

MASTER THESIS

THE WEIGHT OF TASTE

An experimental study on the influence of visual heaviness on
consumer responses for soft drinks packages



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An experimental study on the influence of visual heaviness, communicated through visual dynamism and visual positioning on the package, on taste experiences, package attractiveness, and purchase intention for light and regular soft drink packages.

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Abstract

Consumers are exposed to a variety of brands in supermarkets, all with packaging characteristics that try to communicate their benefits and product qualities. One of the essential determinants in the customer decision-making is the taste of a particular product. However, there are no possibilities to experience this at the point of purchase, as a consequence, consumers use packages to infer the product characteristics. Studies show that visual characteristics of packages can communicate weight features and that this, in turn, influences consumer responses. This study aimed to examine whether visual heaviness, communicated through visual dynamism and visual positioning on the package, influences consumer responses for light and regular soft drinks. This study uses a 2 (dynamic visual vs static visual) x 2 (positioning on top vs positioning on the bottom) x 2 (light soft drink vs regular soft drink) experimental research design to research the various conditions. The study is a between-subjects research, and all the participants were randomly assigned to one of the eight experimental conditions ($N = 240$). The consumer responses in this study are taste experience, including basic taste evaluations, taste intensity, taste naturalness, nutritional value, and taste liking. The other consumer responses are package attractiveness and purchase intention. Participants of this research were approached in the hallway of a shopping mall and tasted the soft drink. After that, the respondents evaluated the package, which was demonstrated on an a4-display and filled out an online questionnaire. The results demonstrated that heaviness by a static visual had a direct positive impact on the taste intensity. Whereas, lightness by dynamic visuals had a direct positive influence on taste naturalness, nutritional value, taste liking, package attractiveness, and purchase intention. By contrast, heaviness cues by visual positions positively affected the nutritional value of the drink. Moreover, interaction effects were found for bottom positions and regular drinks for taste intensity. Also, three-way interactions were found for the congruent combination communicating lightness by a dynamic visual positioned on the top of the package for a light drink on the package attractiveness and purchase intention. Whereas, the incongruent combinations for the regular drink with a dynamic visual positioned on the bottom of the package had a greater effect on package attractiveness and purchase intention. This study proves that lightness by dynamism in visuals can influence consumer responses, by contrast, limited effects are visible for visual positions as weight cues. The results of this research contribute to the field of research in packaging design by highlighting the effects of visual dynamism and visual positions as cues for visual heaviness and its effects on consumer responses. Besides, this study provides practical implications for marketers as it is possible to communicate product benefits through the use of dynamic visuals and visual positions.

Keywords: *Visual packaging design, dynamic visuals, location effect, visual heaviness, soft drinks, crossmodal correspondence, consumer responses*

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1. Introduction

Imagine that you are walking through the supermarket aisle, looking left and right you are exposed to a wide variety of resembling products. The shelves are filled with different brands all screaming for your attention, which makes the shopping task challenging (Underwood, Klein, & Burke, 2001; Van Ooijen, Fransen, Verlegh, & Smit, 2017b). Customers do not think intensively about all the available brands before entering the supermarket, and as a consequence, the package becomes very important in the customer decision-making process (Silayoi & Speece, 2007). Clement (2007) states that approximately 70% of the food choices are made within the supermarket, supporting the importance and the influence of packaging on decision-making. Eventually, we make a choice, but what influences our choice?

Product packaging has a vital role in the conscious and subconscious communication of food choice motives. From a customer perspective, the product package is the first thing one is exposed to before making a purchase decision (Ampuero & Vila, 2006). The practical function of packaging is to protect and preserve the product, besides packaging increases the shelf-life of products, makes it easy to display, and serves as a convenience purpose for specific product categories (Hawkes, 2010; Silayoi & Speece, 2004). However, from a marketing perspective, the function of packaging is different: it serves as a silent salesperson (Van Ooijen, Fransen, Verlegh, & Smit, 2017a). Packages identify the product characteristics and communicate the product qualities (Ampuero & Vila, 2006). Based on the packaging characteristics customers can make assumptions about the content. Businesses try to distinguish oneself from other brands by creating attractive packages to communicate the benefit(s) of their products and to draw the attention of the customer (Ampuero & Vila, 2006; Bui, Tangari, & Haws, 2017; Chandon & Wansink, 2007; Krishna, Cian, & Aydinoglu, 2017). Packages that fit the product characteristics help customers to form a suitable product expectation and evaluation (Velasco, Salgado-Montejo, Marmolejo-Ramos, & Spence, 2014).

Taste is an essential determinant for acquiring a particular product. However, the taste is an experience attribute, and it is generally not possible to experience this at the point of purchase (Wansink, Ittersum, & Painter, 2004). Therefore, customers use other available cues to make inferences about the product, such as visual characteristics of packages (Deliza, Macfie, & Hedderly, 2003). To facilitate their decision making, customers tend to associate various available elements, such as packaging characteristics and taste, with another to make a choice. Hence, packaging features help customers to judge the content of the product and shape their expectations about the taste. The occurrence of crossmodal correspondence explains this phenomenon (Spence, 2016).

Weight can transfer taste sensations; for instance, heavy packages trigger intense flavour ratings and positively affect consumer responses (Kampfer, Leischnig, Ivens, & Spence, 2017). Moreover, studies show that visual appearances of products contribute the most to positive product experiences (Fenko, Schifferstein, & Hekkert, 2010). Various researches demonstrate the influence of movement in visuals on attitudes towards the brand, level of engagement, purchase intention, appeal, and sensorial perceptions as weight and smell (Cian, Krishna, & Elder, 2014; van Rompay, Fransen, & Borgelink, 2013; Westerman et al., 2013). Not only visuals but also the position of visuals affect weight perceptions, nutritional values, intensity, quality and, purchase intention (Deng & Kahn, 2009; Fenko, de Vries, & van Rompay, 2018; van Rompay et al., 2013). The so-called location effect causes that visuals on particular positions appear heavier than the identical visual on a different position (Deng & Kahn, 2009). Furthermore, the impact of visual positions tend to be different for various product types and communicate different product information (Deng & Kahn, 2009).

Previous studies merely focussed on communicating weight of a product by physically manipulating weight, in order to influence perceptions and affect consumer responses. Moreover, various studies centre their research on either dynamism in visuals or visual positions to research the influence on individual sensorial perceptions and product evaluations. Nevertheless, limited research is available about visual heaviness to transfer weight inferences and to influence consumer responses such as taste experience. As a contribution

to the field of research in packaging design, this study will focus on communicating weight through visual characteristics on consumer responses for two different types of drinks. This study aims to understand how dynamism (dynamic visual vs static visual) and the position of the visual on packages (top position vs bottom position) affect weight perceptions and influence consumer responses for different soft drinks (light soft drink vs regular soft drink). Studies show that the weight of a product is closely related to the type of product, as light products are linked to lightness whereas regular products are related to heaviness (Deng & Kahn, 2009; Karnal, Machiels, Orth, & Mai, 2016). For this reason, light and regular products will be used to analyse the interaction effects of visual heaviness and the soft drink on consumer responses.

The consumer responses in this study are taste experience, which consists of basic taste evaluations (sweet, sour, bitter, and salty), taste intensity, taste naturalness, nutritional value, and taste liking. Other consumer responses are package attractiveness and purchase intention. This study uses a 2 x 2 x 2 experimental research design to analyse the various conditions and their effects. This research uses soft drink packages to analyse the various conditions, for soft drinks, are fast-moving consumer goods and do not require much cognitive processing. Notably, the purchase intention for fast-moving consumer goods is determined by the communication at the point of purchase (Silayoi & Speece, 2007). By understanding the influence of the variables dynamic visuals, visual positions, and drink type on consumer responses, businesses can optimise their product packaging designs to influence expectation, choice, and perceptions positively, eventually leading to an increase in revenues. Hence, the central research question of this study is as follows:

“To what extent does visual heaviness, communicated through visual dynamism and visual positioning, on a package influence taste experience, package attractiveness, and purchase intention for light and regular drinks?”

This report consists of five parts. The next section of this report introduces the theoretical framework and presents the conceptual framework of this experimental study. Subsequently, a description of the methodology used for the preliminary studies is given. After that, the main study and the findings of the experiment are presented. In the final chapter, the concluding remarks are discussed and implications, as well as recommendations for further research, are pointed, and this report concludes with a general conclusion.

2. Theoretical framework

This theoretical framework addresses the relevant literature regarding the study. This chapter elaborates on the effects of visual appearance on taste, visual characteristics and weight, the influence of product types, and congruency effects. Moreover, the hypotheses regarding the subjects in the research are formulated in this section of the paper. The last section of this chapter focusses on the design of this study.

2.1 Visual appearance and taste

A significant number of products that are sold in supermarkets are packaged products. The visual appearance of the product becomes essential in the customer decision-making process. Studies show that visual appearances of products contribute the most to positive product experiences (Fenko et al., 2010). The human brain is potent; it interprets new information and can combine this with previous interactions and information that was already stored in mind. The combination of new cues and existing information helps customers to form expectations and to draw conclusions (Piqueras-Fiszman & Spence, 2015). Expectations of a product communicate the characteristics that can be associated with the item or specific attributes the item has (Cardello & Wise, 2008). Previous consumptions and prior shopping experiences also affect one's expectations about a product. Therefore expectations tend to be subjective (Cardello & Wise, 2008; Garber, Hyatt, & Boya, 2008; Piqueras-Fiszman & Spence, 2015). For this particular reason, it is of great essence that a product satisfies the expectations. On the other hand, it is also crucial that the product sets the right expectations. After experiencing the product, the expectations can be confirmed or disconfirmed (Spence, 2015).

Taste expectation is a critical determinant at the point of purchase, and this eventually affects, evaluation, choice, purchase intention, and consumption (Bialkova, Sasse, & Fenko, 2016; Schifferstein, Fenko, Desmet, Labbe, & Martin, 2013; Zandstra, de Graaf, & Van Staveren, 2001). Nevertheless, the taste is a somewhat ambiguous concept since it is a unique sensation for it is not only determined by the taste receptors on the tongue (Elder & Krishna, 2010). The olfaction of a product influences taste, besides the look of a product, and feel of a product in the mouth as well as in the hands are influential. Hence taste sensation includes multiple sensory elements (Elder & Krishna, 2010; Mizutani et al., 2010; Spence, 2015; Stewart & Goss, 2013). The experience of taste can be divided into five qualities: sour, bitter, sweet, salty, and umami (i.e. savouriness) (Cardello & Wise, 2008; Krishna, 2012). Additionally, the magnitude of the taste and the liking of the product influence how humans experience taste (Cardello & Wise, 2008). Nonetheless, Elder and Krishna (2010) advocate that taste is also affected by external characteristics, such as the environment, the context, and advertising (Stewart & Goss, 2013).

The visual appearance of a package provides information about the product attributes at the point of purchase and during consumption (Silayoi & Speece, 2004). Kahneman (2011) argues that "human behaviour, in general, is not driven by deliberation over the consequences of actions but is in no small extent automatic cued by environmental stimuli, resulting in actions that are mostly unaccompanied by conscious reflection (as cited in Tijssen, Zandstra, de Graaf, & Jager, 2017) (p.46), which might serve as an explanation of why the choice for low involvement products, such as food in supermarkets, are generally made at the point of sale. Furthermore, this indicates the importance of communication and information at the point of purchase.

In line with those mentioned earlier, various studies have demonstrated the influence of packaging design on consumer responses. Deliza et al., (2003) found that visuals on fruit juice packages had an impact on the sweetness, freshness, and naturalness expectation of the juice. Whereas Mizutani et al., (2010), found that visuals also affect taste evaluation of juices regardless of the congruency between the visual and the juice. Becker et al. (2011) demonstrated that angular yoghurt packages positively contribute to the perceived taste intensity compared to round yoghurt packages. Similarly, Velasco et al. (2014) studied the influence of round and angular characteristics on packages and sounds to transfer information about the taste of a

product. Their study showed that round characteristics communicate sweet tastes and angular characteristics sour tastes. Fenko et al. (2018) found that positioning a visual on the bottom of the package has a positive effect on the perceived strength of the coffee and the purchase intention. Another study found that consuming yoghurt from heavy bowls impacted density, price expectations, intensity, and liking (Piqueras-Fiszman, Harrar, Alcaide, & Spence, 2011).

The crossmodal correspondence explains the effects of packaging on consumer responses. Spence (2016) reports that “cross-modal correspondences have been defined as the surprising cross-sensory associations that many of us share between seemingly unrelated dimensions of experience in different sensory modalities” (p.8). Humans are inclined to link the characteristics of one modality (e.g. packaging characteristics) with the characteristics of another modality (e.g. consumer responses). Consequently, customers attach symbolic meaning to packages in which customers utilise available symbolic information derived from packaging characteristics to infer the contents of the package (Becker et al., 2011). Eventually, packaging aims to positively influence the decision-making of the customer and affect purchase behaviour. An explanation for this is that in general vision is the most potent sense of humans because it is often the first feature to which the customer is exposed to (Krishna, 2012). Accordingly, visual appearance includes a wide range of characteristics, and this study will focus on the usage of visuals on the package for taste is likely to be influenced by external elements such as visual characteristics of the package.

2.2 Visual heaviness

Visuals on packages are vivid characteristics making them very useful (Underwood et al., 2001). Spence (2016) claims that visual characteristics on packages are the essential sensory elements that can influence the success or the failure of the product. Generally, visuals are still images, however, due to their design features they can connote some sense of movement although numerous studies showed that visuals and their positions are closely related (Cian et al., 2014; Deng & Kahn, 2009; Fenko et al., 2018).

Visual imagery, moving visual, and dynamic imagery, these are all terms that are used for a static image that conveys a sense of movement without actually moving (Cian et al., 2014). The human mind continues the movement in the visual, leading to an increase in the customer engagement and ultimately to a favourable attitude towards the brand (Cian et al., 2014; Krishna, Cian, & Sokolova, 2016). Important to note, actual fast-moving animations are part of daily interactions in the human world. Therefore, Cian and colleagues (2014) emphasise that “it is unlikely that a static visual would generate enough perceived motion to be classified as extremely dynamic” (p. 188). Both the visual content and visual shape, are significant for influencing the evaluations as well as the behaviours (Cian, Krishna, & Elder, 2015). As a consequence, dynamic visuals are considered lightweight, since these visuals connote the idea of movement and demonstrate that they are not affected by gravity. While on the contrary, static visuals that do not express movement and are influenced by the effects of gravity are related to heaviness (Van Rompay et al., 2014).

To exemplify, Westerman et al. (2013) conclude that graphics with upward oriented characteristics positively influence the purchase intention, the appeal, and are perceived as being pleasant, in contrast to downward oriented graphics. Similarly, van Rompay, Fransen, and Borgelink (2013) studied the effects of a package with dynamic elements on sensorial perceptions, such as weight and smell. They observed in their study concerning the effects of dynamic imagery on washing power packages that the smell of the product was perceived as less dense when the image on the packaging showed upward movement, in contrast to downward movement. It is significant to take into account that this effect solely appeared for elements in the upper part of the package that illustrated upward movement, thus the position on the package is noteworthy.

Another determinant for weight perception is the associations that humans have with visual positions, also known as the location effect. Deng & Kahn (2009) state that a visual can occur heavier in a particular

position of the package, whereas the same visual on the other position does not. Packaging visuals positioned on the bottom, right, and bottom-right are indicated as dense positions and are perceived as being heavy. By contrast, visuals positioned on the top, left, and top-left are perceived as light positions and are seen as lighter. Generally, heaviness is disliked and seen as unfavourable, unless, the weight has a positive relation with taste, then heaviness is considered as positive (Deng & Kahn, 2009). Deng and Kahn (2009) found that for snacks, such as chocolate cookies, heaviness positions are preferred for these positions indicate that the snacks are rich in taste. In most cases, positive assumptions are related to upper positions, such as lightness and freedom. Whereas, negative assumptions are related to below, such as heaviness and constraint (Kandinsky, as cited in Van Rompay, 2008). Humans tend to associate things that go up or are on top, with lightness since it requires little effort. On the contrary, items that are on bottom positions are associated with being heavy (Van Rompay et al., 2014).

The experiences mentioned above are grounded in everyday bodily experiences. Embodied cognition contributes to the understand how visual characteristics influence the way humans experience weight. The concept states that bodily experiences, situated actions, and mental stimulations are part of cognitive representations (i.e. a mental representation) of something that is somewhat ambiguous (Barsalou, 2008). Gravity has a significant role in the explanation for these perceptions because items that do not weigh much drift upward (e.g. balloon) and bulky items stick on the ground (Deng & Kahn, 2009). The literature suggests that visual characteristics can infer the weight of a product (Karnal et al., 2016). Accordingly, it is assumed that static visuals and bottom positions for visuals communicate heaviness, and dynamic visuals and top positions communicate lightness to affect consumer responses.

Not much is known about the influence of weight on basic taste evaluations. However, there might be a link with similar researches in the field of packaging design. For instance, Deroy and Valentin (2011) found that the taste of beer for voluminous and round shapes was considered as sweet, whereas angular shapes and lightness were linked to bitterness. Elaborating on this understanding, lightness might be probably somewhat related to angularity. Other studies found that angular shapes are associated with sourness, bitterness, and saltiness (Fenko, Lotterman, & Galetzka, 2016; Hanson-Vaux, Crisinel, & Spence, 2013; Velasco et al., 2014; Wang, Reinoso Carvalho, Persoone, & Spence, 2017). Considering the knowledge of previous studies, it might be that visual heaviness reinforces sweetness perceptions of the drink and visual lightness reinforces sourness, bitterness, and saltiness. Nonetheless, this study does not expect any effect of visual heaviness on the basic taste evaluations.

Another taste characteristic is taste intensity. Piqueras-Fiszman et al., (2011) affirm the effect of heaviness on taste intensity. Their study found that increasing the weight of a yogurt bowl increased the taste intensity in contrast to lighter yogurt bowls. Likewise, Kampfer et al., (2017) conducted studies with chocolate packages and soft drink cans, in both the studies, they prove that increasing the weight of the package positively influences taste intensity. This assumption is based on the metaphor that heavy indicates intense (Karnal et al., 2016). Given the influence of weight on taste intensity, this study assumes that taste intensity will be positively affected by heaviness cues as static visuals and bottom positions.

The taste characteristic taste naturalness can be described as something natural without additives and artificial substances (Piqueras-Fiszman, Ares, & Varela, 2011). Since dynamism communicates lightness and is seen as positive and favourable, dynamic visuals and top positions likely contribute to the perceived taste naturalness in contrast to static visuals and bottom positions (Deng & Kahn, 2009). Nutritiousness, on the contrary, is likely closely related to heaviness because these items are generally considered as being satiating and filling (Karnal et al., 2016). Also, altering the weight of a package can affect the presumed satiety even before tasting the food (Piqueras-Fiszman & Spence, 2012). As for taste liking, it has been proven that increasing the weight of a yoghurt bowl increases taste liking (Piqueras-Fiszman, Harrar, et al., 2011). Piqueras-Fiszman, Harrar, Alcaide, and Spence (2011) found in their study that the heaviness of the bowl affected the density of the yoghurt in the mouth, eventually affecting the perception of satiety of the product. Generally, satiating products are considered as being enjoyable and tasteful (Raghunathan, Naylor,

& Hoyer, 2006; Vadiveloo, Morwitz, & Chandon, 2013). For this reason, it is expected that staticity and bottom positions are positively related to taste liking. Since heaviness is arguably related to unhealthiness it can be argued that heaviness is positively correlated with taste liking (Raghunathan et al., 2006). Despite the relation of heaviness and taste liking, Deng and Kahn (2009) demonstrate that favourable attitudes and positive assumptions are related to lightness, whereas heaviness induces unfavourable attitudes and negative assumptions. Therefore, it is likely that package attractiveness and purchase intention are positively influenced by visuals that communicate lightness, thus a dynamic visual and a top visual position.

Visual heaviness can be communicated by use of visual characteristics. This study uses dynamic visuals to communicate lightness and heaviness is communicated by the use of a static visual. This study positions the visual on the bottom to indicate heaviness and visuals on top positions indicate lightness. Considering the literature, it is assumed that a static visual on a bottom position is the heaviest and a dynamic visual on a top position the lightest. Furthermore, a static visual on a top position is considered as being heavier than a dynamic visual on a bottom position and a dynamic visual on a top position, but lighter than a static visual on a bottom position. Likewise, a dynamic visual on a bottom position is heavier than a dynamic visual on a top position but lighter than a static visual on a bottom position and a static visual on a top position. Thus, the subsequent hypotheses are developed:

- H1:** A static visual, as opposed to a dynamic visual, on the package will result in higher perceived (a) *taste intensity*, (b) *nutritional value*, and (c) *taste liking*.
- H1:** A dynamic visual, as opposed to a static visual, on the package will result in higher perceived (d) *taste naturalness*, (e) *package attractiveness*, and (f) *purchase intention*.
- H2:** A package with a visual on a bottom position will positively influence perceived (a) *taste intensity*, (b) *nutritional value*, and (c) *taste liking* compared to a package with a visual on a top position.
- H2:** A package with a visual on top a top position will positively influence perceived (d) *taste naturalness*, (e) *package attractiveness*, and (f) *purchase intention* compared to a package with a visual positioned on the bottom.

The studies illustrate that visuals and their positions are closely related; both tend to affect another, eventually influencing consumer responses. These visual characteristics likely affect the perceived weight of a product, for they are capable of transferring symbolic meaning, causing sensation transference (Kampfer et al., 2017; Karnal et al., 2016). The perceived weight of a product also depends on the product type. The following part identifies the two product types of this research.

2.3 Drink type

The weight of a product is closely related to the type of product, meaning that consumers do not always associate heaviness with unfavourable attitudes and lightness with favourable attitudes (Deng & Kahn, 2009). To illustrate, Deng and Kahn (2009) demonstrate that heaviness is a positive attribute for regular products (i.e. cookie). Consequently, consumers have a preference for visual characteristics that indicate heaviness. On the contrary, for lighter products (i.e. crackers), consumers prefer visual characteristics that do not indicate heaviness. Given this knowledge, it is likely that consumers match the product characteristics with the visual characteristics.

Groups of consumers can be segmented based on their food preferences and attitudes towards foods. From a marketing perspective, segmentation is useful to target specific products to the right group of consumers (Roininen, Lähteenmäki, & Tuorila, 1999). Observing the available products in supermarkets, it is noticeable that a considerable number of regular products are also available in a light version. Light products generally contain less sugar, fat, and other additional ingredients. Consumers tend to classify food into healthy and unhealthy categories, in which light versions are considered as being healthier as compared to the regular

version of the product (Chandon & Wansink, 2007; Chernev & Gal, 2010; Tijssen et al., 2017). Additionally, Karnal et al. (2016) report that consumers tend to associate unhealthy food with heaviness and healthy foods with lightness. A justification for this appearance is that “unhealthy items lie heavy on the stomach and are perceived as being filling” (p. 107). The opposite likely applies to light products and healthy products. Similarly, consumers prefer static visuals and visuals on a bottom position (heavy) for unhealthy products, and dynamic visuals and top positions (light) for healthy products (Deng & Kahn, 2009).

However, various researches show that light products are evaluated as less tasty compared to the regular version of the product. Raghunathan, Naylor, and Hoyer (2006) demonstrate that customers, without actually being aware of it, evaluate the taste of unhealthy products higher and enjoyment is higher while consuming the food. Moreover, customers find regular products satiating in comparison with the healthier light version (Vadiveloo et al., 2013). Thus, light products are healthier but negatively the taste evaluation and are perceived as being less rewarding (Fenko et al., 2016; Tijssen et al., 2017). Healthy choices are related to healthfulness and little calories. By contrast, humans see unhealthy products as high in calories, temporary desire, and pleasurable taste (Katariina Roininen & Tuorila, 1999). The tasty = unhealthy intuition serves as an explanation for this occurrence, claiming that healthiness and tastiness of foods are conversely related. (Raghunathan et al., 2006). Eventually, this notion influences customers' choice for specific products.

Due to the assumptions as mentioned earlier, one can advocate that consumer experiences for light and regular products differ from another. This study aims to indicate the differences between light and regular soft drinks. It expects that consumers prefer light visual characteristics (dynamic visual and top position) for light products, and this will, in turn, positively affect the consumer responses towards the product as a consequence. On the contrary, suggestions are that heavy visual characteristics (static visual and bottom position) are preferred for regular products and positively affect the consumer responses. The match between the drink type and visual characteristics is closely related to the concept of congruency; for this reason, the next section discusses the effects of congruency.

2.4 Congruency effects

Humans prefer stimuli that do not need much cognitive processing, and they like items that are simple to deal with (Spence & Velasco, 2018). Packaging characteristics can activate automatic processing or make sense to the consumer when they match the expectations or the product itself (Van Ooijen et al., 2017a). Besides, when different product characteristics are in harmony, consumers can effortlessly form a logical opinion about the product, as congruency makes information processing easier (Fenko & Van Rompay, 2018). Here again, the crossmodal correspondence explains this phenomenon.

Various studies showed the effects of corresponding elements in packaging design. For instance, Fenko, Lotterman, and Galetzka (2016) demonstrated that consumers prefer cookies that connote congruency between the sound of the name of the product and the shape of the product (e.g. angular cookies named Asahi and round cookies named Ramune). Furthermore, their study proved that consumers prefer congruency between the brand name and the type of product, such as Ramune butter cookies instead of Ramune muesli cookies. Another study, regarding congruency between the logotype and the logo symbol by Salgado-Montejo, Velasco, Olier, Alvarado, and Spence (2014) found that consumers associated high congruency with pleasure, interest, fun, and happiness. It is suggesting that high levels of congruency evoke positive emotions, in contrast to low levels of congruency (Salgado-Montejo et al., 2014). Similarly, Deng and Kahn (2009) demonstrate that consumers prefer visuals positioned on bottom positions for unhealthy products and visuals positioned on top positions for healthy products. Given this perspective, regular products are classified as unhealthy and light products as healthy, congruency between the visual characteristics and product type influences the consumer evaluations.

The prior studies prove that harmonious combinations have a positive effect on the evaluative consumer responses. Therefore, this study considers congruency between the visual elements and drink type as influential for package attractivity and purchase intention. As a consequence, corresponding elements in the packaging design, such as positioning a dynamic visual on top for a light product will lead to positive evaluative responses. Likewise, a regular product with a static visual positioned on the bottom of the package will generate positive responses for package attractivity and purchase intention. The expectations are that visual characteristics (visual dynamism and visual position) strengthen each other when they are congruent. For this reason, the following interaction hypothesis is stated:

H3: Package attractiveness and purchase intention will be evaluated higher when the combination of visual characteristics and drink type are congruent, as opposed to an incongruent combination of visual characteristics and drink type.

2.5 Research design

This study researches whether visual heaviness for light and regular drinks influences taste experiences, package attractiveness, and purchase intention. Also, this study assumes that congruency between the independent variables positively affects the evaluative consumer responses: package attractiveness and purchase intention. Based on the prior theories and hypotheses, the research design, as demonstrated in Figure 1, is proposed. The independent variables of this research are visual dynamism (static visual vs dynamic visual), visual position (top position vs bottom position), and drink type (light soft drink vs regular soft drink). The dependent variables of the research are taste experience, subdivided into basic taste evaluations, and this includes sweetness, sourness, bitterness, saltiness. The remaining taste variables are taste intensity, taste naturalness, nutritional value, and taste liking. The other dependent variables are package attractiveness and purchase intention. This study categorizes and refers to the dependent variables as consumer responses.

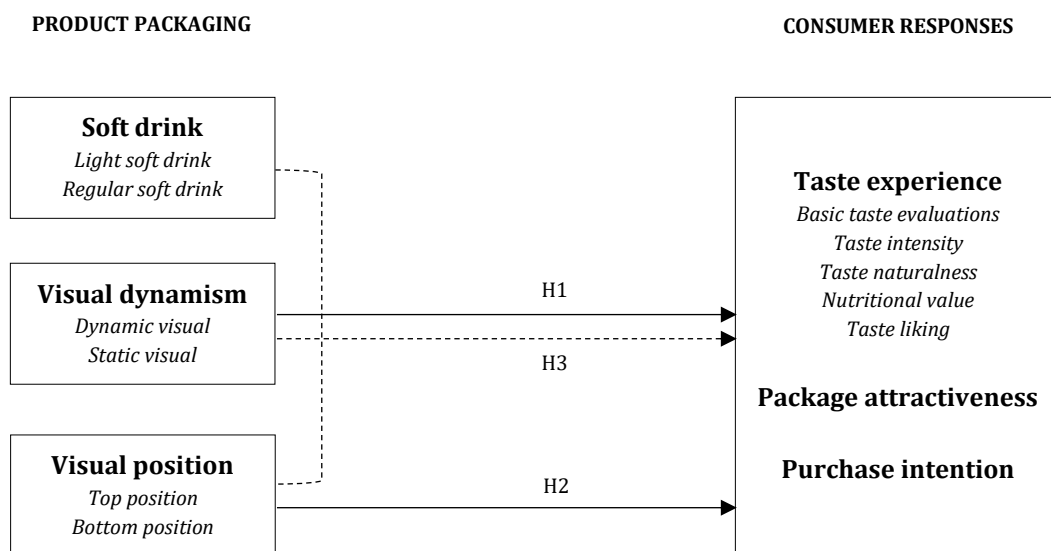


Figure 1. Research design with independent and dependent variables.

3 Method preliminary studies

This study aims to analyse whether dynamism in visuals and its positioning on a package influences consumer responses, and to what extent this applies to light and regular products. Before executing the main test, two preliminary studies were conducted. This chapter elaborates on the procedure, and the outcomes of the two preliminary studies, based on the outcomes the final stimulus materials for the main study are developed.

3.2 Procedure preliminary study 1

A preliminary study was conducted in order to select and develop strong stimuli for the main test. It is of great essence that the visuals used for the main study, are unambiguous to the participants and communicate the intended message. This preliminary study evaluates if the respondent perceives deliberate manipulation in visual dynamism. The non-carbonated soft drinks used in the main test are raspberry flavoured. For this reason, seven pairs of raspberry visuals were created to match the product. Besides this preliminary study measured the suitability and the attractiveness of the pairs. The questionnaire of the preliminary study can be found in Appendix 1.

The respondents were selected by non-probability sampling and were recruited via social media (e.g. Instagram). Besides, respondents were asked to spread the link of the questionnaire to gather significantly more responses and to create a snowball effect. Consequently, twenty eight participants ($N = 28$) participated in the preliminary test, including 19 female (67.9%) and 9 male (32.1%) respondents. The participants were between 17 and 57 years old ($M = 25.54$).

3.2.1 Level of dynamism

The use of one item measured the level of dynamism in the visual: “this image connotes movement” (Van Rompay et al., 2013). The respondents had to indicate on a 7-point Likert-scale, ranging from “1= totally disagree” to “7 = totally agree”, to what extent they agree on the statement. Low scores indicate that the visual connotes little to no movement, considering it a static visual. On the contrary, a high score means that the visual connotes primarily to fully movement making it a dynamic visual. All the designs incorporated a dynamic version and a static version of the identical visual, and this resulted in seven pairs of visuals. The respondent was exposed to the pairs and had to answer the level of movement per visual of the pair. Appendix 2 provides an overview of the pairs that are used for this preliminary test.

After analysing the mean scores of the visuals, the difference between the mean scores of the static and dynamic visual is calculated per pair. The calculation demonstrated that the contrast between the static visual ($M = 2.68$, $SD = 1.36$) and the dynamic visual ($M = 5.86$, $SD = 1.24$) was the highest for pair 1, causing a mean difference score of 3.18 (see Table 1).

Table 1
Means and standard deviations of perceived movement in visuals per pair (N = 28)

Pair	Static visual		Dynamic visual		Difference M score
	M ^{a)}	SD ^{a)}	M ^{a)}	SD ^{a)}	$M_{dynamic} - M_{static}$
1	2.68	1.36	5.86	1.24	3.18
2	2.36	1.37	3.96	2.03	1.6
3	2.61	1.60	5.29	1.68	2.68
4	4.11	1.83	4.14	1.86	0.03
5	2.71	1.68	5.36	1.64	2.65
6	3.07	1.63	4.89	1.81	1.82
7	2.89	1.47	5.54	1.53	2.65

a) 7-point Likert scale (1 = totally disagree – 7 = totally agree).

3.2.2 Control questions

Two control questions were added to the test to determine whether the pairs are attractive and suitable for the product, both were measured by one item on a 5-point Likert scale ranging from “1= totally disagree” to “5= totally agree”. A low score implies low attractivity and suitability, whereas a high score implies high attractivity and suitability. To evaluate the attractiveness of the pairs, the respondents assessed to what extent they agreed with the statement: “I find this pair of visuals attractive”. Pair 3 demonstrates the highest score ($M = 3.89$, $SD = 1.03$) compared to the other pairs (see Table 2). The suitability of the pairs is measured by: “I think this pair of visuals is suitable for a raspberry drink”. The respondents classify pair 3 ($M = 4.04$, $SD = .88$) as the most suitable design for a raspberry drink. Overall, pair 3 showed the highest score for both the attractivity and the suitability of the visuals ($M = 3.97$, $SD = .96$).

Table 2

Means and standard deviations of attractivity and suitability of the pairs (N = 28)

Pair	Attractivity		Suitability		Total	
	M^a	SD^a	M^a	SD^a	M^a	SD^a
1	3.00	.98	3.04	1.07	3.02	1.03
2	2.82	1.34	3.36	1.37	3.09	1.36
3	3.89	1.03	4.04	.88	3.97	.96
4	2.89	1.26	3.18	1.16	3.04	1.21
5	3.61	1.07	3.18	1.28	3.40	1.18
6	2.75	1.18	3.04	1.07	2.90	1.13
7	3.50	1.00	3.75	.89	3.63	.95

a) 5-point Likert scale (1 = totally disagree – 5 = totally agree).

3.2.3 Conclusion

The first part of the preliminary test showed that pair 1 is a suitable design to communicate staticity and dynamism in the visual. It can be concluded that the static version of the visual connotes little movement and the dynamic version of the visual connotes movement mostly. On the other hand, the second part of the preliminary study indicates that respondents consider the visuals in pair 3 as being attractive and suitable for a raspberry drink. Hence, there is a discrepancy between the results of the pairs. Nevertheless, the essential component of this study is the influence of dynamic visuals versus static visuals on consumer responses. Considering the aforementioned, pair one is selected to develop the stimulus materials for the main study (see Figure 2).



Figure 2. Dynamic visual (left) and static visual manipulation (right).

3.3 Procedure preliminary study 2

Preliminary study 1 identified the pair of visuals for the packaging, before conducting the second preliminary study, the colour, saturation, and size of these visuals were adapted to make them as identical as possible. After that, a second preliminary study was conducted to determine whether the position of the visual and the dynamism in the visual communicated the intended weight and dynamism manipulations. Additionally, the attractivity and the suitability of the designs were measured. Three main designs were developed with four manipulations per design. Eventually, twelve designs are established for this preliminary study (see Appendix 3). All the respondents were exposed to all the various manipulations; the questionnaire of the preliminary study can be found in Appendix 4. The responses were measured on a 7-point Likert scale ranging from “1= totally disagree” to “7= totally agree”.

Similar to the first preliminary study, the respondents were selected by non-probability sampling and were recruited via social media (e.g. Instagram). Besides, respondents were asked to spread the link of the questionnaire to gather significantly more responses and to create a snowball effect. In the second preliminary study, a number of 15 respondents participated and resulted in the participation of 10 (66.7%) females and 5 males (33.3%). The participants were aged between 20 and 34 years ($M = 26.40$).

3.3.1 Weight perception

The positioning of the visuals in the manipulations aims to influence weight perception. The expectations were that top positions score low on heaviness and high on lightness, and bottom positions score high on heaviness and low on lightness. Besides, it was expected that there was a difference in weight perception for the same position between the two types of visuals. To illustrate, a top position with static visual scores higher on heaviness as compared to a top position with a dynamic visual. Nevertheless, these scores are still less than the scores for the bottom positions with the corresponding visuals. The perceived weight of the product, as a result of the visual position and the dynamism in the visual, was measured by use of two items: “This design seems to be heavy” and “This design seems to be light”. The respondents answered both questions for all the versions of the three designs (12 versions). The results of the perceived lightness were reversed in the data analysis in order to compare the outcomes (see Appendix 7.1- Table 1).

Design 3 demonstrates the lowest score for heaviness on the top position ($M = 2.87$, $SD = 1.69$) and the highest score on heaviness for the bottom position ($M = 4.87$, $SD = 1.91$). The result indicates that the combination of the visual and the top position communicates lightness, and the combination of the visual and the bottom position infers heaviness. Considering the results, the difference weight score for the top position and bottom position is the largest for design 3 ($M_{\text{difference score}} = 2.00$). Table 3 provides an overview of the means and standard deviations for the heaviness perception per design.

Table 3
Means and standard deviations of heaviness perception per design ($N = 15$)

Design	Top position		Bottom position		$M_{\text{difference score}}$
	M^a	SD^a	M^a	SD^a	$M_{\text{bottom}} - M_{\text{top}}$
1	2.91	1.37	4.22	1.91	1.31
2	3.12	1.71	4.44	1.93	1.32
3	2.87	1.69	4.87	1.83	2.00

a) 7-point Likert-scale (1 = totally disagree – 7 = totally agree).

3.3.2 Dynamism in design

The level of dynamism in the visual had already been measured in preliminary study 1. Nonetheless, it is of importance that the visual also communicates movement when positioned on different places of the package. For this reason, the movement was repeatedly measured in the second preliminary study. The respondents answered both questions for all the versions of the three designs (12 versions). The use of two

items measured the level of movement: “This design seems to be dynamic” and “This design seems to be static”. A high score on staticity and a low score on dynamism implies little to no movement and can be considered as static. Likewise, a low score on staticity and a high score on dynamism, indicates that the visual connotes a sense of movement, and can be considered as dynamic. The results of the perceived dynamism were reversed in the data analysis in order to compare the outcomes (see Appendix 7.1 – Table 2).

The results demonstrate that the difference score between the static visual and the dynamic visual is the highest for design 1 ($M_{\text{difference score}} = 2.45$). The dynamic visual of design 1 displays a slightly higher score on staticity compared to the dynamic visuals of the other designs ($M = 3.00$, $SD = 1.70$). The static visual of design 1 scores considerably higher on the level of staticity compared with the other designs ($M = 5.45$, $SD = 1.44$). An overview of the means and standard deviations for the staticity per design is given in Table 4.

Table 4
Means and standard deviations of staticity perception per design ($N = 15$)

Design	Dynamic visual		Static visual		$M_{\text{difference score}}$
	M^a	SD^a	M^a	SD^a	$M_{\text{bottom}} - M_{\text{top}}$
1	3.00	1.70	5.45	1.44	2.45
2	2.99	1.57	5.16	1.66	2.17
3	2.99	1.86	5.29	1.49	2.30

a) 7-point Likert scale (1= totally disagree – 7= totally agree).

3.3.3 Control questions

Two control questions determine the attractiveness and the suitability of the designs: “This design is attractive” and “This design is a suitable package for a raspberry drink”. Both control questions were measured on a 7-point Likert scale ranging from “1 = totally disagree” to “7 = totally agree”. The respondents assessed the attractiveness and suitability for all the versions of the three designs (see Appendix 7.1 – Table 3).

The outcomes of the second preliminary study show that the respondents perceived all the designs as attractive and suitable for a package of a raspberry soft drink. The attractiveness mean score is the highest for design 1 ($M = 5.40$, $SD = 1.07$) and design 3 scores the highest on the suitability ($M = 5.65$, $SD = 1.20$), see Table 5. The overall score indicates that design 1 is the most attractive and suitable design for this study ($M_{\text{total}} = 5.50$, $SD_{\text{total}} = 1.12$).

Table 5
Means and standard deviations of the attractiveness and suitability of the designs ($N = 15$)

Design	Attractivity		Suitability		Total	
	M^a	SD^a	M^a	SD^a	M^a	SD^a
1	5.40	1.07	5.60	1.17	5.50	1.12
2	5.37	1.40	5.52	1.45	5.45	1.42
3	5.32	1.54	5.65	1.20	5.49	1.37

a) 7-point Likert scale (1= totally disagree – 7= totally agree).

3.3.4 Conclusion

Considering the outcomes of the weight scores, design 3 proves the largest difference in weight between the top and bottom position ($M_{\text{difference score}} = 2.00$). Whereas, design 1 exhibits the largest difference in movement between the static and dynamic visual ($M_{\text{difference score}} = 2.45$). Likewise, the scores on attractiveness and suitability are the highest for design 1 ($M_{\text{total}} = 5.50$). The outcomes of the weight perception and the level of movement demonstrate that there is a disparity between the results of both variables for the various

designs. Since design 1 demonstrates the highest scores on dynamism, attractivity, and suitability, this design will be used as stimulus material for the main study (Figure 3).



Figure 3. Dynamic visual x top position and bottom position (1 & 2) and static visual x top position and bottom position manipulations (3 & 4).

4. Main study

This section presents an overview of the experimental research conditions, as well as the stimulus materials and the procedure of the main study. Moreover, it elaborates on the characteristics of the participants, the measures used in the study, the manipulation checks, and the reliability analysis of the applied constructs. This chapter concludes with justification regarding the analysis of data for the main study.

4.1 Experimental research conditions

This study uses a 2 x 2 x 2 experimental research design ($N = 240$), as shown in Table 6, to measure the effects of visual dynamism (dynamic vs static), visual position (top position vs bottom position) and drink type (light soft drink vs regular soft drink) on consumer responses, this results in eight manipulated conditions. Experimental conditions one and eight are considered as congruent combinations, conditions four and five are congruent on visual characteristics, and the remaining conditions are incongruent combinations. The aim of the study is the equal distribution of participants among the various conditions ($n = 30$).

Table 6
2 x 2 x 2 experimental research design ($N = 240$)

	SOFT DRINK Light drink		SOFT DRINK Regular drink	
	VISUAL POSITION Top position	VISUAL POSITION Bottom position	VISUAL POSITION Top position	VISUAL POSITION Bottom position
VISUAL DYNAMISM Dynamic visual	Condition 1 $n = 30$	Condition 2 $n = 30$	Condition 5 $n = 30$	Condition 6 $n = 30$
VISUAL DYNAMISM Static visual	Condition 3 $n = 30$	Condition 4 $n = 30$	Condition 7 $n = 30$	Condition 8 $n = 30$

4.2 Stimulus materials

The designs for the main study were developed based on the results of the two preliminary studies. The shape and the content of the packages were identical. Condition 1, 2, 3, and 4 are packages for the light soft drink condition, whereas condition 5, 6, 7, and 8 are packages for the regular soft drink condition, for this reason, eight types of designs are created for the research (see figure 4 and 5). The aim of having various designs of the package and two types of drinks is to research which package significantly affects consumer responses and if this differs for the type of soft drink. The brand of the soft drink in this study is "SWIZZL" which is a non-existing brand. This study used a fictional brand in order to exclude the positive or negative attitude of the participant towards the known brand, for this might influence the results. Moreover, controlling these variables ensures that the measured differences were caused by the independent variables, rather other possible factors.



Figure 4. Packages of the light soft drink conditions.

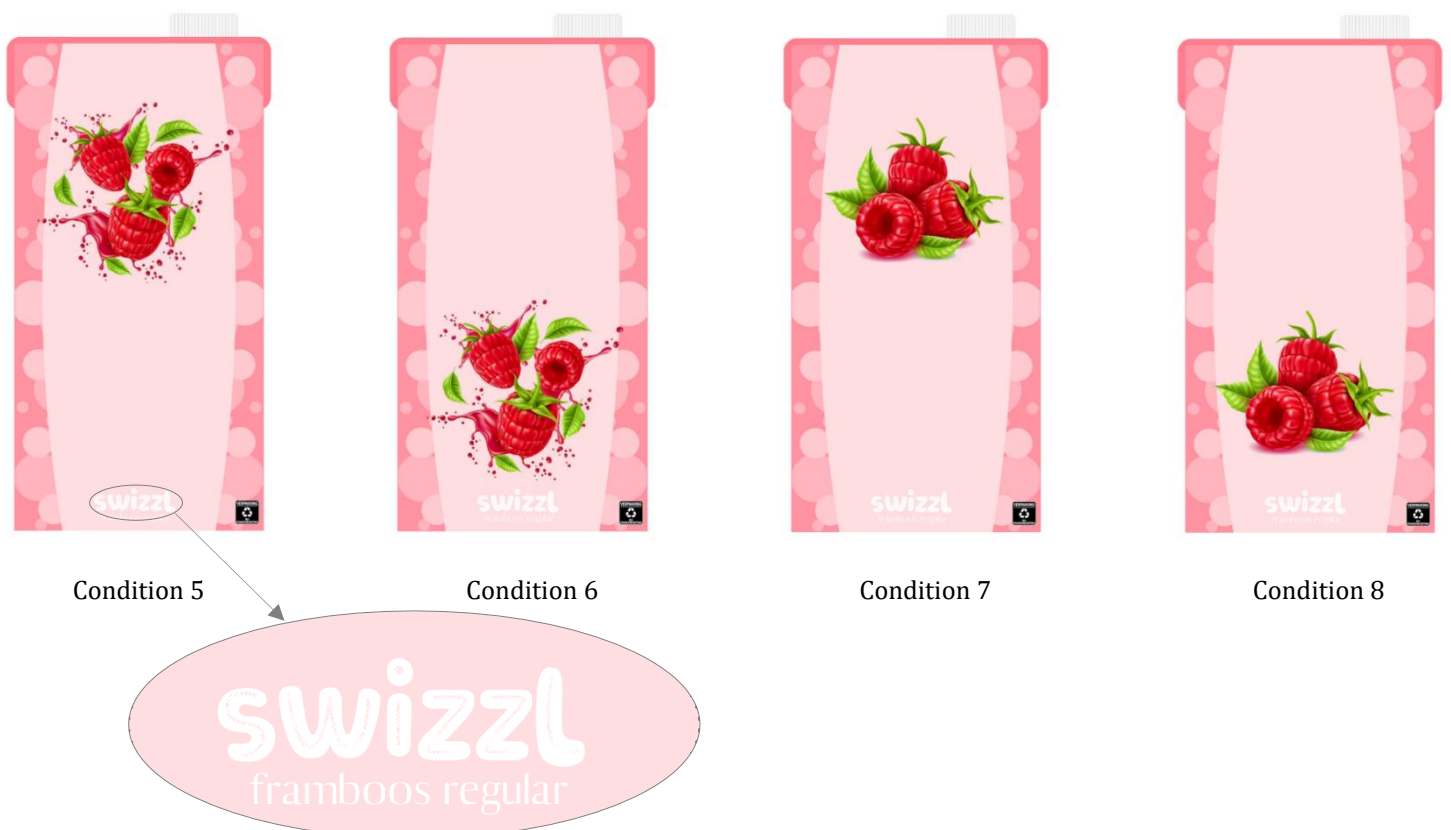


Figure 5. Packages of the regular soft drink conditions.

4.3 Procedure

The data collection took place by use of an experiment conducted in the hallway of a local shopping centre in Enschede. The data were collected within two and a half week by use of an online questionnaire which was designed in the Qualtrics software. The researcher approached the respondents, explained the purpose of the study and invited them to participate in the experiment. The respondents were also informed about the anonymity of their participation, implying that one had the opportunity to quit its participation anytime one wanted without providing an explanation or justification. After agreeing on participating, the respondents were requested to take place at the table with the iPad, and the participants were randomly assigned to one of the eight experimental research conditions (Appendix 5). The questionnaire had already been set up at the table and started with a brief introduction and provided further directions. Meanwhile, the researcher poured the drink from a transparent carafe into the cup to avoid disruption from factors such as branding and packaging. For convenience and hygienic purposes, the drink was served in a little plastic cup. According to the directions of the questionnaire, respondents were requested to take a look at the display on which the soft drink packaging was demonstrated on A4-format and to drink the soft drink. After and during consumption, the respondents filled out the questionnaire to assess the influence of the package on consumer responses. In all the conditions, the color of the beverage and the design of the packaging were identical. Since it was of importance to ensure that the responses were merely assigned to the characteristics of the packaging (Appendix 5). Subsequently, a manipulation check was carried out to measure if the participants observed the intentional manipulation. Finally, the respondents were asked to answer some questions about their age and gender to gain insight in the demographical characteristics. After finishing the questionnaire, the respondents were thanked for their attendance and time.

4.4 Participants

There was no distinction made in the gender or education level of the participants. The only distinctions that were made in this research was that the participants were at least 16 years or older and that the respondents have an understanding of the Dutch language, for the experiment was designed in Dutch. Thus, the main focus of this study was on the Netherlands. The research was a between-subjects research design; all the participants in the study were randomly assigned to one of the eight experimental conditions. The respondents were selected by non-probability sampling using a consecutive sampling method. The aim of the study was an equal distribution, and as a consequence, every condition contains 30 valid responses. A response was considered valid if the whole questionnaire was completed. Eventually, 241 respondents participated in the experiment. One respondent in condition 8, terminated its participation before finishing the questionnaire; for this reason, this result was deleted from the dataset and not used during the data analysis phase. Accordingly, 240 responses were completed, the majority of the participants were female 147 (61.3%), and 93 (38.7%) participants were male. The age of the respondents varied between 18 and 80 years ($M = 40.38$, $SD = 15.48$). Table 8 provides an overview of the descriptive data of the participants per experimental research condition.

A Chi-Square test was performed to analyse if there were differences between the gender of the participants in the eight conditions. The test demonstrated ($\chi^2(7, N = 240) = 7.29$, $p = .400$) that there are no significant differences between the gender of the participants among the eight experimental research conditions. Moreover, an one-way analysis of variance showed that there were significant differences ($F(7, 232) = 2.53$, $p = .016$) between the ages of the respondents in the eight conditions. Due to the significant differences in the age of the participants, age was included as a covariate for further analysis. For both the tests as mentioned earlier, an alpha level of .05 was used.

Additional information about the participants illustrates that most of the participants (27.9%) rarely consume non-carbonated soft drinks, followed by daily (23.8%), weekly (21.7%), and monthly (14.6%) consumers of non-carbonated soft drinks. The smallest group of participants (12.1%) never consume non-carbonated soft drinks.

Table 8

Descriptive statistics of the participants (N = 240)

Condition	n	Gender		Age	
		Female (%)	Male (%)	M	SD
1	30	22 (73.3%)	8 (26.7%)	37.87	14.11
2	30	20 (66.7%)	10 (33.3%)	44.23	17.34
3	30	14 (46.7%)	16 (53.3%)	42.83	17.89
4	30	20 (66.7%)	10 (33.3%)	45.03	14.80
5	30	20 (66.7%)	10 (33.3%)	41.77	16.08
6	30	15 (50%)	15 (50%)	42.93	13.90
7	30	18 (60%)	12 (40%)	33.40	13.78
8	30	18 (60%)	12 (40%)	34.97	12.41
Total	240	147 (61.3%)	93 (38.7%)	40.38	15.48

4.5 Measures

An online questionnaire was developed to measure the effects of the independent variables on the dependent variables (taste experience, package attractiveness, and purchase intention), the congruency effects, and the role of general health interest as a covariate. Moreover, the questionnaire measured the applied manipulations and collected general demographical data, such as age and gender (see Appendix 6). The questionnaire included negatively and positively formulated items, and the negative items had been recoded to make adequate observations. All items and reliability coefficients are given in Table 9.

4.5.1 Taste experience

Eight constructs were used to evaluate the taste experience of the soft drink. Consequently, the taste experience consists of the following constructs: four basic taste evaluations, taste intensity, taste naturalness, nutritional value, and taste liking. The participants had to indicate on a 7-point Likert scale, ranging from “1 = totally disagree” to “7 = totally agree” to what extent they agreed with the statements. To compose the items for the constructs, previous researches are conducted and adapted for this study (Becker et al., 2011; Van Rompay, Kramer, & Saakes, 2018).

Basic taste evaluations. Four individual items were used to measure the basic taste valuations: “sweet”, “sour”, “bitter”, and “salty”. These items are single item constructs.

Taste intensity. Four items measured the intensity of the drink: “strong”, “full”, “powerful”, and “intense” (van Rompay, van Hoof, Rorink, & Folsche, 2019).

Taste naturalness. A set of seven items measured the perceived taste naturalness of the drink: “natural”, “artificial”, “pure”, “chemical”, “mild”, “fresh”, and “sparkling”. The two components, artificial and chemical, are reversed items.

Nutritional value. Two items measured the perceived nutritional value of the drinks: “nutritional” and “healthy”.

Taste liking. To measure the hedonic response towards the drink the following three items were used: “This drink tastes good”, “This drink is tasty”, and “This drink tastes delicious” (van Rompay, van Hoof, Rorink, & Folsche, 2019).

4.5.2 Package attractiveness

A three-item construct was used to measure the attractiveness of the package and to determine whether the package fits the product. The respondents had to indicate to what extent they considered that “The beverage fits the packaging”, “The packaging is attractive”, and “The packaging appeals to me”. The items were measured on a 7-point Likert scale, starting from “1 = totally disagree” to “7 = totally agree”.

4.5.3 Purchase intention

A single item measured the purchase intention: “I would consider buying this beverage at the supermarket”. The item was measured on a 7-point Likert scale, ranging from “1 = totally disagree” to “7 = totally agree”. The note “This item fits in your budget” was added to the question to avoid influences of personal financial resources.

4.5.4 Congruency

Three items measured the harmony between the visual characteristics and the drink: “I consider the product and package as a whole”, “The product and package are consistent”, and “The content matches the packaging” (Schutrups, 2018). The responses were recorded on a 7-point Likert scale, starting from “1 = strongly disagree” to “7 = strongly agree”.

4.5.5 General Health Interest (GHI)

Individual differences in health interest could affect product choice. Therefore this study considered GHI as a covariate. The interest in eating healthy was measured with an eight-item construct developed by Roininen et al., (1999) and measured the general health interest with questions like: “The healthiness of food has little impact on my food choices” and “I always follow a healthy and balanced diet”. The statements were measured on a 7-point Likert scale, ranging from “1 = strongly disagree” to “7 = strongly agree”. A high score on GHI indicates that the person has great health interests and finds it essential to make healthy choices, and a low score indicates that the person is not interested in making healthy food choices.

4.6 Manipulation checks

A manipulation check was conducted to assess whether the manipulations worked as intended. The responses were measured on a 7-point Likert scale, varying from “1 = strongly disagree” to “7 = strongly agree”. The level of dynamism was measured by the same items as used in the second preliminary test: “The package seems to be dynamic” and “The package seems to be static”. High scores on the dynamism and low scores on the staticity refer to packaging that seems to be moving, whereas low score on dynamism and high scores on staticity point out that the packaging seems to be static. Two items measured the perceived weight of the package: “The package seems to be light” and “The package seems to be heavy”. Both low scores on the heaviness and high scores on the lightness of the package indicate that the packaging was perceived as light. Conversely, high scores on the heaviness and low scores on the lightness of the packaging indicate that the packaging was perceived as heavy.

4.7 Reliability

A reliability analysis was conducted to measure the quality of the constructs and to determine whether the constructs were internally consistent. The Cronbach’s Alpha was used to assess the reliability, accordingly, this coefficient analyses how closely the items of a construct are related as a group. The Cronbach’s Alpha is commonly used for questionnaires with items that have three or more answer options and varies between 0 and 1. The most substantial value of the reliability coefficient indicates that the random error is zero, and the smallest value means that the construct is full of error (Vos, 2009). Low-reliability constructs should be avoided for this reason. This study considered a Cronbach’s Alpha of .70 or higher is acceptable. The

reversed items for the construct of taste naturalness were recoded to fit the appurtenant items. Also, the reversed items of the GHI were recoded into positive items before conducting the reliability analysis. The reliability analysis showed that the used constructs were all reliable. Table 9 summarises the used constructs, established items, and reliability scores.

Table 9

Constructs, items, and reliability

Construct	Items ^{a)}	N	α
Basic taste evaluation	This drink tastes sweet.	1	-
	This drink tastes sour.	1	-
	This drink tastes bitter.	1	-
	This drink tastes salty.	1	-
Taste intensity	This drink tastes strong.	4	.89
	This drink tastes full.		
	This drink tastes powerful.		
	This drink tastes intense.		
Taste naturalness	This drink tastes natural.	7	.83
	This drink tastes artificial. (<i>reversed</i>)		
	This drink tastes pure.		
	This drink tastes chemical. (<i>reversed</i>)		
	This drink tastes fresh.		
	This drink tastes sparkling.		
	This drink tastes mild.		
Nutritional value	This drink tastes nutritious.	2	.76
	This drink tastes healthy.		
Taste liking	This drink tastes good.	3	.97
	This drink is tasty.		
	This drink tastes delicious.		
Package evaluation	This drink fits the packaging.	3	.81
	The packaging is attractive.		
	The packaging appeals to me.		
Purchase intention	I would consider buying this drink at the supermarket.	1	-
Congruency	I consider the product and the package as a whole.	3	.93
	The drink and the package are consistent.		
	The content matches the packaging.		
General health interest (GHI)	The healthiness of food has little impact on my food choices. (<i>reversed</i>)	8	.83
	I am very particular about the healthiness of the food I eat.		
	I eat what I like and do not worry about the healthiness of food. (<i>reversed</i>)		
	It is important to me that my diet is low in fat.		
	I always follow a healthy and balanced diet.		
	It is important to me that my daily diet contains a lot of vitamins and minerals.		
	The healthiness of snacks makes no difference to me. (<i>reversed</i>)		
	I do not avoid foods, even if they may raise my cholesterol. (<i>reversed</i>)		

a) 7-point Likert scale (1= totally disagree – 7 = totally agree)

4.8 Analyses

A multivariate analysis of variance (MANOVA) was conducted to analyse the manipulation effects. Univariate analyses of covariances (ANCOVA) were carried out to analyse the main effects and the interaction effects of the independent variables on the dependent variables with the covariates age and general health interest. The influences of the covariates are solely reported if they had statistically significant effects. Furthermore, for the significant interaction effects, simple means analyses were performed as a post-hoc tests to analyze the characteristics of the interactions and to explore the differences between the conditions. The significance level of alpha was set on .05 for all the statistical tests.

5. Results

This chapter elaborates on the findings of the influence of dynamism in a visual, visual position, and drink type on taste experience, package attractiveness, and purchase intention. Merely the significant main effects and interaction effects are reported in this section. Furthermore, the main effects of the soft drinks are not included in the analysis because it was not the intention to measure the effect of the soft drink solely. This study is a $2 \times 2 \times 2$ experimental research with general health interest and age as covariates. Additional tables regarding the main study can be found in Appendix 7.

5.1 Manipulation check

To test whether the visual manipulations would sustain in the integrated packages, a multivariate analysis of variance was conducted with visual dynamism and visual position as independent variables, and package dynamism ("The package seems to be dynamic" and "The package seems to be static") and package weight ("The package seems to be light" and "The package seems to be heavy") as fixed factors.

The main effect of visual dynamism was significant for the level of dynamism ($F(1, 236) = 70.66, p < .001$), indicating that the dynamic visual was indeed perceived as dynamic ($M = 5.07, SD = 1.50$) as opposed to the static visual ($M = 3.37, SD = 1.67$). In line with this outcome was the significant main effect of visual dynamism for the level of staticity ($F(1, 236) = 28.39, p < .001$), pointing that the static visual was perceived as being static ($M = 4.51, SD = 1.54$) in contrast to the dynamic visual ($M = 3.42, SD = 1.64$). The analysis demonstrated that there was a main effect of visual dynamism on the lightness evaluation ($F(1, 236) = 5.13, p = .024$), stating that the dynamic visual is observed as light contrary to the static visual ($M = 5.27, SD = 1.47$ versus $M = 4.83, SD = 1.62$). By contrast, the effects of the dynamic visual and static visual did not reach significance for the level of heaviness ($p = ns$).

The main effect of visual position was significant for the perceived lightness ($F(1, 236) = 12.59, p < .001$), stating that the top position is perceived as light ($M = 5.39, SD = 1.31$) in comparison with the bottom position ($M = 4.70, SD = 1.70$). Moreover, a significant main effect was observed for the perceived heaviness ($F(1, 236) = 10.53, p = .001$), indicating that the bottom position ($M = 3.51, SD = 1.69$) is heavier compared to the top position ($M = 2.85, SD = 1.45$). Contrary to expectations, the interaction of visual dynamism and visual position did not reach significance for weight inferences ($p = ns$). As a consequence, it was expected that in the following section, no significant interaction effects of visual dynamism and visual position would appear for the consumer responses.

5.2 Basic taste evaluations

Sweetness, bitterness, and saltiness

The univariate analyses demonstrated that there were neither significant main effects, nor significant interaction effects of visual dynamism, visual position, and drink type on sweetness, bitterness and saltiness of the drink (p 's = ns). Table 10 provides an overview of the statistics of all the main effects and interaction effects.

Sourness

There were no significant main effects of visual dynamism and visual position on the sourness. However, there was a significant interaction effect of visual dynamism and drink type on the sourness of the drink ($F(1, 232) = 3.92, p = .049$). This effect indicates that at least one condition has a significantly different rate of sourness compared to another condition. The means demonstrate that for the light drink the dynamic visual ($M = 2.60, SD = 1.65$) results in higher scores on perceived sourness, as opposed to the static visual condition ($M = 2.28, SD = 1.46$). Strikingly, the results for the regular drink show the opposite: the regular soft drink is perceived as sour if the visual is static ($M = 2.73, SD = 1.48$), whereas the drink is perceived as less sour when the visual is dynamic ($M = 2.28, SD = 1.35$).

A simple effects analysis was carried out to determine which condition differs significantly from the other condition. The means exhibit that a static visual for a regular drink results in higher perceived sourness. Moreover, Figure 6 demonstrates that the difference between the dynamic visual and the static visual is more evident for the regular drink condition. The simple effects analysis demonstrated that the difference between the dynamic visual and the static visual within the regular drink condition was not significant ($F(1, 236) = 2.73, p = .100$). Also, within the light drink condition, no statistical significance was found for the difference between the dynamic visual and static visual ($F(1, 236) = 1.35, p = .246$). Hence, based on the means, the effect of visual dynamism is more notable for the regular drink condition. Nevertheless, there was no statistical evidence that the dynamic visual differs from the static visual.

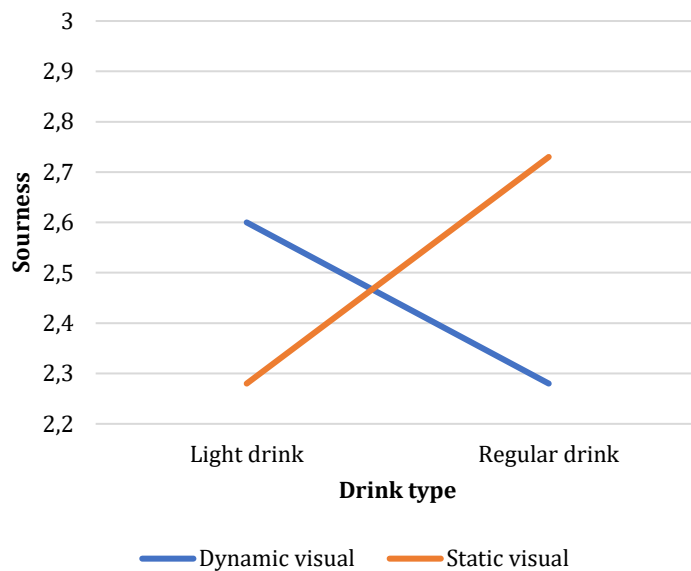


Figure 6. The interaction effect of visual dynamism and drink type on the basic taste evaluation sourness.

5.3 Taste intensity

For the dependent variable taste intensity, a significant main effect of visual dynamism appeared ($F(1, 232) = 4.54, p = .034$). As visible in figure 7, the drink was perceived as intense when a static visual ($M = 4.72, SD = 1.36$) was used on the package instead of a dynamic visual ($M = 4.35, SD = 1.33$), this outcome is in line with hypothesis 1a. This outcome suggests that visual dynamism can affect taste intensity, for a static visual positively influenced the response on taste intensity. Figure 7 shows how taste intensity is affected by visual dynamism.

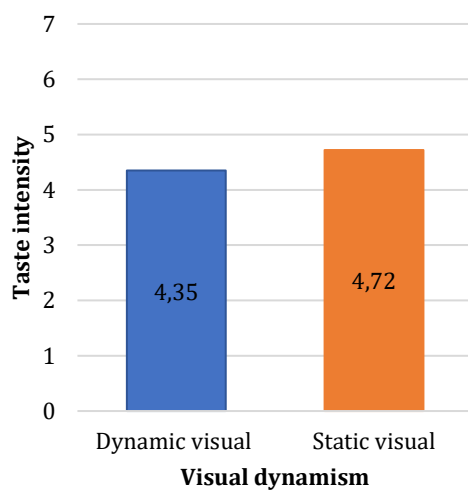


Figure 7. The main effect of visual dynamism on taste intensity.

Furthermore, an interaction effect was found for visual position and drink type ($F(1, 232) = 5.29, p = .022$). This interaction means that at least one condition has a significantly different rate of taste intensity compared to the other condition. The difference between the means of the visual position is more pronounced for the regular drink condition. Also, a visual on a bottom position for a regular drink displays the highest mean score (Figure 8). The simple effects analysis demonstrated that the difference within the regular drink condition is significant ($F(1, 236) = 4.28, p = .040$). A regular drink with a visual on the bottom of the package ($M = 4.74, SD = 1.23$) was perceived as being more intense compared to a regular drink with a visual on a top position ($M = 4.23, SD = 1.56$). The opposite was visible for the light drink, nevertheless, the difference within the light drink condition was not statistically significant ($F(1, 236) = 1.37, p = .243$). However, a visual on a top position ($M = 4.72, SD = 1.29$) demonstrated a higher mean score on taste intensity as opposed to a visual on a bottom position ($M = 4.43, SD = 1.28$). There is evidence that the effect of visual dynamism on taste intensity is more prominent for a regular drink as opposed to a light drink.

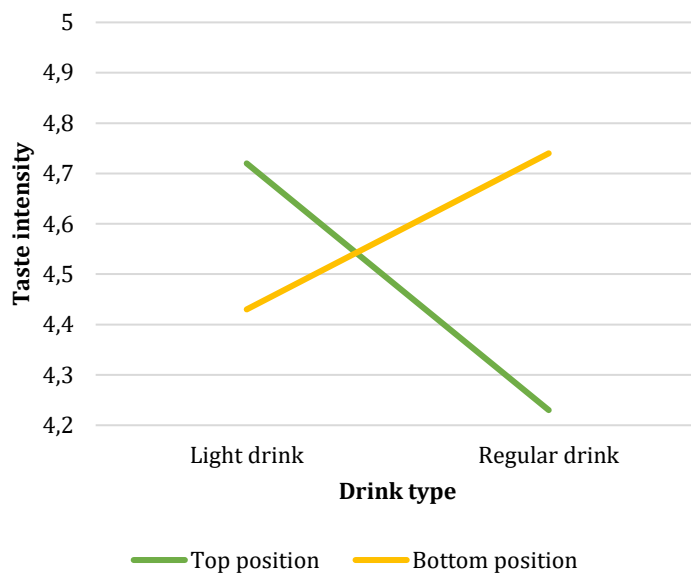


Figure 8. The interaction effect of visual position and drink type on taste intensity.

5.4 Taste naturalness

The univariate analysis merely demonstrated a significant main effect of visual dynamism for taste naturalness ($F(1, 232) = 26.62, p < .001$). As illustrated in Figure 9, the taste of the soft drink was perceived as being more natural for the package with a dynamic visual ($M = 4.37, SD = .94$) in contrast to a package with a static visual ($M = 3.65, SD = 1.26$). Thus, visual dynamism influences the taste naturalness where packages with dynamic visuals are perceived as natural, thus supporting hypothesis 1d.

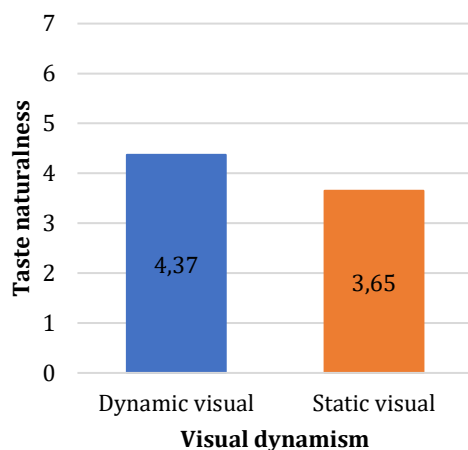


Figure 9. The main effect of visual dynamism on taste naturalness.

5.5 Nutritional value

Two significant main effects appeared for the dependent variable nutritional value. In the first place, there was a significant main effect of visual dynamism on nutritional value ($F(1, 232) = 8.13, p = .005$). The mean of the nutritional value was greater for a dynamic visual ($M = 3.67, SD = 1.46$) in contrast to the static visual condition ($M = 3.16, SD = 1.35$). In the second place, there was a significant main effect of visual position on nutritional value ($F(1, 232) = 5.24, p = .023$). The mean of the top position demonstrated lower outcomes than the bottom position for the nutritional value of the drink ($M = 3.21, SD = 1.41$ versus $M = 3.62, SD = 1.42$). Figure 10 provides illustrations of the effects of visual dynamism and visual position on the nutritional value.

Accordingly, visual dynamism and visual position both affect the perceived nutritional value of the drink. As for the type of visual, the dynamic visual indicates a positive influence on the nutritional value of the drink. Nevertheless, it was hypothesised that static visuals would positively influence the nutritional value. Thus this outcome contradicts with hypothesis 1b. Moreover, bottom positions positively affect the nutritional value; this result is in line with hypothesis 2b.

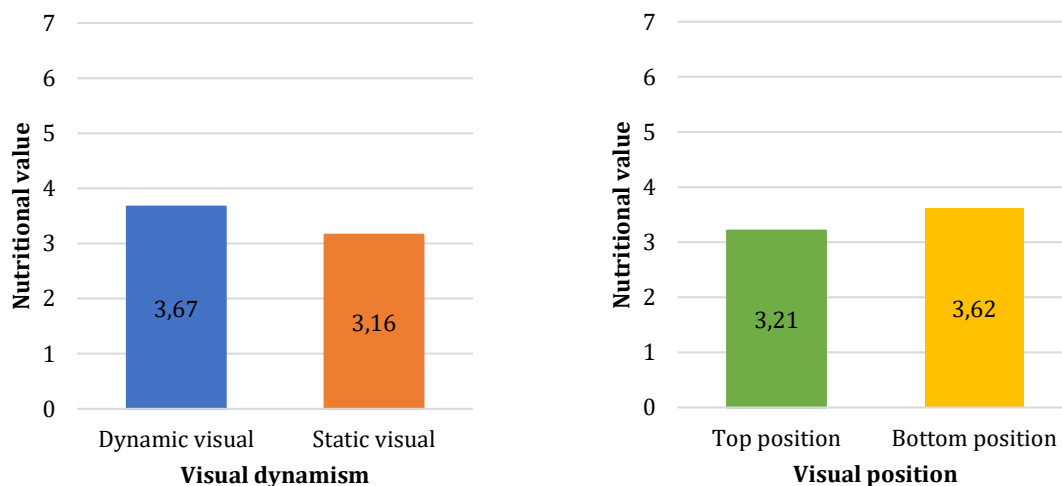


Figure 10. The main effects of visual dynamism (left) and visual position (right) on nutritional value.

5.6 Taste liking

The univariate test indicated a significant main effect of visual dynamism ($F(1, 232) = 10.82, p = .001$). Indicating that a dynamic visual ($M = 5.58, SD = 1.44$) had a greater impact on the taste liking than the static visual ($M = 4.94, SD = 1.62$). Thus, in contrast to hypothesis 1c, a dynamic visual positively influences taste liking. Figure 11 shows the distribution of the mean scores of the visual dynamism on taste liking.

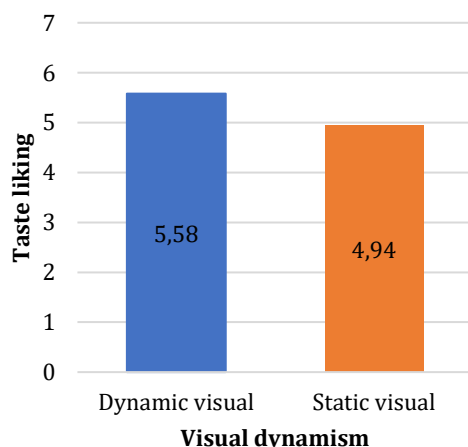


Figure 11. The main effect of visual dynamism on taste liking.

Besides the main effects, there was a significant three-way interaction effect of visual dynamism, visual position, and drink type ($F(1, 232) = 5.26, p = .023$). This outcome indicated that at least one condition had a significantly different rate of taste liking compared to another condition. Figure 12 (left) exhibits that for a light drink, a dynamic visual resulted in higher taste liking regardless of the visual position, contrary to the static visual condition. However, the contrast between the dynamic visual and the static visual seemed to be more evident for the top position condition than the bottom position condition. The simple effects test showed that the difference between the dynamic visual and the static visual within the top position condition is significant ($F(1, 232) = 3.98, p = .047$). The dynamic visual on a top position generated the highest mean ($M = 5.81, SD = 1.07$), whereas, positioning a static visual on the same position generated a lower mean ($M = 5.03, SD = 1.45$). The difference between the dynamic visual and static visual within the bottom position condition was not significant ($F(1, 232) = 1.36, p = .244$). Nevertheless, the means indicate that a dynamic visual on a bottom position had a more positive effect on taste liking as opposed to a static visual on a bottom position ($M = 5.71, SD = 1.27$ versus $M = 5.26, SD = 1.47$).

Contrary to the pattern of the light drink condition is the regular drink condition. Figure 12 (right) illustrates that for the regular drink, the difference between the dynamic visual and static visual is more evident within the bottom position condition. Here again, the average mean on taste liking is in favour of the dynamic visual condition. The simple effect analysis outcomes established that the difference between the dynamic visual and static visual within the bottom position condition is statistically significant ($F(1, 232) = 12.88, p < .001$). The design with a dynamic visual on a bottom position ($M = 5.76, SD = 1.74$) demonstrated a significantly higher score on taste liking than the static visual on a bottom position ($M = 4.36, SD = 1.80$). Moreover, the contrast between the dynamic visual and static visual within the top position condition was not significant ($F(1, 232) = 0.03, p = .864$). The results revealed that the mean of the static visual is higher than the dynamic visual condition ($M = 5.10, SD = 1.65$ versus $M = 5.03, SD = 1.50$).

The analyses found that for both the light drink and regular drink condition, there were significant differences between the visuals and their positions. For the light drink condition, the effect of visual dynamism on taste liking is more prominent for the top position, thus the congruent condition. Whereas, for the regular drink condition, the effect of visual dynamism is more prominent for the bottom position.

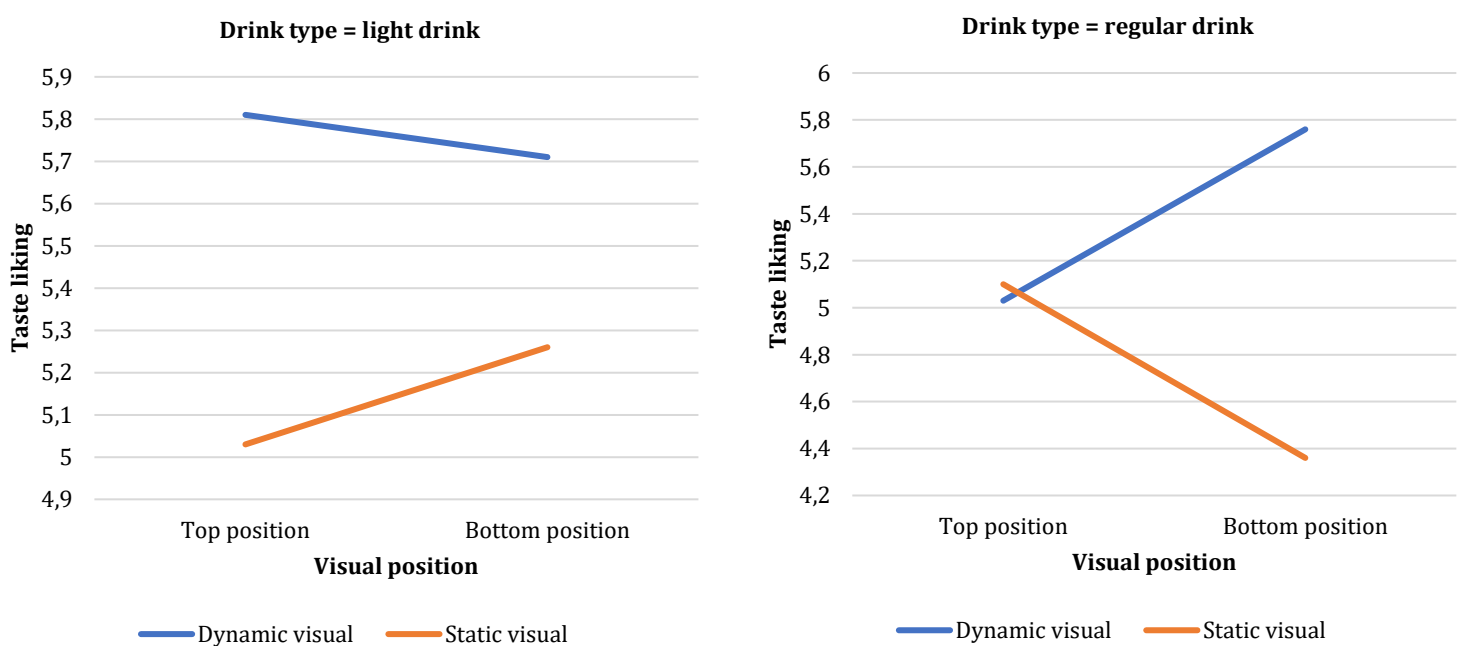


Figure 12. The interaction effects of the visual dynamism, visual position, and light soft drink (left); regular soft drink (right) on taste liking.

5.7 Package attractiveness

The univariate analysis displayed a significant main effect of visual dynamism ($F(1, 232) = 6.46, p = .012$) on package attractiveness. The static visual condition showed a lower score on the package attractivity in contrast to the dynamic visual condition ($M = 5.01, SD = 1.30$ versus $M = 5.43, SD = 1.31$). Meaning that dynamism in the visual influences the package attractivity, where dynamic visuals have a more positive effect on the attractiveness of the package than packages with static visuals. This outcome corresponds with hypothesis 1f. Figure 13 is a graphic of the means scores of visual dynamism on the attractivity of the package.

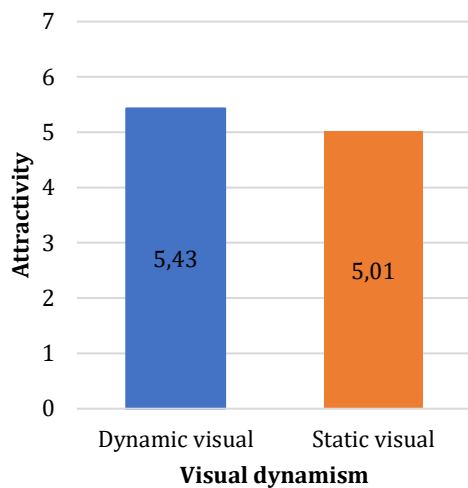


Figure 13. The main effect of visual dynamism on package attractiveness.

Besides, one interaction effect appeared for visual position and drink type ($F(1, 232) = 4.88, p = .028$). As visible in Figure 14, placing the visual on the bottom position for a light drink seemed to demonstrate the highest mean score for the package attractivity, whereas, the same position seemed to score the lowest on the attractivity of the package for a regular drink. Figure 14 suggests that the difference between the top position and bottom position within the light drink condition was the largest. The simple effects analysis showed that the difference between the positions within the light drink condition was not significant ($F(1, 236) = 3.02, p = .083$). Nevertheless, placing the visual on a bottom position caused a higher score on the package attractiveness ($M = 5.48, SD = 1.23$), contrary to positioning the visual on the top ($M = 5.06, SD = 1.18$). Furthermore, the difference between the positions within the regular drink condition was also not statistically significant ($F(1, 236) = 1.81, p = .180$). Compared to the light drink condition, the opposite of the mean scores was visible for the regular drink condition: the highest results were found for the top position ($M = 5.33, SD = 1.25$) compared to the results for the bottom position ($M = 5.00, SD = 1.55$).

It can be concluded that there is an interaction effect of visual position and drink type, however, there is no evidence that the conditions differ significantly from each other. The effect of visual positioning on package attractivity is not outstanding for a light drink condition nor a regular drink condition. The results of these interaction effects were contrary to hypothesis 3, and there was no effect visible of congruency between visual characteristics and drink type. Also, an opposite trend is visible, where for the light drink the bottom position demonstrated a higher score than the top position, and for the regular drink, the top position showed a higher score than the bottom position.

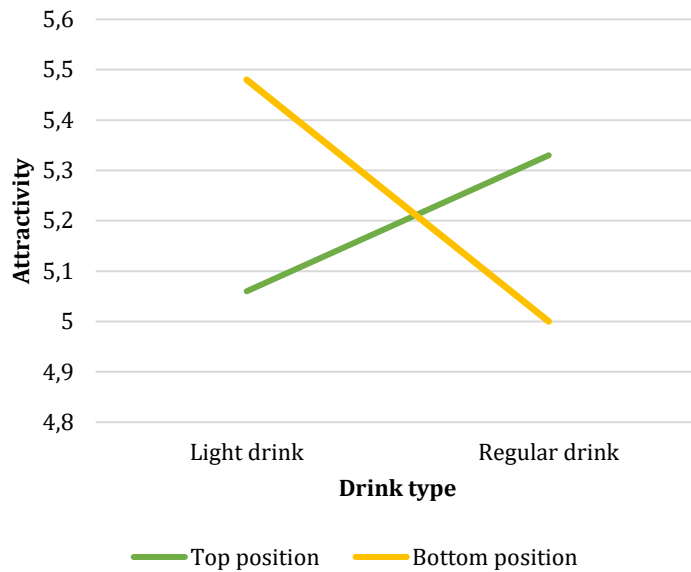


Figure 14. The interaction effect of visual position and drink type for package attractiveness.

5.8 Purchase intention

For the construct of purchase intention one main effect occurred for visual dynamism ($F(1, 232) = 8.03, p = .005$). The descriptive statistics show that the use of dynamic visuals ($M = 5.02, SD = 1.78$) evoked higher levels of purchase intention, as opposed to static visuals ($M = 4.36, SD = 1.90$). This outcome is in line with hypothesis 1f, claiming that dynamic visuals positively influence purchase intention compared to static visuals. Thus, visual dynamism has an influence on the purchase intention, and this is more evident for the dynamic visual condition.

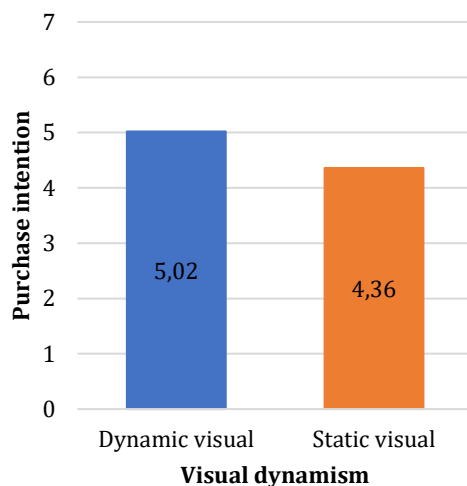


Figure 15. The main effect of visual dynamism on purchase intention.

In addition, a three-way interaction effect for visual dynamism, visual position, and drink type appeared for purchase intention ($F(1, 232) = 8.44, p = .004$). Meaning that at least one condition had a significantly different rate of purchase intention compared to the other condition. Figure 16 (left) demonstrates that for the light drink condition on average, the dynamic visual condition resulted in higher purchase intention than a static visual condition, regardless of the visual position. Moreover, the difference between the dynamic visual and static visual comes off as the largest within the top position condition. This pattern within the light drink condition is similar to the pattern of the light drink condition for the taste liking. The simple effects analysis indicated that the difference between the dynamic visual and static visual within the top position condition was statistically significant ($F(1, 232) = 11.09, p = .001$). The dynamic visual on a top

position demonstrated a higher score ($M = 5.50, SD = 1.50$) on purchase intention than the static visual on the same position ($M = 3.93, SD = 1.98$). Furthermore, the difference between the dynamic visual and static visual within the bottom position condition was not statistically significant ($F(1, 232) = .607, p = .437$). The dynamic visual on a bottom position scored slightly higher ($M = 4.83, SD = 1.60$) than a static visual on a bottom position ($M = 4.47, SD = 1.76$).

As for the regular drink, the opposite pattern is visible. It seems that there is a distinct difference between the dynamic visual and static visual within the bottom position condition (Figure 16; right). The simple effect analysis proved that there was a significant difference between the dynamic visual and static visual within the bottom position condition ($F(1, 232) = 5.80, p = .017$). The means indicated that the dynamic visual on the bottom position ($M = 5.40, SD = 1.94$) elicited a higher score on purchase intention than the static visual on the bottom position ($M = 4.27, SD = 1.93$). Moreover, the difference between the dynamic visual and the static visual within the top position condition was not significant ($F(1, 232) = .723, p = .396$). Nonetheless, the score of the static visual on a top position ($M = 4.77, SD = 1.92$) is higher than the dynamic visual on a top position ($M = 4.37, SD = 1.88$) on purchase intention.

To conclude, for both the light drink and regular drink, an interaction between visual dynamism and visual position is visible for purchase intention. However, the results are the opposite of another. In the light drink condition, the congruent combination of the visual characteristics was more pronounced for the top position than for the bottom position of the visual, partially confirming hypothesis 3. Whereas in the regular drink condition, the dynamism of the visual is more evident for the bottom position than for the top position of the visual. This outcome is not in line with hypothesis 3 since the combination of visual elements and drink type is incongruent.

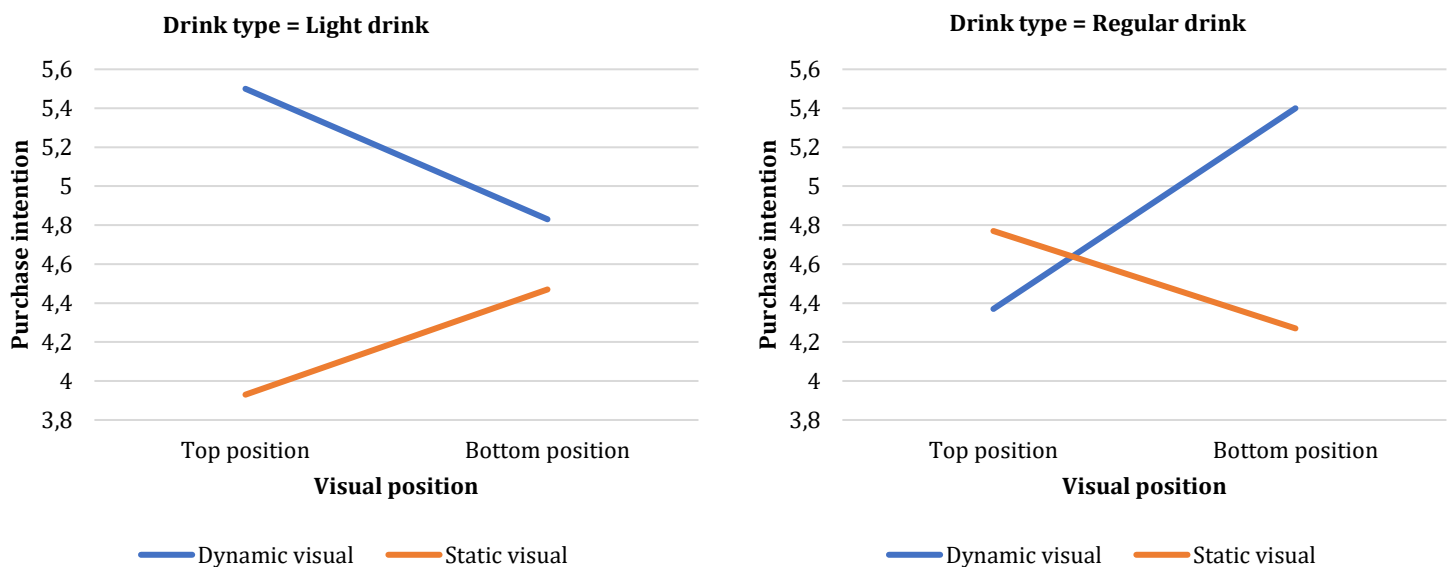


Figure 16. The interaction effect of visual dynamism, visual position, and light soft drink (left); regular soft drink (right) of purchase intention.

Table 10 summarizes all the statistics of the aforementioned main effects and interaction effects. Furthermore, see Appendix 7 – Table 4 for an outline of the means and standard deviations of the significant main effects and interaction effects.

Table 10

Overview of the univariate ANOCVA statistics.

Dependent variable	Independent variable	F	p
Sweetness	Visual dynamism	.07	.787
	Visual position	.98	.323
	Visual dynamism x Visual position	.29	.590
	Visual dynamism x Drink type	.66	.419
	Visual position x Drink type	.01	.928
	Visual dynamism x Visual position x Drink type	.13	.719
Sourness	Visual dynamism	.12	.731
	Visual position	.27	.606
	Visual dynamism x Visual position	.01	.931
	Visual dynamism x Drink type	3.92	.049
	Visual position x Drink type	.60	.439
	Visual dynamism x Visual position x Drink type	.46	.492
Bitterness	Visual dynamism	.05	.827
	Visual position	.05	.827
	Visual dynamism x Visual position	.30	.585
	Visual dynamism x Drink type	2.02	.157
	Visual position x Drink type	.59	.445
	Visual dynamism x Visual position x Drink type	.19	.662
Saltiness	Visual dynamism	.07	.799
	Visual position	1.90	.169
	Visual dynamism x Visual position	1.15	.284
	Visual dynamism x Drink type	.21	.646
	Visual position x Drink type	.75	.386
	Visual dynamism x Visual position x Drink type	1.15	.284
Taste intensity	Visual dynamism	4.54	.034
	Visual position	.41	.524
	Visual dynamism x Visual position	.32	.572
	Visual dynamism x Drink type	.08	.782
	Visual position x Drink type	5.29	.022
	Visual dynamism x Visual position x Drink type	.90	.343
Taste naturalness	Visual dynamism	26.62	< .001
	Visual position	.06	.813
	Visual dynamism x Visual position	1.25	.265
	Visual dynamism x Drink type	3.34	.069
	Visual position x Drink type	.15	.698
	Visual dynamism x Visual position x Drink type	.74	.389
Nutritional value	Visual dynamism	8.13	.005
	Visual position	5.24	.023
	Visual dynamism x Visual position	3.15	.077
	Visual dynamism x Drink type	.00	1.000
	Visual position x Drink type	2.24	.136
	Visual dynamism x Visual position x Drink type	3.32	.070
Taste liking	Visual dynamism	10.82	.001
	Visual position	.016	.898
	Visual dynamism x Visual position	2.15	.144
	Visual dynamism x Drink type	.02	.898
	Visual position x Drink type	.03	.853
	Visual dynamism x Visual position x Drink type	5.26	.023
Package evaluation	Visual dynamism	6.46	.012
	Visual position	.08	.778
	Visual dynamism x Visual position	.05	.829
	Visual dynamism x Drink type	1.24	.267
	Visual position x Drink type	4.88	.028
	Visual dynamism x Visual position x Drink type	2.71	.101
Purchase intention	Visual dynamism	8.03	.005
	Visual position	.18	.671
	Visual dynamism x Visual position	.13	.723
	Visual dynamism x Drink type	1.63	.204
	Visual position x Drink type	.50	.479
	Visual dynamism x Visual position x Drink type	8.44	.004

5.9 Overview of the hypotheses

Based on the outcomes of this study, the established hypotheses can be supported or rejected. Table 12 provides an overview of the hypotheses and identifies whether the outcomes of the study supports or rejects the hypotheses. The significance results are significant for an alpha level of .05.

Table 12
Overview of the hypotheses

Hypothesis		Supported
H1a:	A static visual, as opposed to a dynamic visual, on the package will result in higher perceived taste intensity.	Yes
H1b:	A static visual, as opposed to a dynamic visual, on the package will result in higher perceived nutritional value.	No
H1c:	A static visual, as opposed to a dynamic visual, on the package will result in higher perceived taste liking.	No
H1d:	A dynamic visual, as opposed to a static visual, on the package will result in higher perceived taste naturalness.	Yes
H1e:	A dynamic visual, as opposed to a static visual, on the package will result in higher perceived package attractiveness.	Yes
H1f:	A dynamic visual, as opposed to a static visual, on the package will result in higher perceived purchase intention.	Yes
H2a:	A package with a visual positioned on the bottom will positively influence perceived taste intensity compared to a package with a visual positioned on top.	No
H2b:	A package with a visual positioned on the bottom will positively influence perceived nutritional value compared to a package with a visual positioned on top.	Yes
H2c:	A package with a visual positioned on the bottom will positively influence perceived taste liking compared to a package with a visual positioned on top.	No
H2d:	A package with a visual positioned on top will positively influence perceived taste naturalness compared to a package with a visual positioned on the bottom.	No
H2e:	A package with a visual positioned on top will positively influence perceived package attractiveness compared to a package with a visual positioned on the bottom.	No
H2f:	A package with a visual positioned on top will positively influence perceived purchase intention compared to a package with a visual positioned on the bottom.	No
H3:	Package attractiveness and purchase intention will be evaluated higher when the combination of visual characteristics and drink type are congruent, as opposed to an incongruent combination of visual characteristics and drink type.	Partially

6 Discussion

This section of the report focusses on the discussion of the findings of this study. Moreover, it elaborates on the practical and theoretical implications, points out the limitations and suggestions for future research, and concludes with a general conclusion about the study.

6.1 Influencing consumer responses utilizing visual characteristics

This study aimed to analyse the influence of visual dynamism and visual positioning as cues for visual heaviness to impact consumer responses, like taste experience, package attractivity, and purchase intention and if this differs for a light and regular drink. Prior researches demonstrated that visual characteristics could convey weight impressions and influence evaluations (Deng & Kahn, 2009; Karnal et al., 2016; Van Rompay et al., 2014). Where, dynamic visuals and top positions are considered as lightweight, and static visuals and bottom positions are evaluated as heavyweight (Deng & Kahn, 2009; Fenko et al., 2018; Van Rompay, 2008; Van Rompay et al., 2014). The findings of this study demonstrate that there are indeed main effects of visual characteristics on consumer responses.

In line with the hypothesis, this study showed that weight influences taste intensity, whereby packages that communicate heaviness in the form of a static visual are considered as being intense. Although the manipulation check claimed that the respondents did not observe staticity as heavy. Prior studies found that heaviness is associated with intensity. Hence the outcomes of this study affirm these findings (Ivens, Spence, Kampfer, & Leischnig, 2017; Piqueras-fizman, Harrar, Alcaide, & Spence, 2011). The intensity of the visual could be transferred to the intensity of taste, thus underlining the effect of crossmodal correspondence (Becker et al., 2011). Moreover, the observed results interface with the study of Van Rompay et al., (2014) in which they found that cues for product lightness for laundry detergent resulted in a decrease of expected scent intensity.

Significant evidence has been found for the influence of a lightness on the taste naturalness of the drink. Respondents rated the taste naturalness of the drink higher for the package with a dynamic visual than a package with a static visual. The visual used in the current study was an unprocessed visual, Machiels & Karnal (2016) prove that using an unprocessed visual on a package contributes to the naturalness of a juice. Nevertheless, both visuals in this study were unprocessed; thus, it is presumptive that the naturalness of the visual itself had no effects on the naturalness perception. The dynamism in the visual serves as an explanation for this observation since it is seen as favourable and positive (Deng & Kahn, 2009). Therefore, respondents might not associate the drink as artificial or full with additives, and instead, they linked it with naturalness (Piqueras-Fizman, Ares, et al., 2011; K. Roininen et al., 2001).

Furthermore, the results showed that lightness had a more significant impact on the nutritional value of the drink, where respondents considered packages with static visuals as less nutritious. The perceived nutritional value is closely related to taste naturalness; items that contain little to no additives are perceived as healthy and therefore as lightweight and nutritious (Deng & Kahn, 2009; Karnal et al., 2016). However, these results are not in line with the expectations. Hypothesized was that nutritious items are filling and satiating, and expectations were that static visuals would have a positive effect on the nutritional value of the product (Karnal et al., 2016; Piqueras-Fizman, Harrar, et al., 2011; Piqueras-Fizman & Spence, 2012). Remarkable, but in line with the expectations and the theory, is the opposite result of heaviness communicated by visual positions. The respondents evaluated bottom positions with higher nutritional value as opposed to top positions. Thus, there is a discrepancy visible between visual dynamism and visual position for this variable.

Moreover, taste liking was positively influenced by lightness. Respondents liked the taste of the drink more for a package with a dynamic visual instead of a static visual package. This result was not in line with previous studies indicating that generally, heaviness affects taste liking of a product (Kampfer et al., 2017;

Piqueras-Fiszman, Harrar, et al., 2011). Continuing existing literature, it was expected that heaviness would positively affect taste liking. Nevertheless, the idea that heaviness is considered as unfavourable and negative might influence the liking and can serve as a clarification for this outcome (Deng & Kahn, 2009). It was expected that the influence of the “tasty = unhealthy intuition” would serve as an explanation, indicating that regular products are unhealthy but taste better (Raghunathan et al., 2006). The notion of negativity associated with heaviness might serve as a justification for this observation.

The study of Deng & Kahn (2009) might also serve as an explanation for the outcomes of package attractiveness and purchase intention. The current study discovered that lightness communicated by a dynamic visual positively influences both the attractiveness of the package and purchase intention, this reinforces the link between favourable attitudes and positive assumptions that one has with lightness (Cian et al., 2014; Krishna et al., 2016; Westerman et al., 2013). Moreover, the study of Maggioni, Risso, Olivero, & Gallace (2015) is in line with these results stating that more weight does not always lead to more favourable attitudes.

Furthermore, no influences of weight communicated by visual positions appeared for the basic taste evaluations, taste intensity, taste naturalness, taste liking, package attractiveness, and purchase intention. Perhaps the manipulation was not blatant enough since the package surface was not very large. Considering that, the distance between the top and the bottom position was visible but not impressive enough to be decisive and influence perceptions.

6.2 Interplay between visual characteristics and product type

Besides the main effects of the visual characteristics, several interaction effects have been found in this study. An interaction effect was found for visual dynamism and drink type on the perceived sourness of the drink. Nevertheless, there was no evidence that the conditions within the drink types differed from each other. However, the arguable link between lightness and sourness can provide a clarification for the observed interaction effect. Also, the predominance of scent might serve as an explanation for this observation, where the perceived scent of the drink overruled the taste sensation and influenced perception.

The taste of the drink was perceived as intense for a heavy position visual for a regular drink. This effect is similar to the main effect of visual dynamism. This outcome implies that the heavier the package, the more intense one perceives the taste; thus, there is a positive relation, as demonstrated by (Kampfer et al., 2017; Piqueras-Fiszman, Harrar, et al., 2011). Furthermore, there is a link with the study of Becker et al., (2011), stating that experiencing intensity in one modality (bottom position and regular drink) leads to an intense experience another modality (taste). Parallel to this is the interaction effect of visual dynamism and drink type for package attractiveness. Nevertheless, the results within the drink type conditions did not reach significance. As for the visual position it was expected that lightness for a light product would contribute the most to package attractiveness (Cian et al., 2014; Krishna et al., 2016; Westerman et al., 2013). A justification might be that the influence of the product type (light soft drink) contradicted the influence of the visual position and altered the package attractiveness. The absence of a significant interaction effect of visual dynamism and the visual position, to communicate weight, is notable.

Taste liking was affected by the interplay between congruent visual characteristics and drink type. This outcome suggests that lightness has a positive impact on the taste liking. This result contradicts with the established theories, indicating that heaviness positively affects taste liking (Kampfer et al., 2017; Piqueras-Fiszman, Harrar, et al., 2011). The impression of attaching lightness to positivity and favourable attitudes can perhaps serve as an explanation for this observation (Deng & Kahn, 2009). For regular drinks, the incongruent combination of visual characteristics positively impacts taste liking, which is partly in line with the established theories. Similarly, lightness positively contributes to the purchase intention. Whereas for regular drinks, incongruence on visual characteristics positively affects purchase intention. These results

insinuate that for taste liking and purchase intention, the effects of visual positions overrule the presence of a dynamic visual. Therefore, consumers might prefer heaviness cues and link the visual position and the drink more carefully when it comes to regular drinks

6.3 Theoretical and practical implications

Based on the results of this study, theoretical implications and practical implications can be identified. From a theoretical point of view, the influence of visual cues, as well as communicating weight perceptions with haptic cues, on consumer responses, are widely researched. This study found that weight can be communicated by use of dynamic visuals (dynamic visuals and static visuals), and that visual position (top and bottom) have limited influence in this context. Nevertheless, the outcomes of this study are in line with prior studies concerning weight perceptions and consumer responses. Also, visual positions, as used in this study, tend to have limited influence on consumer responses.

As from a practical point of view, product packaging is an essential determinant in the customer decision-making process. This study provides implications for food manufacturers, product packaging designers, and marketers to affect customer decision making. According to this study, it is possible to transfer weight perceptions by use of visuals. Also, dynamic visual can be used as subtle visual elements to persuade consumers. Thus, for products that require heaviness implications, one can design packages with static visuals since heaviness is closely related to quality. Moreover, the nutritional value of the product is an essential predictor for purchase intention, and thus if a package has visual elements on bottom positions, customers are more likely to purchase the product.

6.4 Limitations and suggestions for future research

This study provides insights and findings to amplify this field of research in packaging design. Notwithstanding, this research has some limitations that can be used as input for consecutive studies. The experiment was conducted in the hallway of a local shopping centre. This location was advantageous because there were enough potential participants for the research, and the respondents were approached in a natural setting. However, the disadvantage was that it was a crowded and noisy environment thus it was easy for respondents to get distracted and being less concentrated while tasting the drink, viewing the package, and filling out the questionnaire. Also, most participants visited the shopping centre to do their weekly/daily grocery shopping, and this may have caused that participants rushed their participation. Future research could focus on experimenting on a location where people take their time to shop and walk around, for instance, in the city centre.

The data was collected by the use of an online questionnaire since this was an efficient way to increase the response rates, and it facilitated the data processing. Despite the length of the questionnaire, it did not provide deeper insights into the underlying thoughts of the respondents. Moreover, it did not provide information about the unconscious information processing. Using focus groups or conducting interviews could overcome this limitation since this is a useful method to obtain in-depth data.

The stimulus materials were carefully designed and pretested several times. However, the stimuli were presented on an ad display, so the respondents had to imagine that the soft drink was poured from the package and that the drink belonged to the package. The usage of a physical package might influence the responses differently. The colours used on the package were in pink colour tones to match the colour of the drink. Also, the package was plain (i.e. no additional design features) since the design features were limited: solely, the visual was presented on a fixed position. These design features might have influenced the credibility and attractiveness of the package. Also, weight was communicated by a top (light) and bottom (heavy) positions. Nevertheless, Deng & Kahn (2009) affirm that other positions are also able to communicate weight; new researches can take these positions into account. Additionally, instead of

communicating weight by visual positions, forthcoming research can combine visual and haptic cues to invoke two senses (vision and touch) to manipulate weight perceptions.

The soft drink used in the experiment was an existing drink of a known brand. The drink was not manipulated, so respondents might have recognized the taste, colour, smell, or the combination of these characteristics and linked it to the existing brand, eventually influencing their responses. Preliminary tests for the drink or manipulating the drink by adding sugar, water, or food colouring could bridge this constraint. Besides, the experiment was conducted in the winter, and a soft drink is not a typical drink to consume in cold weathers, so it is useful to consider seasonal influences when experimenting with soft drinks. Several respondents also mentioned this, for this might have affected the responses. The drink was poured in the cup after the respondent agreed on participating in the experiment. Despite the directions of both the researcher and in the questionnaire, most of the participants directly consumed the drink and did not carefully view the display in front of them. To overcome the limitation, the researcher could pour the drink in the cup after the respondent indicates that he/she has viewed the package carefully and is ready to start the questionnaire. Notwithstanding, in everyday life, customers do not take extensively the time to view a package. Thus the time spend viewing the package somewhat resembles the reality.

The product in this study was a non-sparkling drink, although it might be interesting to research this for a sparkling drink or sparkling water with a touch of taste. For, the product itself has some movement in it, and this might correspond to movement in the visual. Further, other product types could be used to test whether the dynamism in visuals and their position influences taste perceptions or other perceptions like healthiness. This study considered general health interest as a covariate; using this variable as a moderator can generate different results. Furthermore, personal design preferences might influence how respondents assess the package, so sensitivity to design or centrality of visual product aesthetics can serve as moderators or covariates in future research.

6.5 Conclusion

The objective of this study was to gain insights into the customer decision-making process and to investigate how visual packaging characteristics communicate weight and affect taste experiences, package attractiveness, and purchase intention. By use of a 2 x 2 x 2 experimental research design, this study intended to answer the central research question: *“To what extent does visual heaviness, communicated through visual dynamism and visual positioning, on a package influence taste experience, package attractiveness, and purchase intention for light and regular drinks?”*

Although not all outcomes illustrate the expected effects, the results contribute to the field of research in packaging design and prove that dynamism in visuals and visual positions can influence weight assumptions. This study demonstrates that especially visual dynamism communicates the weight and positively affects taste characteristics. Where heaviness cues affect taste intensity and lightness cues impact taste naturalness, nutritional value, and taste liking. Also, lightness had a positive influence on the package attractiveness and purchase intention. As for the visual positions, heaviness cues solely impact the nutritional value of the product. Remarkably, no interactions of visual dynamism and visual position were found on consumer responses, even though the theory stresses the importance of combining these elements to communicate weight. Moreover, faintly evidence has been found on basic taste evaluations, solely an interaction between visual dynamism and drink type influenced the sourness of the drink. Nevertheless, no evidence was found for the difference within the conditions. Furthermore, heaviness cues by visual positions and regular drinks affected taste intensity and package attractiveness. The visual on a bottom position for a regular had a favourable impact on taste liking. On the contrary, for package attractiveness, no evidence significant weight influences were found. Also, it can be concluded that congruency for lightness and light drink manipulates the taste liking and purchase intention. To conclude, this study contributes to the framework of embodied cognition and provides additional insights into how weight can be communicated by dynamism in visual characteristics, and eventually manipulate consumer responses.

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Appendices

Appendix 1	Questionnaire preliminary study 1
Appendix 2	Overview of the static-dynamic visual pairs preliminary study 1
Appendix 3	Questionnaire preliminary study 2
Appendix 4	Overview of the designs preliminary study 2
Appendix 5	Setting main study
Appendix 6	Questionnaire main study
Appendix 7	Additional tables

Appendix 1 – Questionnaire preliminary study 1

Beste respondent,

Bedankt voor je deelname! Ik volg de masterstudie communicatiewetenschappen met de specialisatie marketing aan de Universiteit van Twente. Momenteel werk ik aan mijn masterthesis en doe ik onderzoek naar het gebruik van afbeeldingen op consumentenverpakkingen. Om tot een zo goed mogelijk beeld te komen, voer ik een aantal vooronderzoeken uit, zo ook dit onderzoek. Het invullen van deze vragenlijst duurt ongeveer 10 minuten. Er zijn geen goede of foute antwoorden. Alle gegevens worden volledig anoniem verwerkt en worden alleen gebruikt voor dit onderzoek. Je kan te allen tijde stoppen met het invullen van de vragenlijst.

Nogmaals bedankt voor je deelname!

Met vriendelijke groet,

Fatma Aydogdu

f.aydogdu@student.utwente.nl

Wil je meewerken aan dit onderzoek?

- ☐ Ja
☐ Nee

Je krijgt straks een aantal afbeeldingen te zien. Bekijk de afbeeldingen goed en beantwoord de vraag.

Movement

Note: The participant is exposed to the pairs and has to answer the question per visual individually.

Q1 – Q7 Bekijk de onderstaande afbeeldingen goed. In hoeverre ben je het eens met de stelling?

	Zeër mee oneens	Mee oneens	Enigszins mee oneens	Neutraal	Enigszins mee eens	Mee eens	Zeër mee eens
Deze afbeelding suggereert beweging.	☐	☐	☐	☐	☐	☐	☐
Deze afbeelding suggereert beweging.	☐	☐	☐	☐	☐	☐	☐

Control questions

Note: The participant is exposed to the pairs and has to answer the question per pair.

Q8 – Q14 Bekijk de onderstaande twee afbeeldingen goed. Geef aan in hoeverre je het eens bent met de stellingen.

	Helemaal mee oneens	Mee oneens	Neutraal	Mee eens	Helemaal mee eens
Ik vind deze afbeeldingen passen bij een frambozen drankje.	☐	☐	☐	☐	☐
Ik vind deze afbeeldingen aantrekkelijk.	☐	☐	☐	☐	☐

Demographics

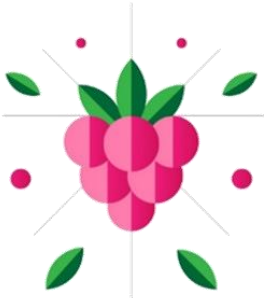
Q15 Wat is jouw leeftijd?

Q16 Wat is jouw geslacht?

- ☐ Vrouw
- ☐ Man

End of survey

Appendix 2 – Overview of the static – dynamic visual pairs preliminary study 1

Design	Visual dynamism	
	Static visual	Dynamic visual
Design 1		
Design 2		
Design 3		
Design 4		

Design 5



Design 6



Design 7



Appendix 3 – Questionnaire preliminary study 2

Welkom,

Bedankt voor je deelname! Ik volg de masterstudie communicatiewetenschappen met de specialisatie marketing aan de Universiteit van Twente. Momenteel werk ik aan mijn masterthesis en doe ik onderzoek naar karakteristieken van consumentenverpakkingen. Om tot een zo goed mogelijk beeld te komen, voer ik een aantal vooronderzoeken uit, zo ook dit onderzoek. Het invullen van deze vragenlijst duurt ongeveer 5 minuten. Er zijn geen goede of foute antwoorden. Alle gegevens worden volledig anoniem verwerkt en worden alleen gebruikt voor dit onderzoek. Je kan ten allen tijde stoppen met het invullen van de vragenlijst zonder hiervoor een reden op te geven.

Nogmaals bedankt voor je deelname!

Met vriendelijke groet,

Fatma Aydogdu
f.aydogdu@student.utwente.nl

Wil je meewerken aan dit onderzoek?

- ☐ Ja
☐ Nee

Je krijgt een aantal designs van verpakkingen voor een frambozen fruitdrankje te zien. Bekijk de designs goed en beantwoord de vraag. **TIP:** zet de helderheid van je telefoon, tablet of pc op de hoogste stand.

Weight, movement, and control questions

Note: The participant is exposed to the pairs (e.g. top position x dynamic visual and bottom position x dynamic visual) and has to answer the question per design individually.

Q1 – Q12 Wat vind je van dit design?

	Zeer mee oneens	Mee oneens	Enigszins mee oneens	Neutraal	Enigszins mee eens	Mee eens	Zeer mee eens
Dit design oogt zwaar.	☐	☐	☐	☐	☐	☐	☐
Dit design oogt licht.	☐	☐	☐	☐	☐	☐	☐
Dit design oogt beweeglijk.	☐	☐	☐	☐	☐	☐	☐
Dit design oogt statisch.	☐	☐	☐	☐	☐	☐	☐
Dit is een mooi design.	☐	☐	☐	☐	☐	☐	☐
Dit design past bij een frambozendrankje.	☐	☐	☐	☐	☐	☐	☐

Demographics

Q13 Wat is je geslacht?

- ☐ Vrouw
- ☐ Man

Q14 Wat is je leeftijd?

End of survey

Appendix 4 – Overview of the designs preliminary study 2

Design	Position x Visual dynamism			
	Top position x Static visual	Bottom position x Static visual	Top position x Dynamic visual	Bottom position x Dynamic visual
Design 1				
Design 2				
Design 3				

Appendix 5 – Setting main study



Figure 1. Setting of the main study.



Figure 2. Identical colour of the soft drinks; on the left side the light version and on the right side regular version.

Appendix 6 – Questionnaire main study

Welkom!

Bedankt voor uw deelname! Momenteel werk ik aan mijn scriptie voor mijn masterstudie Communicatiewetenschappen aan de Universiteit van Twente. Ik doe onderzoek naar een nieuw merk frisdrank. Op het display voor u staat de verpakking van de frisdrank afgebeeld, u wordt verzocht om zorgvuldig naar het display te kijken en de frisdrank te proeven. Vervolgens vult u een korte vragenlijst naar eigen mening in. Probeer niet te lang na te denken bij het invullen van de vragenlijst, er zijn geen goede of foute antwoorden.

Uw deelname aan dit onderzoek duurt ongeveer 5 minuten. Alle gegevens worden volledig anoniem verwerkt en worden alleen gebruikt voor dit onderzoek. U kunt te allen tijde stoppen met het invullen van de vragenlijst, zonder hiervoor een reden op te geven.

Met vriendelijke groet,
Fatma Aydoğdu

Toestemming tot deelname

Ik ga hierbij akkoord met deelname aan dit onderzoek.

- ☐ Ja
- ☐ Nee

Op het display voor u staat de verpakking van een frisdrank afgebeeld. Neem gerust de tijd om de verpakking zorgvuldig te bekijken en proef de frisdrank uit het bekertje voor u. Nogmaals, uw eerlijke mening is waardevol voor dit onderzoek. Als u zover bent, kunt u beginnen met het invullen van de vragenlijst.

Randomization check

Q1 Welk nummer staat er op het display voor u?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8

Taste intensity and taste evaluation

Q2 Hoe omschrijft u de smaak van de frisdrank die u zojuist geproefd heeft? Deze frisdrank smaakt.....

	Totaal mee oneens	Mee oneens	Enigszins mee oneens	Neutraal	Enigszins mee eens	Mee eens	Totaal mee eens
Sterk	☐	☐	☐	☐	☐	☐	☐
Vol	☐	☐	☐	☐	☐	☐	☐
Krachtig	☐	☐	☐	☐	☐	☐	☐
Intens	☐	☐	☐	☐	☐	☐	☐
Zoet	☐	☐	☐	☐	☐	☐	☐

Zuur	☐	☐	☐	☐	☐	☐	☐
Bitter	☐	☐	☐	☐	☐	☐	☐
Zout	☐	☐	☐	☐	☐	☐	☐
Fris	☐	☐	☐	☐	☐	☐	☐
Sprankelend	☐	☐	☐	☐	☐	☐	☐
Natuurlijk	☐	☐	☐	☐	☐	☐	☐
Kunstmatig	☐	☐	☐	☐	☐	☐	☐
Puur	☐	☐	☐	☐	☐	☐	☐
Mild	☐	☐	☐	☐	☐	☐	☐
Voedzaam	☐	☐	☐	☐	☐	☐	☐
Chemisch	☐	☐	☐	☐	☐	☐	☐
Gezond	☐	☐	☐	☐	☐	☐	☐

Taste liking

Q3 In hoeverre vindt u de onderstaande stellingen passen bij de smaak van de frisdrank?

	Totaal mee oneens	Mee oneens	Enigszins mee oneens	Neutraal	Enigszins mee eens	Mee eens	Totaal mee eens
De frisdrank smaakt goed.	☐	☐	☐	☐	☐	☐	☐
De frisdrank is smakelijk.	☐	☐	☐	☐	☐	☐	☐
De frisdrank is lekker.	☐	☐	☐	☐	☐	☐	☐

Purchase intention

Q4 **Stel:** u komt deze frisdrank tegen in de supermarkt en het past binnen uw budget.

	Totaal mee oneens	Mee oneens	Enigszins mee oneens	Neutraal	Enigszins mee eens	Mee eens	Totaal mee eens
Ik zou overwegen deze frisdrank te kopen in de supermarkt.	☐	☐	☐	☐	☐	☐	☐

Package attractivity and congruency

Q5 In hoeverre vindt u de onderstaande stellingen passen bij de frisdrank en de verpakking?

	Totaal mee oneens	Mee oneens	Enigszins mee oneens	Neutraal	Enigszins mee eens	Mee eens	Totaal mee eens
De frisdrank past bij de verpakking.	☐	☐	☐	☐	☐	☐	☐
De verpakking is aantrekkelijk.	☐	☐	☐	☐	☐	☐	☐
De verpakking spreekt me aan.	☐	☐	☐	☐	☐	☐	☐
Ik beschouw de frisdrank en de verpakking als één geheel.	☐	☐	☐	☐	☐	☐	☐
De frisdrank en de verpakking zijn samenhangend.	☐	☐	☐	☐	☐	☐	☐
De inhoud past bij de verpakking.	☐	☐	☐	☐	☐	☐	☐

General Health Interest (GHI)

Q6 In hoeverre vindt u de onderstaande stellingen bij u passen?

	Totaal mee oneens	Mee oneens	Enigszin s mee oneens	Neutraal	Enigszin s mee eens	Mee eens	Totaal mee eens
Hoe gezond een product is, heeft weinig invloed op mijn voedingskeuzes.	☐	☐	☐	☐	☐	☐	☐
Ik ben erg gefocust op hoe gezond mijn eten is.	☐	☐	☐	☐	☐	☐	☐
Ik eet wat ik wil en maak me niet druk om hoe gezond het is.	☐	☐	☐	☐	☐	☐	☐
Ik vind het belangrijk dat mijn eten laag in vetten is.	☐	☐	☐	☐	☐	☐	☐
Ik eet altijd gezond en gebalanceerd.	☐	☐	☐	☐	☐	☐	☐
Ik vind het belangrijk dat mijn dagelijkse voeding veel vitaminen en mineralen bevat.	☐	☐	☐	☐	☐	☐	☐
Hoe gezond een snack is, maakt voor mij geen verschil.	☐	☐	☐	☐	☐	☐	☐
Ik vermijd bepaald eten niet, ook al verhoogt het mijn cholesterol misschien.	☐	☐	☐	☐	☐	☐	☐

Manipulation checks

Q7 Bekijk de verpakking nogmaals goed. In hoeverre vindt u de stellingen passen bij de verpakking?

	Totaal mee oneens	Mee oneens	Enigszins mee oneens	Neutraal	Enigszins mee eens	Mee eens	Totaal mee eens
De verpakking oogt dynamisch.	☐	☐	☐	☐	☐	☐	☐
De verpakking oogt licht.	☐	☐	☐	☐	☐	☐	☐
De verpakking oogt statisch.	☐	☐	☐	☐	☐	☐	☐
De verpakking oogt zwaar.	☐	☐	☐	☐	☐	☐	☐

Demographics

Hoe vaak consumeert u frisdrank zonder prik?

- ☐ Dagelijks
- ☐ Wekelijks
- ☐ Maandelijks
- ☐ Zelden
- ☐ Nooit

Q9 Wat is uw geslacht?

- ☐ Vrouw
- ☐ Man

Q10 Wat is uw leeftijd?

End of survey

Dit is het einde van de vragenlijst. Bedankt voor uw deelname aan dit onderzoek! Mocht u nog vragen en/of opmerkingen hebben, dan kunt u contact opnemen door te mailen naar: f.aydogdu@student.utwente.nl.

Appendix 7 – Additional tables

7.1 Results preliminary study 2

Appendix table 1

Means and standard deviations of weight perception per pair (N = 15)

Design	Light		Heavy		Total heaviness	
	<i>M</i> ^{a)}	<i>SD</i> ^{a)}	<i>M</i> ^{b)}	<i>SD</i> ^{b)}	<i>M</i> ^{b)}	<i>SD</i> ^{b)}
<i>Design 1</i>						
Top x static	3.27	1.49	3.00	1.46	3.14	1.48
Top x dynamic	2.73	1.39	2.60	1.12	2.67	1.26
Bottom x static	4.47	1.89	4.53	2.00	4.50	1.95
Bottom x dynamic	4.27	1.75	3.60	1.99	3.94	1.87
<i>Design 2</i>						
Top x static	2.93	1.53	2.47	1.30	2.70	1.49
Top x dynamic	3.67	2.09	3.40	1.88	3.54	1.99
Bottom x static	4.33	2.02	4.27	2.19	4.30	2.11
Bottom x dynamic	4.60	1.77	4.53	1.73	4.57	1.75
<i>Design 3</i>						
Top x static	3.07	1.53	2.67	1.45	2.87	1.49
Top x dynamic	3.00	1.85	2.73	1.91	2.87	1.88
Bottom x static	4.73	1.83	4.60	1.99	4.67	1.91
Bottom x dynamic	5.00	1.69	5.13	1.81	5.07	1.75

a) 7-point Likert scale (1= totally agree – 7= totally disagree) *reversed*.

b) 7-point Likert scale (1= totally disagree – 7= totally agree).

Appendix table 2

Means and standard deviations of dynamism per pair (N = 15)

Design	Static		Dynamic		Total staticity	
	<i>M</i> ^{a)}	<i>SD</i> ^{a)}	<i>M</i> ^{b)}	<i>SD</i> ^{b)}	<i>M</i> ^{a)}	<i>SD</i> ^{a)}
<i>Design 1</i>						
Top x static	5.40	1.35	5.53	1.41	5.47	1.38
Bottom x static	5.33	1.45	5.53	1.55	5.43	1.50
Top x dynamic	2.93	1.87	3.13	1.77	3.03	1.82
Bottom x dynamic	2.80	1.61	3.13	1.55	2.97	1.58
<i>Design 2</i>						
Top x static	5.07	1.67	5.20	1.61	5.14	1.64
Bottom x static	5.20	1.61	5.13	1.73	5.17	1.67
Top x dynamic	3.13	1.81	2.87	1.46	3.00	1.63
Bottom x dynamic	2.93	1.58	3.00	1.41	2.97	1.50
<i>Design 3</i>						
Top x static	5.40	1.35	5.33	1.54	5.37	1.45
Bottom x static	5.13	1.55	5.27	1.49	5.20	1.52
Top x dynamic	3.27	1.91	2.60	1.68	2.94	1.80
Bottom x dynamic	3.27	2.02	2.80	1.82	3.04	1.92

a) 7-point Likert scale (1 = totally disagree – 7= totally agree).

b) 7-point Likert scale (1= totally agree – 7= totally disagree) *reversed*.

Appendix table 3

Means and standard deviations of the attractivity and suitability per design (N = 15)

Design	Attractivity		Suitability		Total	
	<i>M</i> ^{a)}	<i>SD</i> ^{a)}	<i>M</i> ^{a)}	<i>SD</i> ^{a)}	<i>M</i> ^{a)}	<i>SD</i> ^{a)}
<i>Design 1</i>						
Top x dynamic	5.53	.92	5.80	1.01	5.67	.97
Bottom x dynamic	4.87	1.41	5.47	1.46	5.17	1.43
Top x static	5.60	.91	5.40	1.24	5.50	1.08
Bottom x static	5.60	1.06	5.73	.96	5.67	1.01
<i>Design 2</i>						
Top x dynamic	5.20	1.47	5.40	1.50	5.30	1.49
Bottom x dynamic	5.00	1.65	5.40	1.64	5.20	1.64
Top x static	5.47	1.41	5.67	1.29	5.57	1.35
Bottom x static	5.80	1.08	5.60	1.35	5.70	1.22
<i>Design 3</i>						
Top x dynamic	5.33	1.54	5.60	1.24	5.47	1.39
Bottom x dynamic	4.93	1.94	5.40	1.55	5.17	1.75
Top x static	5.40	1.55	5.93	.96	5.67	1.26
Bottom x static	5.60	1.12	5.67	1.05	5.64	1.08

a) 7-point Likert-scale (1= totally disagree – 7= totally agree).

7.2 Results main study

Appendix table 4

Means and standard deviations of the significant main effects and interaction effects of the independent variables on the dependent variables.

Dependent variable	Independent variable		<i>M</i>	<i>SD</i>
Sourness	Visual dynamism x drink type	Dynamic – light	2.60	1.65
		Static – light	2.28	1.46
		Dynamic – regular	2.28	1.35
		Static – regular	2.73	1.48
Taste intensity	Visual dynamism	Dynamic	4.35	1.33
		Static	4.72	1.36
	Visual position x drink type	Top – light	4.72	1.29
		Bottom – light	4.43	1.28
		Top – regular	4.23	1.56
		Bottom – regular	4.74	1.23
Taste naturalness	Visual dynamism	Dynamic	4.37	.94
		Static	3.65	1.26
Nutritional value	Visual dynamism	Dynamic	3.67	1.46
		Static	3.16	1.35
	Visual position	Top	3.21	1.41
		Bottom	3.62	1.42
Taste liking	Visual dynamism	Dynamic	5.58	1.46
		Static	4.94	1.62
	Visual dynamism x visual position x drink type	Light		
		Dynamic – top	5.81	1.07
		Static – top	5.03	1.45
		Dynamic – bottom	5.71	1.27
		Static – bottom	5.26	1.47

		Regular		
		Dynamic – top	5.03	1.50
		Static – top	5.10	1.65
		Dynamic – bottom	5.76	1.74
		Static – bottom	4.36	1.80
Package attractiveness	Visual dynamism	Dynamic	5.43	1.31
		Static	5.01	1.30
	Visual position x drink type	Top – light	5.06	1.18
		Bottom – light	5.48	1.23
		Top – regular	5.33	1.25
		Bottom – regular	5.00	1.55
Purchase intention	Visual dynamism	Dynamic	5.02	1.78
		Static	4.36	1.90
	Visual dynamism x visual position x drink type	Light		
		Dynamic – top	5.50	1.50
		Static – top	3.93	1.98
		Dynamic – bottom	4.83	1.60
		Static – bottom	4.47	1.76
		Regular		
		Dynamic – top	4.37	1.88
		Static – top	4.77	1.92
		Dynamic – bottom	5.40	1.94
		Static – bottom	4.27	1.93

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