presence of an imagery appeal enhances the effect of an attribute-based categorization aligning it with a benefit-based categorization.

Study 4b

In this study, we examine the moderating role of individual differences in mental imagery ability on the effect of benefit (vs. attribute)-based categorizations on the number of products consumers choose to buy. We expected the positive effect of a benefit (vs. attribute)-based categorization to be attenuated for consumers who already have high mental imagery abilities.

Method

Study 4b involved two between-subjects experimental conditions: benefit vs. attribute-based product categorization. Imagery ability was measured as a continuous variable. A total of 500 participants from MTurk (via the cloudresearch.com platform) completed the study in exchange for a standard payment (292 female, M_{age} = 42.8). They were randomly asked to engage in a shopping task from one of the two online stores that we designed. The online stores offered 20 different types of nutrition bars. In the benefit-based categorization store, products were classified into five categories based on the different benefits they offered (e.g., energy-boosting, weight loss, muscle-building). In the attribute-based categorization store, the same assortment of products was classified into five categories based on their ingredients (e.g., chocolate bar, fruit bar, nut bar; see Web Appendix G). Participants were then asked to select as many products as they would buy and we measured the number of items in their shopping basket (i.e., the shopping basket size). They also responded to two five-item manipulation check questions similar to previous studies to examine whether the implementation of benefit-based (Cronbach's alpha = .96) and attribute-based (Cronbach's alpha = .80) categorizations was effective. We measured individuals' imagery ability using the scale adapted from the Vividness of Visual Imagery Questionnaire (VVIQ, Marks 1973). Participants were presented with a series of scenarios and were asked to rate how vividly they could imagine each scenario. Item scores of the VVIQ scale were reversed so that higher values implied higher imagery ability (1 = *No image at all*, 5 = *Perfectly clear images*). This scale was used in prior research to measure individual differences in imagery ability (e.g., Ostinelli & Böckenholt 2017; Petrova & Cialdini 2005). To rule out some alternative explanations, we asked a series of questions about participants'

perception of the product categorization. We measured whether the organization of the products was perceived as "realistic", "artificial", "novel", "colorful", and "visually appealing" (1 = *strongly disagree*, 7 = *strongly agree*). Finally, participants answered demographic questions.

Results

Manipulation checks of product categorization. The findings show that the benefit (vs. attribute)-based categorization was perceived to be more focused on grouping the products based on their benefits ($M_{benefit}$ = 5.86 vs. $M_{attribute}$ = 4.07; $F(1, 498) = 259.24$, $p < .001$, $\eta_p{}^2 = .34$). By contrast, the attribute (vs. benefit)-based categorization was perceived to be more focused on grouping products based on their attributes ($M_{benefit}$ = 4.66 vs. $M_{attribute}$ = 5.43; $F(1, 498) = 80.61$, $p < .001$, $\eta_p{}^2 = .14$).

Shopping basket size. The results revealed a significant effect of product categorization on shopping basket size. Participants added more products to their shopping baskets when choosing from the benefit (vs. attribute)-based categorization ($M_{benefit}$ = 6.42 vs. $M_{attribute}$ = 5.79; $F(1, 498) = 3.99$, $p = .046$, $\eta_p{}^2 = .008$).

Moderating effect of individual differences in imagery ability. We regressed shopping basket size on the binary product categorization type (0 = attribute, 1 = benefit), the continuous imagery ability (mean-centered), and the cross-product of these two variables. The results showed a significant main effect of categorization type ($B = 0.63$, $t(496) = 2.05$, $p = .04$), but no main effect of imagery ability ($B = 0.29$, $t(496) = 1.46$, $p = .15$). More importantly, the results revealed a significant interaction effect ($B = -0.86$, $t(496) = -2.17$, $p = .03$). For participants with lower imagery ability score, the benefit (vs. attribute)-based categorization significantly increased the shopping basket size, whereas for participants with higher imagery ability score there was no significant difference between benefit-based and attribute-based categorizations on shopping basket size. More specifically, the Johnson–Neyman value indicated that participants scoring 3.67 and below on the five-point imagery ability scale (which corresponds to 54% of the sample) purchased significantly more products from the benefit (vs. attribute)-based categorization.

Ruling out alternative explanations. The results showed that the benefit-based and attribute-based categorizations were perceived similarly in terms of being realistic ($M_{benefit}$ = 5.80 vs. $M_{attribute}$ = 5.70, $p > .2$), artificial ($M_{benefit}$ = 3.03 vs. $M_{attribute}$ = 2.87, $p > .2$), novel ($M_{benefit}$ = 3.88 vs. $M_{attribute}$ = 3.7, $p = .17$), colorful ($M_{benefit}$ = 3.65 vs. $M_{attribute}$ = 3.72, $p > .2$), as well as visually appealing ($M_{benefit}$ = 5.72 vs. $M_{attribute}$ = 5.63, $p > .2$).

Discussion

The findings of Study 4b support our contention that imagery ability impacts the relationship between benefit (vs. attribute)-based categorizations and consumer purchase behavior (H3b). The results show that a benefit (vs. attribute)-based categorization increases the number of products consumers choose to buy but this effect disappears for consumers who already have high imagery abilities.

Study 5

The purpose of this final study is to test H4. We examined if there was a moderating effect of categorization breadth (broad vs. narrow categorization) on the effect of benefit (vs. attribute)-based categorizations on consumer purchase behavior. We expected the positive effect of a benefit-based categorization to be stronger for a narrower categorization and to be attenuated for a broader categorization.

Method

Study 5 was a 2 (product categorization: benefit-based vs. attribute-based) × 2 (categorization breadth: broad vs. narrow) between-subjects design. A total of 499 participants (240 female, M_{age} = 39.97) from MTurk (via the cloudresearch.com platform) completed the study. Participants were asked to engage in a shopping task from one of the four online stores we had designed. For the manipulation of broad (vs. narrow) categorization, we followed the approach by Mogilner, Rudnick, and Iyengar (2008) while the manipulation of benefit (vs. attribute)-based categorization was adapted from Lamberton and Diehl (2013). The online stores offered 36 different types of teas. In the benefit-based narrow categorization condition, products were classified into nine categories based on their benefits (e.g., weight loss, energy boost, stress relief, detox, digestive, calming). In the benefit-based broad categorization condition, the same products were classified into three categories based on the different benefits they offered (i.e., calming, health protection, energy and wellness). In the attribute-based narrow categorization condition, products were classified into nine categories based on tea type (e.g., green, black, white, mint, chamomile, ginger). Finally, in the attribute-based broad categorization condition, products were classified into three categories based on their similar ingredients (i.e., type of tea: herbal tea, spiced tea, and plain tea; see Web Appendix H). Participants were asked to select as many products as they would buy and we measured the number of items in their shopping basket (i.e., shopping basket size). We then asked two five-item manipulation check questions similar to previous studies to examine whether the implementation of benefit-based (Cronbach's alpha = .95) and attribute-based (Cronbach's alpha = .90) categorizations was effective. We also tested the manipulation of category breadth by asking participants to

respond to the following question: "How many groups/categories of products were available in the store?" (1 = *very few categories*, 9 = *too many categories*). Finally, participants responded to demographic questions.

Results

Manipulation checks of benefit vs. *(attribute)-based categorizations.* The results of a two-way ANOVA on our benefit-based manipulation check scale showed a significant main effect of categorization type ($M_{benefit}$ = 6.01 vs. $M_{attribute}$ = 4.87; $F(1, 495) = 108.67$, $p < .001$, $\eta_p^2 = .18$), a marginal effect of categorization breadth (M_{narrow} = 5.60 vs. M_{broad} = 5.36; $F(1, 495) = 2.99$, $p = .08$, $\eta_p^2 = .006$), and a marginal interaction effect ($F(1, 495) = 3.01$, $p = .08$, $\eta_p^2 = .006$). More importantly, the findings show that in both narrow and broad conditions, benefit (vs. attribute)-based categorization was perceived to be more focused on grouping the products based on their similar benefits (*narrow:* $M_{benefit}$ = 6.01 vs. $M_{attribute}$ = 5.08; $F(1, 495) = 38.77$, $p < .001$, $\eta_p^2 = .07$; *broad:* $M_{benefit}$ = 6.01 vs. $M_{attribute}$ = 4.70; $F(1, 495) = 76.38$, $p < .001$, $\eta_p^2 = .13$).

The findings of a two-way ANOVA on our attribute-based manipulation check scale showed a significant main effect of categorization type ($M_{benefit}$ = 4.79 vs. $M_{attribute}$ = 5.59; $F(1, 495) = 54.60$, $p < .001$, $\eta_p^2 = .1$), a significant main effect of categorization breadth (M_{narrow} = 5.25 vs. M_{broad} = 5.08; $F(1, 495) = 4.84$, $p = .03$, $\eta_p^2 = .01$), and a significant interaction effect ($F(1, 495) = 21.66$, $p < .001$, $\eta_p^2 = .04$). More importantly, the findings show that in both narrow and broad categorization conditions, attribute (vs. benefit)-based categorization was perceived to be more focused on grouping products based on their attributes (*narrow:* $M_{benefit}$ = 4.66 vs. $M_{attribute}$ = 6.00; $F(1, 495) = 67.49$, $p < .001$, $\eta_p^2 = .13$; *broad:* $M_{benefit}$ = 4.93 vs. $M_{attribute}$ = 5.24; $F(1, 495) = 3.93$, $p = .05$, $\eta_p^2 = .008$).

Manipulation checks of categorization breadth. The findings of a two-way ANOVA on category number perceptions showed a significant main effect of categorization breadth (M_{narrow} = 6.63 vs. M_{broad} = 3.92; $F(1, 495) = 354.06$, $p < .001$, $\eta_p^2 = .42$), but no significant main effect of categorization type ($F < 1$), and a significant interaction effect ($F(1, 495) = 8.80$, $p = .003$, $\eta_p^2 = .02$). Importantly, in both categorization type conditions, individuals who chose from the narrow (vs. broad) categorization identified a greater number of distinct categories in the store (*attribute-based:* M_{narrow} = 6.43 vs. M_{broad} = 4.17; $F(1, 495) = 117.09$, $p < .001$, $\eta_p^2 = .19$; *benefit-based:* M_{narrow} = 6.77 vs. M_{broad} = 3.67; $F(1, 495) = 254.76$, $p < .001$, $\eta_p^2 = .34$).

Shopping basket size. The results of a two-way ANOVA on shopping basket size revealed a significant main effect of categorization breadth (M_{narrow} = 7.12 vs. M_{broad} = 5.98; $F(1, 495) = 6.12$, $p = .01$, $\eta_p^2 = .01$), and a marginal main effect of categorization type ($M_{benefit}$ = 6.88 vs. $M_{attribute}$ = 6.14; $F(1, 495) = 2.85$, $p = .09$, $\eta_p^2 = .006$). More importantly, the findings revealed a significant interaction effect of category breadth and categorization type on shopping basket size ($F(1, 495) = 4.87$, $p = .03$, $\eta_p^2 = .01$). When the products were classified into narrow categories, participants added significantly more products to their shopping basket when choosing from the benefit (vs. attribute)-based categorization ($M_{benefit}$ = 7.83 vs. $M_{attribute}$ = 6.20; $F(1, 495) = 8.69$, $p = .003$, $\eta_p^2 = .02$); whereas when the products were classified into broad categories, there was no difference in shopping basket size when choosing from the benefit (vs. attribute)-based categorization ($M_{benefit}$ = 5.87 vs. $M_{attribute}$ = 6.09; $F(1, 495) = 0.15$, $p > .2$).

Discussion

The findings of Study 5 support H4. The results show that categorization breadth (broad vs. narrow) impacts the relationship between benefit (vs. attribute)-based categorization and consumer purchase behavior. A benefit (vs. attribute)-based categorization can increase the number of products consumers choose to buy when the products are classified into narrower categories, but it is less effective when the products are classified into broader categories.

General discussion

Retail markets are becoming more and more competitive, and retailers must differentiate themselves by providing the best possible shopping experience to their consumers (e.g., Becker & Jaakkola 2020; Dekimpe 2020; Hagtvedt & Chandukala 2023; Kumar, Anand & Song 2017). In the current research, we explore product categorization as a common product display tool that retailers use to organize their products and assist consumers during their decision-making. Some of the prior research examined across-category organizations when items from multiple product types are grouped together, such as complement (vs. substitute)-based categorization, or goal-derived categorization (e.g., Diehl, Van Herpen & Lamberton 2015; Sarantopoulos et al. 2019) (see Table 1). We focus on the categorization within a single product category and distinguish between benefit-based and attribute-based product categorizations and show that each can differentially impact consumer mental imagery and purchase behavior. Evidence from eight studies (two of which were conducted in field settings and a supplemental study reported in Web Appendix B) shows that a benefit (vs. attribute)-based categorization increases the number of products consumers choose to buy. The effect occurs because being exposed to a benefit (vs. attribute)-based categorization can enhance mental imagery of product use and the anticipated consumption value.

Our research makes several theoretical contributions. We demonstrate that product categorization not only influences attitudinal measures but also consumer in-store purchase behavior. We show that a benefit-based categorization, compared to an attribute-based categorization, can increase the number of products consumers choose to buy in a store. Furthermore, we contribute to the literature on mental imagery (Elder & Krishna 2021; MacInnis & Price 1987) by showing that compared to

an attribute-based categorization, a benefit-based categorization can enhance consumer tendency to imagine using products during the purchase decision process, which in turn positively impacts their anticipated consumption value and purchase quantity. Prior research has shown the effect of different cues in the shopping environment on evoking mental imagery (e.g., Lee & Gretzel 2012; Roggeveen et al. 2015; Yoo & Kim 2014; Zhao & Xia 2021). We contribute to this research stream and demonstrate that mental imagery can be also facilitated through a benefit (vs. attribute)-based product categorization. To the best of our knowledge, no research has examined the effect of these product categorizations on mental imagery. In line with this, we illustrate that the presence of imagery appeals can qualify the effect of a benefit (vs. attribute)-based categorization. We show that incorporating an imagery appeal can help to enhance the effect of an attribute-based categorization aligning it with a benefit-based categorization. Hence, we add to the literature on strategic use of imagery appeals (e.g., Ostinelli & Böckenholt 2017) by showing the impact of imagery appeals in combination with a product categorization on consumer purchase behavior. Furthermore, we demonstrate that a benefit (vs. attribute)-based categorization has a higher impact among people who have lower imagery abilities, but its effect will be attenuated for people who already have higher imagery abilities. By doing so, we highlight the significance of individual cognitive traits in shaping consumer responses to product categorization. Finally, we qualify and extend past research (Mogilner, Rudnick & Iyengar 2008) by showing that it is not just the number of categories that can influence consumer purchase behavior but also the nature of those categories. We show that the type of categorization (benefit vs. attribute-based) interacts with the effect of the number of categories (broad vs. narrow categorization) on consumer purchase behavior.

Our research also has several methodological strengths. We operationalized benefit-based and attribute-based categorizations in different settings. We gathered data from two field studies in large supermarkets in metropolitan areas and observed consumers' in-store purchase behavior while they were exposed to benefit-based or attribute-based categorizations. We also conducted six experiments in controlled settings and examined participants' reactions to benefit-based and attribute-based categorizations of products in online stores. We tested our hypotheses using different product categories such as yogurt, spreads, tea, and nutrition bars in both online and brick-and-mortar stores.

Managerial implications

Our findings have significant managerial implications. As a common technique in the marketplace, and as confirmed by our primary field investigation (see Web Appendix A), brick-and-mortar retail stores classify the majority of products based on their similar features (i.e., attribute-based categorization). Our findings show that retailers can achieve desirable outcomes such as increasing the anticipated value of using products and additional sales if they implement benefit-based categorizations. Moreover, our findings offer valuable insights into different strategies that retailers can employ to enhance the impact of different product categorization schemes. For example, our research guides marketers in tailoring their marketing communication strategies to align with the product categorization. This could be especially important in instances where restructuring product categorization is challenging (e.g., implementing a benefit-based categorization is difficult). Our findings suggest that retailers can enhance the intended effects of attribute-based categorizations by integrating imagery appeals (i.e., advertisements that stimulate consumer imagination). Furthermore, with targeted short surveys, marketers can identify customer segments with distinct imagery abilities and tailor their categorization strategy accordingly. Indeed, understanding the impact of imagery appeals and customer imagery ability on the effect of product categorization can help allocate the merchandising and advertising budgets more effectively. Finally, our findings can be used by marketers or policy makers who wish to contribute to consumer welfare. The results of our studies demonstrate that a benefit-based categorization of specific (e.g., healthy, sustainable) products could encourage consumers to buy more items from these product categories. In the same vein, positive marketing efforts could be implemented to reduce the purchase of potentially harmful and unsustainable products by implementing category management that relies on attribute-based, rather than benefit-based, presentation of the available offerings.

Limitations and future research

In assessing the contribution of our research, we acknowledge several limitations. Across our field studies, our access was restricted to specific sets of products, limiting us to use certain categories based on the available assortment. For example, we used flavor as the main attribute, but we could not focus on more distinct attributes. Furthermore, we examined the effect of benefit-based categorizations within a single product category (e.g., yogurt, spreads) on the number of products consumers selected to buy. We did not examine sequential purchase behavior, and our access to the store-level sales data was limited. Our findings suggest that enhanced mental imagery of product use is an underlying reason for increased purchase quantity in benefit-based product categorizations. However, we have less knowledge of how this effect plays out dynamically in sequential consumer decisions in multiple product categories (e.g., after an initial choice from a benefit-based product category in a supermarket aisle, visiting another aisle where a different product category is not necessarily categorized by benefit). Future research can thus examine the spillover effect of exposure to a benefit-based categorization on changes in consumer decisions in subsequent, and possibly unrelated, shopping tasks. Furthermore, we investigated consumer purchase behavior on a single shopping trip in retail stores. Consumers might intend to revisit a particular store if they had previously had a positive shopping experience with it. It would be interesting to examine whether consumers

would visit a store more frequently and develop increased retailer loyalty if they had found its product display more appealing. To investigate these new research areas, further research could benefit from the use of consumer panel data to learn more about the long-term effects of categorization strategies on store patronage. Finally, in this research our primary dependent variable was the number of products consumers decided to purchase, a metric more relevant to non-durable, rather than durable, consumer goods. Given that our findings indicate that the effect of benefit-based categorization is attributed to enhanced mental imagery and anticipated value, we expect that consumers would be more inclined to pay a premium for durable products, as they would anticipate an even greater value. Further exploration of this area opens exciting avenues for future research.

Declaration of competing interest

None.

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Supplementary materials

Supplementary material associated with this article can be found, in the web appendix, at doi:10.1016/j.jretai.2024.01.001.

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