The Effects of Congruency in Product-Claim-Package on Consumers' Perception and Purchase Intention

Master Thesis

Student: Zhihui Yu
Register Number: 900421981030
Course Code: MCB-80433
Supervisors: Dr. Erica van Herpen;
Dr. Ir. Hans van Trijp

Marketing and Consumer Behaviour
Wageningen University
Wageningen

Abstract

Within Europe, health claims have been allowed in food products as visual features on packages. The objective of this research was to study how the congruency in product-claim-package influences consumers' perception and purchase intention, as well as the 'magic bullet' effects. Pictures on packages were studied instead of the whole packages. A survey among 143 respondents from the Netherlands explored the impacts of different levels of congruency on product perceptions (attractiveness, naturalness, credibility of information, overall healthiness, and novelty), purchase intention, and overgeneralization on 5 health benefits (giving extra energy, improving cardiovascular fitness, improving cognitive function, maintaining healthy cholesterol level, and reducing fat level) by comparing ratings on different levels of congruency in product-claim-picture. The results showed that the congruency between health claims and products increased perceived attractiveness, naturalness, credibility of information, and purchase intention, but it decreased the perceived novelty; consumers overgeneralized the healthiness on giving extra energy and cognitive function when they were exposed to a health claim on a congruent product. In addition, abstract and health-related pictures, compared to concrete and claimed benefit-related pictures, led to favourable product evaluations on perceived attractiveness, perceived naturalness, and higher purchase intention. Furthermore, abstract pictures induced associations with inappropriate health benefits (giving extra energy, improving cardiovascular fitness, and reducing fat level). The findings suggest implications for consumer research, food companies and policy makers.

Key words

Congruency in product-claim-picture; product perception; purchase intention; overgeneralization of healthiness

Table of Contents

1. Introduction

The first Chinese jelly manufacturer started in China in 1985. Eight years later, GuangDong Xizhilang Group Limited (XZL) was founded, which produced three kinds of products, including jelly. Until 1996, it was still a local brand without much market share. However, in 1997, it repositioned the product and developed a new package. In 1998, series of new products entered the market, called "Romantic Cristal Love" series (Fig. 1) targeted at young lovers. The symbolic meaning of the products was the feeling of love, which conveyed love among young lovers and brought the feeling of love. The new heart-shaped package, pink color, and the image of two cartoon lovers on the package connoted love and romance, which was congruent with the symbolic meaning of the products. The new products had great performance in jelly market and became famous in China. During one-year period, XZL became the second famous brand in jelly market, rather than a normal local brand. A survey among national consumers in 1999 showed that XZL had held 83% of the jelly market. Later on, XZL put a paper in each package with a love story, making the products more romantic and sweet. Until now, "Romantic Crystal Love" series are popular and sell well in China. From this case, we can find that the key factor of the success is the new package design. Various elements of the package (e.g., shape, color, and image) connote the same symbolic meaning. The congruency of symbolic meanings is important to consumers.

Literatures indicate that congruency plays an important role in buying process, since it positively affects various kinds of consumer responses, such as brand impression, brand credibility, and perceived product value (e.g., Orth & Malkewitz, 2008; van Rompay & Pruyn, 2011). Studies have demonstrated the effects of various forms of congruency on consumer responses, e.g., congruency between visual and verbal information (Heckler & Childers, 1992), congruency between product type and color (Bottomley & Doyle, 2006), and congruency between shape and typeface (van Rompay & Pruyn, 2011). For example, the shape-typeface congruency positively affects perceived brand credibility and price expectation (van Rompay & Pruyn, 2011), and the unexpected information leads to less favorable brand evaluation, compared to expected information (Lee and Mason, 1999). The visual elements of product design convey symbolic meaning to consumers, and the package design can enhance the image of a brand. Symbolic meaning can be a determinant of products selection (Creusen & Schoormans, 2005). Consumers attach meaning of a brand to the visual elements of products, so the image of a brand is transferred in this way. Some companies therefore use consistent visual and verbal components in product packaging.

There are various examples of presence of congruency on product appearance. Red Bull is a famous functional beverage company. Functional foods are food products which have been enriched with natural substances/components with a specific physiological preventive and/or health-promoting effect (Poulsen, 1999). In Europe, Red Bull is packed in blue-silver can, with a red logo of two red bulls in the center of the can, and a red "Vitalizes body and mind" claim under the logo (Fig. 1). Blue is associated with sincere, dependable, and trustworthy (Jacobs et al., 1991), while red is associated with exciting, powerful, and strong (Wexner, 1954). Functional products are believed to be better presented in blue (Bottomley and Doyle, 2006). Therefore, when consumers notice the blue can and the red logo, they perceive Red Rull as functional, credible, and exciting, which is congruent with the claim and the product itself. In 2013, 5.387 billion cans of Red Bull were sold in 166 countries. It is likely that the

presence of congruency in claim-package-product is a factor of Red Bull's success.

Fig. 1. Examples of congruency of symbolic meaning

On the other hand, in terms of new product development, Red Bull also created schema incongruency in its development. The unique formula of Red Bull Energy Drink provided a completely different attribute from beverage category schema. That is, it was a functional beverage which provided energy. So it was regarded as the birth of a new product category. A research suggests that moderate schema incongruity leads to favorable product evaluations (Meyers-Levy & Tybout, 1989). So the application of schema incongruity may play a role in Red Bull's development.

We can see from the example above that products may present congruency of symbolic meanings, whereas they may create incongruency in other aspects as well. The effects of congruency/incongruency on consumer responses may differ among different formats of congruency in products. Although consumer researchers have studied on congruency generally, there is no attention paid to distinguish different formats of congruency in different types of products. So it is necessary to explore more specifically in one certain condition. This paper is going to study the congruency in functional product-health claim-package.

Health claims are new tool for communicating healthiness attribute to consumers (Lähteenmäki et al., 2010). In 2006, they began to be acceptable in food products and supplements if they are based on scientific evidence within the European Union (Lähteenmäki et al., 2010). Recently consumer researchers focus on relevant issues on health claims (Roe et al., 1999; Urala et al., 2003; Lyly et al., 2007). Positive effects on the perceived healthiness of products have been reported (Urala et al., 2003; Lyly et al., 2007; van Trijp & van der Lans, 2007). A health claim is presented on product package, conveying product message as a visual element of a package.

Consumers make inferences about products from visual appearance when they lack relevant information (Fenko et al., 2010; Becker et al., 2011). The visual features connote symbolic meanings (Childers & Jass, 2002; Rompay et al., 2005; Zhang et al., 2006), and the congruency of the symbolic meanings across mix elements in turn affects product evaluations (van Rompay & Pruyn, 2011). Therefore, it is likely that health claims, as a visual element of a package, should be congruent with other visual features as well. It could be an important issue that how health claims interact with visual elements on packages to affect consumer responses. However, the study of this keeps blank. The lack of literatures makes it unclear that whether the congruency between health claims and pictorial

elements is as important as the congruency between other visual elements. If it is, will a higher level of congruency lead to superior product evaluation and buying intention? If a heart disease reduction related claim is presented, will a concrete picture with a red heart or an abstract picture with a healthy person doing extreme sports be preferred? The answers to these questions are unknown. So it is necessary to explore the interaction effects between health claims and pictorial elements, including colors and images.

Besides, the interaction between health claims and carrier foods is another issue that should be considered. A few articles have studied the combinations of health claims and products (Verbeke et al., 2009; van Kleef et al., 2005). Verbeke et al. (2009) found that generally food products with functional heath claims are preferred over those with reduction of disease risk claims. Van Kleef et al. (2005) studied health claim and food products compatibility, results indicating that health claims and food carriers influence perceived attractiveness and intention to buy independently. Although there are several researches on combinations of health claims and food products, nobody used the terminology "congruency" exactly. There is not much congruency-related literature on the study of food products. Hence it is necessary to study the congruency effects between health claim and carrier foods. Mandler (1981) proposed that schema congruity is presented by a match between the attributes of a product and a relevant schema. Based on this, this paper refers congruency in claim-product to the degree to which the claimed health benefit matches the category schema. If a claimed health benefit is completely the same with a health attribute evoked by the category schema, it is extreme congruency.

As what has been discussed above that the congruency issue about health claims is unexplored, it is hard to know how the degree of congruency in product-claim-package affects consumer responses. For example, when consumers are exposed to a new milk product with a reduction of heart disease claim presented on the package, with a heart image next to the claim, it is difficult to predict what happens. Does it increase the consumers' intention to buy due to the health-related claim, or does it lead to negative evaluation because of the less linkage between milk and reduction of heart diseases in minds? Let's consider another case. When consumers are exposed to milk with a health claim which has more linkage to milk, i.e., it supports bone health, and with a bone picture or a sporty figure on the package. Do the two pictures lead to same effects? Consumers may purchase both milk for the sake of the bone health, but some people may think that the milk with sporty figure also brings other benefits like enhancing energy, generalizing a greater healthiness perception. On possible reason is that the sporty figure is associated with different things such as power or energy, which could evoke overgeneralization of perceived benefits. The lack of knowledge makes it hard to predict what happens in a specific condition. Therefore, this paper is going to investigate congruency issue in health product-claim-package. Pictures on packages will be studied instead of the whole packages.

Visual product features connote symbolic meanings (Childers & Jass, 2002; Rompay et al., 2005; Zhang et al., 2006). Within a store, packages often feature colorful graphic and visual elements along with verbally oriented elements to convey a message about product (Houston et al., 1987). A more similar message conveyed by a health claim and a picture leads to a high level of congruency. In terms of product itself, people buy products not for what they do, but for what they mean (Solomon, 2006). For example, when people buy a Nike "Swoosh", they do more than choosing footwear-they may also be making a lifestyle statement about the type of person they are (Solomon, 2006). Similarly, people

buy functional foods not only because of hunger, but also because of the health benefits. Consumers expect physiological preventive and/or health-promoting effects from functional products (Bottomley & Doyle, 2006). The congruency between health claims and functional foods is defined as the degree to that the claimed benefits matches the health attribute in the category schema. Extreme congruency in product-claim-picture therefore occurs when a health claim and a picture convey a same meaning, which completely matches the health attribute within a category schema. The objective of this paper is to investigate consumers' perception and buying intention towards different levels of congruency in product-claim-picture. It will contribute to the knowledge gap and provide suggestions on functional products package design in practice. The study puts forward a main research question: how do different levels of congruency in product-claim-picture affect consumers' responses to functional foods? Sub questions are as followed:

(1) How does the congruency affect consumers' product perception?
(2) How does the congruency affect consumers' purchase intention?
(3) Will an abstract sport figure with the same claim lead to overgeneralization of perceived health benefits compared to a concrete congruent picture?
(4) Will the congruency between health claims and products lead to overgeneralization of perceived health benefits?
(5) How do the product perceptions affect purchase intention?

The study starts with a general literature review on health claims and product package. In chapter 4, a distinction between perceptual and conceptual congruency will be provided to give a deeper understanding of congruency. It is followed by a review of congruency of symbolic meaning and its effects on consumers, and influences of application of incongruency in some aspects. The different ways of information processing in different conditions will be introduced in chapter 5. Afterwards, the methodology used will be described, including experimental design, procedure, measures, and data analysis. Results of the study will be provided in chapter 8, followed by further discussion and implications for consumer researches, food companies and policy makers.

2. Functional foods and health claims

Nutrition and health claims are potentially powerful tools in consumer communications as they convey information and health-related food benefits that might be unknown to consumers (Leathwood, 2007). Within the European Union, the Regulation EC (No) 1924/2006 allows two basically two types of claims on foodstuffs: nutrition claims and health claims (Verbeke et al., 2009). Health claims are further divided into two types: functional health claim (further in this paper called just "health claim") and reduction of disease risk claim. A functional health claim is any claim that states, suggests or implies that a relationship exists between a food category, a food or one of its constituents and health (Leathwood et al., 2007). A reduction of disease risk claim is any health claim that states, suggests or implies that the consumption of a food category, a food or one of its constituents significantly reduces a risk factor in the development of a human disease (Leathwood et al., 2007).

Consumers may perceive the potential benefits with a bias, due to the way a claim is presented or to the beliefs of the individual reading it (Leathwood et al., 2007). A "magic bullet" effect occurs when consumers associate the product with inappropriate health benefits (Roe et al., 1999). Consumers may think health claim foods provide a "magic bullet" against all health problems. A reduction of a certain disease claim may be transferred to reduction of other diseases as well, whether it will happen or not. For example, consumers might infer from a low cholesterol claim that the product helps against cardio-vascular disease (Leathwood et al., 2007).

Health claims influence perceptions of other attributes as well. "Halo effect" occurs when consumers generalize positive perception on other health-related attributes not mentioned in the claims (Roe et al., 1999). Several studies suggest that health claims increase consumers' perception of healthiness of products (Urala et al., 2003; Lyly et al., 2007; van Trijp and van der Lans, 2007). On the other hand, a negative halo effect is reported. Hamilton et al. (2000) argue that consumers associate improving product healthiness by reducing fat with inferior sensory properties, and thereby inferior taste. Lähteenmäki et al. (2010) demonstrate the negative effect of health claims on perception of naturalness. Consumers perceive added functional components as unnatural (Lähteenmäki et al., 2010). A study also implies that the increased perceived healthiness is moderate at best and the impact can be negative when consumers are exposed to the claims containing ingredients and benefits they have never been exposed to before (Lähteenmäki et al., 2010). Besides, when normal bread and yoghurt are combined with health claims on the packages, the perceived healthiness does not change, but perceived tastiness and attractiveness decreases. Health claims affect perception of other products attributes, and thus indirectly influence consumers' judgment of the overall product quality.

Some researchers have studied impacts of different types of claims and different combinations of health claims and food products (van Kleef et al., 2005; Verbeke et al., 2009; Singer et al., 2006; Urala et al., 2003). Verbeke et al. (2009) found a significant interaction effects of claim type and product effects. Van Kleef et al. (2005) did an experiment to explore consumers' evaluations to different types of claims through a two (enhanced health claim or reduction of disease risk claim) by four (four types of diseases) mixed design, the results demonstrating that overall reduced disease risk claims have higher buying intention ratings than enhanced functional health claims. But the impacts also depend on the health benefits described in the claims. For example, consumers perceive reduction risk of

cardiovascular disease claims more attractive, convincing and credible, rather than enhanced healthier heart claims, but reduced risk of energy claims are rated lower than enhanced functional energy claims (van Kleef et al., 2005). However, some different findings indicate that consumers perceive products with functional health claims better than those with reduction of disease risk claims, in terms of intention to buy, attractiveness of products and credibility of products. The reduction of disease risk claims can act as negative reinforcement messages, because consumers dislike being reminded of potential diseases or losses particular in a context where hedonic values and pleasure play an important role (Verbeke et al., 2009).

Previous studies imply that consumer perceptions and reactions depend on specific combination of health claims and products (van Kleef et al., 2005; Lyly et al., 2007). Consumers prefer the functional foods concepts that primarily communicate disease-related health benefits in carriers that have a healthy image or health motivated positioning history (van Kleef et al., 2005; Verbeke et al., 2009). For example, health consumers appear to hold a clear preference for fibre-enriched cereals, compared to calcium-enriched fruit juice and omega-3 enriched spread (van Kleef et al., 2005). Although fruit juice presents a healthy image (Bech-Larsen & Grunert, 2003), the less natural combination of juice and calcium leads to skepticism and lower evaluations. The credibility of products, which is a determinant of intention to try functional foods, is dependent on specific claim-carrier combinations (van Kleef et al., 2005; Poulsen, 1999). In line with the finding, Lyly et al. (2007) found that health claims have a significant positive effect on expected liking in beverage, but there is no notable effect on liking for soups. But it is interesting to note the effects of health claims on product- or claim-appeal variables is larger than those on buying intention, so there would be additional barriers preventing consumers' buying intention despite of positive evaluations on attractiveness and credibility (Verbeke et al., 2009). The gap is larger for products with functional health claims, rather than those with reduction of disease risk claims. On the other hand, personal characteristics have impacts on consumer reactions to health claims. Consumer ratings are higher for health claims with personally relevant illness (van Kleef et al., 2005). Consumers in different countries also perceive health claims differently (van Trijp & van der Lans, 2007).

Health claims and carrier products independently affect consumers' perceptions (van Kleef et al., 2005; Williams et al., 2008), but carrier products have the largest impacts on consumers' perceived healthiness and willing to try different functional foods concept (Ares & Gámbaro, 2007). With respect to combined effects of carrier products and enrichment, a study shows that for a certain product, the most positive effects on perceived healthiness is achieved when the enrichment is a functional ingredient inherent in the original products (Ares & Gámbaro, 2007). In line with the study, the relationship between the healthiness of carrier product, the nature of the enrichment, and the potential benefits that can result from the enriched products consumption has effects (Peng et al., 2006). Results of a study show that consumers do not readily accept the health information in the claim unless it is confirmed by their knowledge or beliefs (Lähteenmäki et al., 2010), thus whether consumers are familiar with the ingredient or benefits also influence perceptions.

3. Package design

Package design helps to create brand impression (Orth and Malkewitz, 2008), taste impressions and general product evaluations as well (Becker et al., 2011). Consumers make inference about products' attributes and taste with the help of visual appearance; therefore it could be a driver of consumer decision making (Fenko et al., 2010; Becker et al., 2011). Specific feature in package design affect consumer evaluations like color (Becker et al., 2011; Henderson & Cote, 1998). For example, adding a small percentage of yellow to the overall green color of cans lead consumers to experience the taste as more lemony (even though the drink itself has not been manipulated) (Hine, 1995). But the overall effect comes from the integration of all elements as a holistic design instead of an individual element (Orth and Malkewitz, 2008).

The visual product features connote symbolic meanings (Childers & Jass, 2002; Rompay et al., 2005; Zhang et al., 2006). For instance, rounded logos are perceived more harmonious than angular logos (Zhang et al., 2006); black color is associated with expensive and powerful, while gray is associated with dependable and high quality (Jacobs et al., 1991). Studies have shown that the congruency of the symbolic meaning across mix elements plays an important role in product evaluations (van Rompay & Pruyn, 2011). The congruency of shape and typeface increases brand credibility and price expectation (van Rompay & Pruyn, 2011). Designers need to decide how to mix the elements and determine the appropriate level of congruity among them (Bloch, 1995). For example, a juice study suggest that the package images modulate the incidental flavor memory for fruit juice, but the memory bias depend on the perceived congruency of image labels and flavor, and prior experiences (Mizutani et al., 2012).

The combination of visual features on package and the product itself also matters (Doyle & Rottomley, 2004; Bottomley & Doyle, 2006). Findings indicate that products should be presented in different colors (Schiller, 1935). Both products and colors connote meanings (sets of associations and overtones), and the greater their similarity, the more appropriate a color will be for a product or brand (Bottomley & Doyle, 2006). For instance, breakfast foods and soap are best presented in yellow-green color, which is associated with economy and cleanliness, (Schiller, 1935). Blue is more appropriate for functional products like kitchen roll, while red is more appropriate for sensory-social products like perfume (Bottomley & Doyle, 2006). Besides, different logo design on package evokes different perceptions of brands (Orth and Malkewitz, 2008). A logo consisting of an image of a leaf would be judged to be more natural than that consisting of a building. Thus, we can say that the image on package should elicit an association which is congruent with the meaning of brands.

4. Congruency literature review

4.1 Distinguishing perceptual and conceptual incongruency

When people are exposed to stimuli, two phenomena may occur-perceptual and epistemic phenomenon (Michaut, 2004). Perceptual phenomenon refers to percetio, i.e., the fact of gathering and seizing as well as experiencing and feeling elements of the environment (Michaut, 2004). It includes the shape, size, texture, taste and the like, can be concrete or relatively abstract but does not comprise any meaning or category identity (Morfaux, 1980; Springer, 2001). It functions at a subconscious level, with little or no attention paid to the stimulus (Obermiller, 1985). In contrast, an epistemic phenomenon is a synonym of the theory of knowledge or ways of knowing (Morfaux, 1980). It is related to cognitive activities. Epistemic information refers to meaning assignment and location in knowledge structure; it deals with deeper information processing. It is sequential, unit-integrative and causal, mostly relying on verbal information and symbolic representation (Krugman, 1977; Hansen, 1981). On a more concrete level of the two dimensions, Berlyne (1960) distinguished two types of incongruity - perceptual and conceptual incongruity. Perceptual incongruity occurs when properties regarded as incompatible are perceived together, while conceptual conflict results from dissonance between two cognitive elements and cognitive imbalance.

Michaut (2004) developed the two terms in the context of new products. The terminology "incongruity" is used also, but the nature is the same with incongruency. Both perceptual and/or conceptual incongruency dimensions are involved when consumers are exposed to new products. For instance, a basic product is represented by a traditional, natural taste with white color yogurt. If a subject is exposed to a blue yogurt which is incongruent with the schemas consumers have of yogurt, blue is rather unexpected. This occurs at a perceptual level. If the subject is exposed to a yogurt which has a property of improving eyesight, the new product may induce puzzle at an epistemic level. It requires more cognitive efforts for consumers to make sense of new products. To conclude, perceptual incongruency results from a perceived contradiction between the present stimulus and expectation aroused by past experience (Berlyne, 1960). It deals with the perception of the surface properties of the stimulus, which can be integrated at the perceptual level into a global structure (Springer, 2001; Rosch, 1999). Conceptual incongruency involves information processing and understanding at a cognitive level.

Based on the literature, in terms of the congruency in product-claim-package, perceptual incongruency may occur if visual cues (i.e., picture) on packages are different from what you expect but without interfering the symbolic meaning. A study shows an inverted-U-shaped relationship between perceptual incongruency and market success (Michaut, 2004). In contrast, conceptual congruency refers to the extent to which claims and cues on packages convey the same symbolic meaning, as well as the products.

4.2 Effects of congruency of symbolic meaning on consumer responses

Some consumer researchers focus on the study of congruency (Houston et al., 1987; Meyers-Levy, & Tybout, 1989; Lee & Mason, 1999; van Rompay & Pruyn, 2011). Although they use different

terminologies which lack clear definitions, i.e., consistency, congruity, and congruency, the natures are the same. Studies demonstrate the various effects of congruency on consumer responses (e.g., Orth & Malkewitz, 2008; van Rompay & Pruyn, 2011). Congruency of symbolic meaning across mix elements, for instance, is considered as an antecedent of perceived brand credibility, defined as the believability of the product information contained in the brand (Erdem & Swait, 1998). In line with Erdem and Swait (1998), a study demonstrates the positive effects of congruency of visual features on brand credibility (van Rompay & Pruyn, 2011). The results show that when the shape and typeface of package connote the same meaning (i.e., luxury or casualness) in bottled water, consumers perceive the brand as more credible and have higher price expectation, compared to that when the shape and typeface connote different meanings. The brand credibility is an important determinant of consumer-based brand equity, which means the added value a brand gives to a product (Erdem & Swait, 1998). Similarly, Doyle and Bottomley (2004) find whether a particular product is combined with an appropriate font has impacts on people's choice. Brands presented in appropriate fonts were chosen more often than brands presented in inappropriate fonts. For example, chocolate is better appeared in font "Signet" rather than "Salem". Among 29 fonts, jewelry and perfumes are most appropriately presented by fonts that are italicized, scripted, ornate (e.g., Caslon Old Style Italic, Typo Slope), which in turn is associated with the qualities of "luxury" and "dignity", while automobiles, building materials and coffee are most appropriately presented by fonts that are emboldened, simple and easy-to-read (e.g., Cheltenham Bold, Century Bold), which in turn is associated with the qualities of "cheapness", "economy" and "strength" (Poffenberger & Franken, 1923). Besides, whether color is congruent with product types makes sense (Bottomley & Doyle, 2006). Experiments show that functional products are better presented in functional colors (e.g., blue), while sensory-social products are more appropriate in sensory-social colors (e.g., red). The appropriateness between color and products has impacts on inherent and immediate vale of a brand (Bottomley and Doyle, 2006).

To account for the effects of congruency on consumer response, fluency is the potential mechanism. Fluency refers to the subjective experience of ease or difficulty associated with completing a mental task (Oppenheimer, 2008). It is a feeling of ease associated with a cognitive operation which is generated by almost all forms of thinking. Reber et al. (2004) argue that process fluency is hedonically marked, that is, fluent processing is positive. Therefore, fluent stimuli are expected more credible or true (Unkelbach, 2007) and aesthetically pleasing (Reber et al., 2004) than non-fluent stimuli. Similarly, fluent statements are considered to be more true or likeable (Oppenheimer, 2008). The ease of processing can serve as internal cognitive cues towards judgment. For example, in the absence of objective "truth" criteria, the positive effects of fluency may be a cue in considering the correctness of a statement or a proposition, explaining why identical statements are judged more credible when they are presented in colored fonts that can be easily read (Unkelbach, 2007). Perceived congruency of symbolic meanings expressed among visual product features may facilitate processing (van Rompay &Pruyn, 2011). Fluent processing generally inspires favorable products evaluations (Lee & Labroo, 2004). Findings suggest that advertising exposures increase perceptual fluency, which in turn leads to more favorable attitudes towards the brand.

4.3 Effects of incongruency on consumer responses

However, some conflicting results are reported. Meyers-Levy and Tybout (1989) demonstrate that

products that are moderately incongruent with the associated category schema stimulate the process of responding to the levels of schema congruity, and thus lead to more favorable product evaluation than the products that are either congruent or extremely incongruent. Two extreme cases occur when a product matches an activated product category schema completely (e.g., “me-too” product) or multiple features of a product mismatch an activated category schema completely (Meyers-Levy and Tybout, 1989). In practice, the level of congruency therefore lies between extreme match and mismatch. For example, new products include both congruent and incongruent attributes with the product category schema. Mandler (1981) proposed that the process of responding to different levels of schema congruity can influence the valence and extremity of affective responses. Schema congruity leads to a favorable response because people like objects that conform to their expectation and allow predictability. On the other hand, the novelty of the object increases arousal, and greater elaboration may occur in an effort to resolve the incongruities. Moderate incongruity can be successfully resolved and be regarded as interesting and positively valued. That could explain why moderate incongruity is preferred.

This kind of approach is utilized in ads as well. Some ads include incongruent information with consumers’ previously developed schemata or expectations (Heckler and Childers, 1992). For example, an ad for a brand of stain-resistant, easy-to-clean carpet shows an elegantly dressed man approaching a beautiful woman in a posh, dining-room setting—followed by all the food, flowers, china, and so on crashing to the floor as the man causally leans to the table. The incongruent image in the ad is designed to increase the amount of attention and thus the degree to which the information being presented is processed. This process can be understood through associative memory models (Hastie and Kumar, 1979). Social cognitive literature suggests that subjects have better memory for incongruent behaviors with a given personality description of a target than for those that are congruent with the personality (Hastie, 1980). Individuals may have created an impression in mind, serving as a framework that guides processing of subsequently presented information. When exposed to further information, individuals compare the new information to that already stored in memory and an associative linkage may result. If the new information is difficult to comprehend, that is, it is incongruent with expectations; individuals retrieve additional information from long-term memory to understand the new information. The additional elaborate efforts increase the number of associative pathways in memory, which in turn enhances recall of incongruent information. The process involves a network of paths that vary in number and strength for incongruent versus congruent behaviors and minimal paths that are associated with unrelated behaviors. When individuals retrieve both congruent and incongruent behavior information to integrate the new information, the complex set of linkages is developed.

4.4 Product categorization

As what we have mentioned, we define the level of congruency between health claims and food products in this paper as how the claimed benefits match the category schema. And the congruency of products and product category schema has impacts on product evaluation (Meyers-Levy & Tybout, 1989). Therefore product categorization will be the underlying mechanism to explain the effects of congruency in claim-product.

A schema for a product category contains prior knowledge stored in minds about the product (e.g., typical attributes, relationships among attributes, and relationships between the product category and others) (Stayman et al., 1992). The knowledge structures in memory can be thought of as complex spider's webs filled with pieces of data (Solomon, 2006). It is developed in deep information processing (Solomon, 2006). Solomon (2006) suggests that depending on the nature of the processing task, different levels of processing occur that activate some aspects of memory. The more effort it takes to process information (deep processing), the more likely it is that information will be placed in long-term memory. The information in turn is stored in an associative network containing many bits of related information organized according to some set of relationships. The information that is seen as similar in some way is chunked together under a category. How well a product matches the category-schema affects how information is processed and evaluated (Alba &Hutchinson, 1987; Cohen & Basu, 1987; Loken & Ward, 1990).

Studies have shown the impacts of congruity between products and the category schema (Mandler, 1981; Meyers-Levy & Tybout, 1989). Anderson (1973) proposed related psychological theories in predicting the effects of disparity between expected and actual product performance on product evaluation and consumer satisfaction. An unconfirmed expectation creates a state of psychological discomfort, because the actual performance contradicts the consumer's original hypothesis (Festinger, 1962). Assimilation Theory suggests that when consumers receive two psychological dissonant ideas, they try to reduce the discomfort by changing one or both cognitions to make them consonant. As a consequence, consumers' perceived product performance lies between objective and expected performance. In contrast, Contrast Theory assumes that a consumer will magnify the difference between the received product performance and the expected product performance. If the actual performance of a product fails to meet the expectations, consumers will evaluate the product less favorable than if they had no prior expectations on it. On the other hand, Assimilation-Contrast Theory (ACT) indicates that the size of the discrepancy between expected and actual product performance determines the conditions on which Assimilation Theory or Contrast theory plays a role (Hovland et al., 1957). ACT suggests that the size of disparity between actual and expected product performance determines the way consumers deal with it. When the disparity is small, consumers try to ignore the deviation to avoid the psychological discomfort, so the consequence presents assimilation. But large parity is not acceptable, consumers tend to exaggerate it. Based on the theories, we can predict that when the health benefits in claims are relatively congruent with expected ones form category schema, assimilation occurs easily because it is seen as familiar and acceptable. When the benefits in claims are not relatively congruent with the product category, contrast occurs.

5. Information processing

When consumers are exposed to a product package with a claim and a picture, two processes may occur that influence their final decision - affective process and cognitive process (e.g. Cacioppo & Petty, 1989; Berkowitz, 1993). The affective process refers to an easy, straightforward and peripheral processing mode, relying on well-known associations, whereas cognitive process is a conscious and effortful processing mode, relying on the intentional retrieval of known elements (Cacioppo & Petty, 1989). The affective process is relatively automatic and the feelings of desire that consumers often experience in shopping situation may "occur with the minimum conscious deliberation characteristic of automatic" or "mindless behavior and with little or no cognition" (Hoch & Loewenstein, 1991). The process is likely to give rise to affective reaction, which vary in terms of valence (positive or negative) or intensity (Shiv & Fedorikhin, 1999). The affective reaction can arise from two routes: an "innate route" accompanied by sensory-motor processes and a memory route that involves schematic and conceptual process (Leventhal, 1984, 1993). On the other hand, cognitive process is relatively deliberative and controlled, inducing cognitions about the stimuli (Shiv & Fedorikhin, 1999). The cognitions could be from stimuli-based or memory-based processes.

5.1 Perceptual process

Solomon (2006) explained the process of perception. When individuals are exposed to stimuli in environment, only a small amount of the stimuli are noticed and enter their consciousness. The noticed stimuli are not processed objectively. Individuals interpret the meaning of the stimuli based on their own biases, needs and experiences. The three stages of sensation, attention and interpreting make up the perceptual process. Sensation refers to the immediate response of our sensory receptors (e.g. eyes, ears, nose, mouth, fingers) to basic stimuli as light, color and sound (Solomon, 2006)-it is biochemical in nature (Krishna, 2012). Attention refers to the degree to which consumers focus on stimuli within their range of exposure (Solomon, 2006). Perception is the awareness or understanding of sensory information (Krishna, 2012). People interpret the meaning of stimuli based on the schema or set of beliefs (Solomon, 2006). They group the objects that have similar characteristics, and the schema to which an object is assigned is a crucial determinant of how they evaluate the object (Solomon, 2006).

Individuals do not perceive a single stimulus in isolation (Solomon, 2006). Our brains tend to relate incoming sensations to imagery of other events or sensations already in our memory. They select and integrate the separate features of products. Attention is needed when they bind features together (Treisman, 1998). Without intention, the information of a stimulus is only the presence of separate parts and properties (Treisman, 1998). When many stimuli are competing to be noticed, consumer will receive attention to the extent that it differs from those around it (Solomon, 2006). Size and color differences are also powerful ways to achieve contrast.

5.2 Consumers' inference formation

Consumers buy products not for their own sake, but because of the desired benefits which can be achieved form the products (Lancaster, 1966). They don't value products per se, but rather for the benefits that the products deliver on consumption. From a means-end chain perspective, whether a

consumer finds a product attractive is supposed to depend on the extent to which this consumer can link his perception of the product's characteristics to self-relevant consequences and values (Grunert, 2005).) Consumers interpret products features by inferring attribute perceptions. These inferences may contribute to the desired benefits, and thus lead to superior value fulfilment (Grunert & van Trijp, 2014). For example, consumers may infer that yellow color comes from egg yolk which contributes to the creaminess of mayonnaise. Because mayonnaise is creamy, consumers believe that yellow mayonnaise has better taste, which leads to superior benefit delivery (Grunert & van Trijp, 2014). Consumers may get some information about product properties through various ways (i.e., advertisement, promotion), but maybe not all the information on some important properties is included, so they infer beyond the information given (Kardes et al., 2004). Consumers use specific attributes, brand names, or other cues to draw general conclusions about the likely benefits of using various products. They frequently make judgments and decisions based on limited information or knowledge about products (Kardes et al., 2004).

The concept of product quality perceived by consumers is more abstract than concrete products attributes (Steenkamp, 1990; Kardes et al., 2004), i.e., health, taste, convenience. Perceived quality is regarded as an overall unidimensional evaluative judgment. Quality attributes are the functional and psychosocial benefits or consequences provided by the product (Steenkamp, 1990). They represent what the product is perceived as doing or providing for the consumer (Steenkamp, 1990). Consumers form quality attribute beliefs through two important processes that go beyond direct observation: informational and inferential belief formation (Fishbein & Ajzen, 1975). In informational belief formation, quality attribute beliefs can be formed through information provided by outside source, including newspaper, magazines, friends, etc. Consumers also make use of labels, claims on packaging, or recommendations (Grunert & van Trijp, 2014). In inferential beliefs formation, consumers make use of previously learned knowledge or formal coding system to form quality attribute beliefs. Formal coding system is various rules of logic that allow the formation of beliefs about unobserved events. Therefore, cues on packaging like color trigger inferences. For instance, consumers perceive products in green-yellow color as more economical and cleanliness.

On the other hand, Kardes et al. (2004) proposed two types of inference processes: stimulus-based processing and memory-based processing. Stimulus-based processing involves the use of situationally available information, whereas memory-based (or theory-based) processing involves the use of prior knowledge and experience. Stimulus-based inductive inferences are formed when the product category is unfamiliar because consumers are unlikely to have much prior knowledge or experience on which to draw. In contrast, memory-based inductive inferences are more likely when the product category is familiar. When the benefits from products are unknown, and when previous experience is not helpful, inferential belief formation is an important strategy (Grunert, 2005).

6. Hypotheses

Although congruence is envisioned as a continuum, researchers have focused on three discrete points: congruity, moderate incongruity and extreme incongruity (Stayman et al., 1992). We also focus on these three points: congruency, moderate incongruency and extreme incongruency. Regarding to congruency in claim-product, congruency and extreme incongruency will be discussed; regarding to congruency in claim-picture, congruency and moderate incongruency will be discussed. It is weird that a health claim is accompanied by an extremely incongruent picture, therefore we do not discuss about this situation.

Consumers react to the health claims differently based on to what extent the health benefit in the claims is appropriate the products carrier (Verbeke et al., 2009). For example, health claims in fibre-enriched cereals are perceived more attractive, compared to omega-3-enriched spread and calcium-enriched fruit juice, due to the better combination of healthy product image and natural enrichment. Functional foods' attractiveness contributes to consumers' willingness to try (Van Kleef et al., 2005). Therefore we suppose that different levels of congruency in claim-product lead to different evaluations and intention to buy. When a heath claim provides health benefits which are completely associated with the category schema, congruency occurs. When a health claim provides health benefits that are totally different from the category schema, extreme incongruency occurs. Congruency between a health claim and a product leads to a favorable response because, other things being equal, people like the objects that conform to their expectations and allow predictability (Mandler, 1981). Also the congruency contributes to the fluent process which leads to favorable judgments (Oppenheimer, 2008). The incongruency between health claims and products is regarded as a conceptual incongruency which involves information processing at a cognitive level. Consumers would be suspicious towards a health claim containing a novel ingredient, and negative effects on consumers are evoked (Lampila et al., 2009; Lähteenmäki et al., 2010). Mandler (1981) theorized that when consumers are exposed to extreme incongruency, cognitive elaboration occurs in an effort to resolve the incongruity. But the cognitive elaboration may lead to more frustration than resolution, resulting in negative evaluations. On the other hand, when the health claims are congruent with the products, the products could be perceived as not novel because they conform consumers' expectations without surprise. Thus, we propose the following hypotheses:

> H1: Congruency between health claims and products, compared to extreme incongruency between health claims and products, will lead to favorable product evaluations on (a) perceived attractiveness, (b) perceived naturalness, (c) perceived credibility of information, (d) perceived overall healthiness but (e) inferior evaluation on perceived novelty, and lead to (f) more purchase intention.

In the combination of health claims and pictures, we define a concrete picture that conveys the identical meaning with a health claim as a congruent picture, while an abstract picture which is relevant to the health claim but does not completely convey the same meaning is referred to a moderate congruent picture. Specifically, when a bone-enhanced claim is presented with a bone picture, congruency occurs; when a bone-enhanced claim is presented with a sporty figure, moderate occurs. A sporty figure can be associated with healthy bones, but it may represent other associated

meanings like energy or general healthiness. If the association of general healthiness is evoked in consumers' minds, it may lead to an overall healthiness perception. In contrast, a bone picture can only evoke associations with bones; as a consequence, consumers focus on the claimed bone-enhanced benefits rather than overall healthiness of products. When consumers are exposed to a health claim, a congruent picture is referred to expected and relevant information, while a moderate picture is unexpected and relevant information because an abstract picture conveys the information in a distinctive way. Lee and Mason (1999) argue that the presence of unexpected-relevant information, compared to expected-relevant information, leads to more favorable evaluations. From another perspective, congruency contributes to a fluent process which is hedonic marked (Reber et al., 2004). But congruent objects are not so noteworthy to prompt extensive cognitive elaboration. Hence the positive response that they generate is mild rather than extreme. Mandler (1981) argues that when incongruency is encountered, the novelty increases arousal and greater cognitive elaboration may occur in an effort to resolve the incongruity. Moderate incongruency can be successfully resolved. So it is regarded as interesting and positively valued, leading to more positive responses than those elicited by congruency. Therefore, we argue that the arousal evoked by moderate incongruency leads to favorable product evaluations. Evaluations increase intention to purchase (Van Kleef et al., 2005). The discussion leads to following hypothesis:

> H2: Moderate incongruency between claims and pictures, compared to complete congruency between claims and pictures, will lead to favorable product evaluations on (a) perceived attractiveness, (b) perceived naturalness, (c) perceived credibility of information, (d) perceived overall healthiness, (e) perceived novelty, and lead to (f) more purchase intention.

Health claims may lead to a "magic bullet" effect when consumers attribute inappropriate health benefits to the product (Roe et al., 1999). A consumer might infer from a low cholesterol claim that the product will help against cardio-vascular (Leathwood et al., 2007). When an abstract picture is presented with a health claim, the incongruency elicits a cognitive effort to resolve the incongruency based on knowledge stored in minds. Associative network in long-term memory consists of many bits of related information organized according to some set of relationships (Solomon, 2006). When consumers search relevant information of the picture in associative network, some associated information comes out. For example, a running figure can be associated with healthiness and exercises, but it can also be related to healthy heart, healthy bones and energy. The moderate incongruency can be resolved in the process, when consumers associate the picture with an appropriate meaning, which is related to the claim. However, the other associations such as healthy heart may contribute to the "magic bullet" effect. We argue that the various health-related associations make consumer link inappropriate health benefits to the product, resulting in overgeneralization of healthiness. In terms of a concrete picture which communicates the same message with the claim, no much attention will be paid and no additional associations will be evoked. A fluent process occurs. The fluent stimulus are expected more credible or true (Unkelbach, 2007), therefore consumers may form favorable evaluations on the claimed benefits. Thus the effects are hypothesized:

> H3: A moderate incongruent picture (abstract and health-related), compared to a completely congruent picture (concrete and claimed benefits-related), will lead to overgeneralization of the health benefits, including (a) giving extra energy, (b) improving cardiovascular fitness, (c)

improving cognitive function, (d) maintaining healthy cholesterol level, and (e) reducing fat level.

H4: Completely congruency between claim and picture, compared to moderate incongruency between claim and picture, will lead to a favorable evaluation on the claimed health benefits.

Previous study implies that there could be a negative impact on perceived healthiness of products caused by health claims when consumers are approached with claims containing ingredient and benefits they have never been exposed to (Lähteenmäki et al., 2010). Consumers tend to suspect the novelty in food products (Cox et al., 2004; Lampila et al., 2009). They do not readily accept the information in health claims unless it is confirmed by their existing knowledge and beliefs (Lähteenmäki et al., 2010). Hence, when the health claims show health benefits which are extremely incongruent with the products, negative effects on perceived healthiness are evoked. Even when additional novel ingredients are added to achieve health benefits in products which cannot be associated with the health benefits, consumers' suspiciousness is elicited. Consumers will balance the possible claimed benefits with the negative impacts on healthiness caused by the modification of the product in order to include the additional health components (Lähteenmäki et al., 2010). In addition, the extremely incongruent information makes consumer to involve cognitive elaboration to resolve (Mandler, 1981). This in turn decreases fluent processing, which is hedonically marked (Reber et al., 2004). Non-fluent stimuli are experienced as less credible or true than fluent stimuli (Reber & Schwarz, 1999; Unkelbach, 2007). Therefore, it suggests that the incongruency between health claims and products leads to less healthiness perception. Specifically, we propose the following hypotheses:

H5: Congruency between health claims and products, compared to extreme incongruency between health claims and products, will lead to overgeneralization of the health benefits, including (a) giving extra energy, (b) improving cardiovascular fitness, (c) improving cognitive function, (d) maintaining healthy cholesterol level, and (e) reducing fat level.

H6: Congruency between health claims and products, compared to extreme incongruency between health claims and products, will lead to a favorable product evaluation on the claimed health benefits.

A conceptual framework (Fig. 2) is proposed below. The effects of congruency in product-claim-picture on consumers' evaluations and intentions to buy will be explored. The level of congruency will directly influence consumers' product evaluations on different perceptions (attractiveness, naturalness, credibility, novelty, and overall healthiness), and purchase intention respectively.

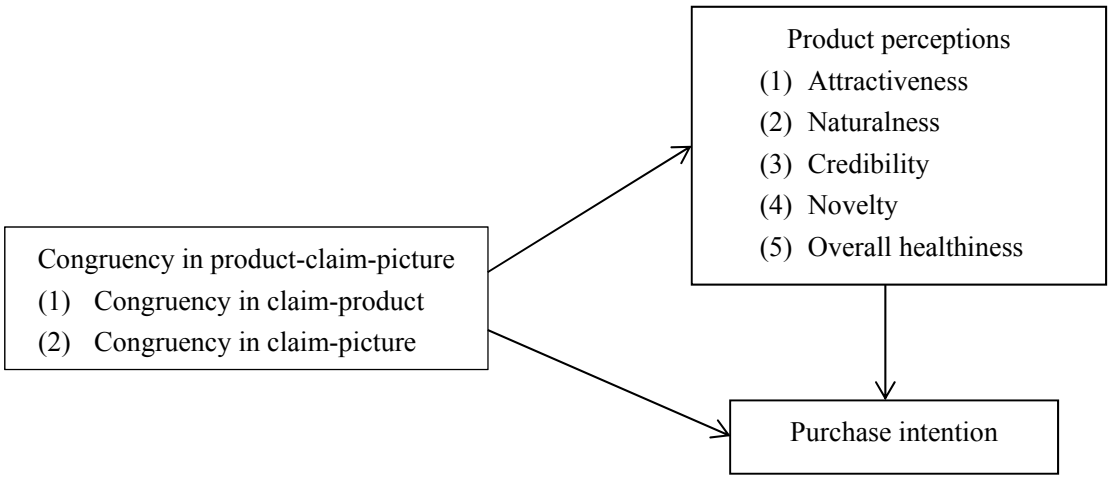


Fig. 2. Conceptual Framework

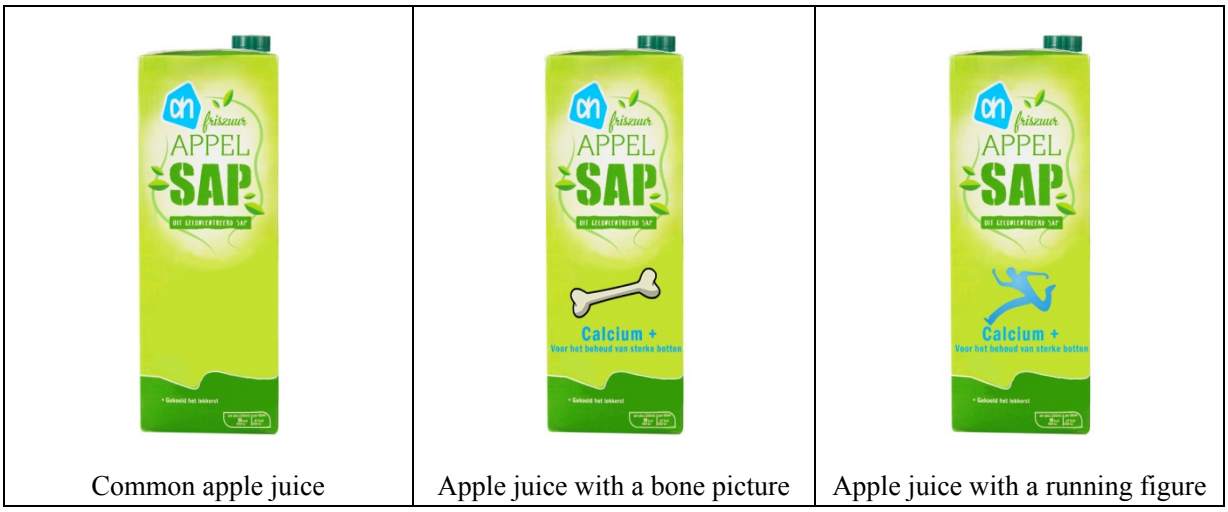
7. Methodology

7.1 Experimental design

Two independent variables were manipulated in a 2×2 combination design, with product (milk, apple juice) as the first within-subjects factor, and picture (running figure, a bone) as the second within-subjects factor (Fig. 3). Milk and apple juice were selected because people are familiar to both of them, the effects of familiarity can be minimized. Same brand name (Albert Heijn) was chosen to minimize the effects of unknown variables as well. A same health claim was presented on the package of each product carrier, described as "Voor het behoud van sterke botten" ("for the maintenance of strong bones") (Fig. 3). Calcium in apple juice is a novel ingredient and cannot be associated with the category schema, so the combination of apple juice and the health claim represents extreme incongruency situation. The second independent variable represents the pictorial element on package. A running figure represents an abstract picture that is moderate congruent with the health claim, while a bone represents a specific congruent picture. In total, the four products were selected to stand for different levels of congruency in product-claim-picture. Milk and a bone picture with the claim represent a congruency; milk and running figure combined with the claim represent moderate incongruency; while both apple juice products present high level of incongruency.

Besides, a control group consisting of common milk and common apple juice was tested (Fig. 3). The two products are in simple packages without a health claim or pictures. Respondents were asked to rate on the two products in terms of same variables. It tested the consumers' different favors on common milk and apple juice products to minimize the impacts of favors on the results.

		
Common milk	Milk with a bone picture	Milk with a running figure



Common apple juice | Apple juice with a bone picture | Apple juice with a running figure

Fig. 3. Six product packages used in the experiment

7.2 Experimental procedure

Dutch consumers were selected because they consider health aspects of food as an important criterion in their grocery shopping (van Kleef et al., 2005). The respondents were from Wageningen University. Data was collected through a survey website (wur.qualtrics.com). The respondents were told to participate in a study about how people think about packages. Each respondent was exposed to a questionnaire consisting of 6 packages and answered questions. For example, a respondent was asked to look a milk product with a health claim and a bone picture, and answer questions immediately. The 6 pictures were assigned randomly, so respondents might get different orders of the pictures.

Prior to the data collection, a pre-test was conducted to check whether the independent variables were valid for the data analysis. In total, 29 participants were asked to indicate the extent to which they associated pictures with health benefits and the extent to which they associated calcium to milk or apple juice. The responses were not forced, so not all responses were complete. Results suggested that people associated calcium with milk to a larger extent and there was a significant difference between the associations with milk and apple juice (t (17) = 10.47, $p < .001$). In terms of the extent to associated health aspects evoked by the two pictures, it is obvious from that all the differences were significant. A bone picture only evoked a larger extent of associated bone-related healthiness (t (15) = -10.96, $p < .001$), whereas a running figure led to more associations with other health benefits.

7.3 Measures

Dependent variables included evaluative measures, purchase intention and consumers' understanding of congruency. Evaluative measures included 5 attributes: attractiveness, naturalness, credibility, healthiness, and novelty. Attractiveness was used to measure the overall appeal of products. Naturalness and credibility measured the extent to which products are considered natural and which the information is perceived credible. Healthiness included the overall healthiness perceived and the ability to strengthen bones. It also referred to healthiness of other aspects that consumers perceive from the product. Novelty suggested whether the products are perceived differently compared to

others. Respondents were requested to indicate the extent to that they will buy the products. Besides, how respondents perceive the consistency in claim-picture and consistency in claim-product were asked. These variables were measured on sliders. The scores were from 0 to 100.

7.4 Data analysis

Two-way repeated measure ANOVA was applied to analyze the main effects of two factors on different dependent variables separately, with interactions included. Paired t-test was used for to remove the effects of common products when the congruency between health claims and products were checked. Regression analysis was used to test the determinants for "purchase intention".

For hypothesis 1, additional paired t-tests were applied as a second check after repeated measures ANOVA. Although the results from repeated measures ANOVA showed significant differences on all dependent variables, significant differences on 5 variables (naturalness, credibility, novelty, overall healthiness, and purchase intention) were also found in common products. This means that the different perceptions on these 5 variables could be caused by two possible reasons. One could be the congruency between claims and products, which was explained in hypothesis 1, while another explanation could be respondents' preference on milk, but it had nothing to do with the congruency effects. To identify the real cause for the results, it was needed to check if the mean difference on ratings between milk and apple juice in experimental group was significant higher than the mean difference in control group. If so, hypothesis 1 was supported; if not, hypothesis 1 was rejected because respondents preferred milk in all conditions. In order to do the second check, the mean difference between milk and apple juice in experimental group were computed, and then it was compared to the mean difference between common milk and common apple juice. Paired t-tests were conducted further to check whether they were significantly different, and in turn identified the real cause of the results. Similarly, the same second check was used for hypothesis 5 and 6 in case respondents overgeneralized health benefits because of their knowledge about common products instead of the congruency between health claims and products.

8. Results

The survey was conducted among 143 participants, but some respondents quit it and did not finish rating on all the products. The invalid responses were left out, and valid data was collected from 67 adults (20 males, 47 females), including 66 students. The ages range from 18 to 51 years, with an average of 23.3 years. In total, 62 respondents are aged between 18 to 27 years.

Table 1 reveals that consumers' intention to buy the healthy foods is driven by attractiveness (β = 0.382, $p < .001$), naturalness (β = 0.421, $p < .001$), credibility of information on packages (β = 0.126, p = .008) and overall healthiness (β = 0.138, p = .005). These four variables explain 59.3% of the variation in "purchase intention".

Table 1

Results on linear regression

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-9,728	2,659		-3,658	,000
Attractiveness	,382	,041	,344	9,227	,000
Naturalness	,421	,047	,403	8,883	,000
Credibility	,126	,047	,115	2,684	,008
Healthiness	,138	,049	,110	2,834	,005

a. Dependent Variable: Purchase intention

It is obvious from table 2 that H1, H2, H3, and H5 were partly supported depending on different measures. H4 was supported, indicating that complete congruency between health claims and pictures led to higher ratings on the claimed health benefits. But the congruency between health claims and products did not lead to favorable evaluations on the claimed health benefits, so H6 was not supported.

Table 2

Results of hypotheses

Supported	**Not Supported**
H1 (a) (b) (c) (e) (f)	H1 (d)
H2 (a) (b) (f)	H2 (c) (d) (e)
H3 (a) (b) (e)	H3 (c) (d)
H4	
H5(a) (c)	H5 (b) (d) (e)
	H6

Table 3

Means of dependent variables

	Common milk	Common apple juice	Milk with bone picture	Apple juice with bone picture	Milk with running figure	Apple juice with running figure
Evaluative measures						
Attractiveness	51.31	57.85	46.52	35.35	62.06	45.25
Naturalness	68.45	57.71	46.70	24.45	52.42	32.24
Credibility	75.32	65.69	59.05	36.64	63.14	40.16
Novelty	20.94	31.19	42.48	62.77	38.66	57.08
Overall healthiness	52.46	40.51	51.33	40.16	54.14	38.65
Purchase intention	61.75	49.75	41.57	22.02	53.02	26.59
Perceived health benefits						
Bones	60.63	21.33	66.92	48.08	66.41	42.30
Extra energy	42.23	50.11	41.69	46.08	49.11	47.65
Cardiovascular fitness	34.73	28.29	35.73	32.00	40.84	33.43
Cognitive function	34.24	30.73	33.68	31.94	34.73	30.29
Cholesterol level	33.86	28.15	32.12	27.83	32.62	28.70
Fat level	28.27	27.24	25.75	22.60	27.68	27.84

8.1 Evaluations and purchase intention

In control group, respondents evaluated common milk and apple juice differently. They perceived common milk as more natural (t (64) = 3.43, p = .001), credible (t (64) = 3.44, p = .001), overall healthiness (t (64) = 4.46, $p < .001$), and showed more intention to buy it (t (63) = 2.63, p = .011), whereas common milk was considered less novel rather than apple juice (t (63) = -3.06, p = .003).

Attractiveness

Results showed a significant difference between milk and apple juice on (F (1, 62) = 24.67, $p < .001$) on perceived attractiveness. Respondents rated higher on milk (M = 54.29) than apple juice (M = 40.30). *Therefore H1 (a) was supported.* Different levels of congruency between claims and pictures also led to significant difference (F (1, 62) = 27.66, $p < .001$), showing that respondents perceived products with running figures (M = 53.66) more attractive than products with bone pictures (M = 40.94). *So H2 (a) was supported.* No interaction effect was found (F (1, 62) = 1.79, p = .186).

Naturalness

Significant difference (F (1, 65) = 68.47, $p < .001$) between products were found, indicating that respondents perceived milk (M = 49.56) as more natural than apple juice (M = 28.35). However, they also perceived common milk without health claims (M = 68.45) more natural than apple juice (M = 57.71) at a significant level (t (64) = 3.43, p = .001). A further t-test indicated that the congruency between health claims and products led to 9.74 higher mean difference rating between milk and apple juice significantly (t (64) = 2.78, p = .007). *H1 (b) was supported.* On the other hand, results revealed that products with running figures were regarded as more natural significantly (F (1, 65) = 11.62, p = 0.001), because respondents gave 42.33 score on products with running figure, but 35.58 on products with bone pictures. *H2 (b) was supported.* No interaction effect existed (F (1, 65) = 0.29, p = .592).

Credibility

In credibility of information for products, participants considered milk more credible significantly (F (1, 63) = 65.06, $p < .001$), with 22.70 higher than apple juice. Although people also perceived common milk more credible (t (64) = 3.44, p = .001), a further test indicated that congruency between health claims and products led to greater ratings significantly (t (61) = 3.83, $p < 0.001$) on perceived credibility on milk by 13.02. *Thus H1 (c) was supported.* Although the information on products with running figures (M = 51.65) was considered more credible, compared to products with bone pictures (M = 47.84), the difference was not significant (F (1, 63) = 3.74, p = .058). *So H2 (c) was not supported.* There was on interaction effect (F (1, 63) = 0.02, p = .877).

Overall healthiness

Ratings on different products were significantly different (F (1, 62) = 37.25, $p < .001$). Respondents associated more overall healthiness with milk (M = 52.74) than apple juice (M = 39.41). Similar significant effects (t (64) = 4.46, $p < .001$) were found between common milk and apple juice.

Results indicated that common milk (M = 52.46) was considered much healthier than apple juice (M = 40.51). Therefore a further test was conducted to check if congruency between health claims and products led to more product healthiness perception. Results showed no significant difference (t (61) = 0.35, p = .725) on overall healthiness. *H1 (d) was not supported.* With regards to pictures, the ratings on products with running figures (M = 46.40) and bone pictures (M = 45.75) were similar. So there was no significant effects of pictures (F (1, 62) = 0.11, p = .747). *H2 (d) was not supported.* No interaction effect exited (F (1, 62) = 1.50, p = .226).

Novelty

It was interesting to notice the opposite results in novelty. Respondents rated lower on milk (M = 40.57) than apple juice (M = 52.93) significantly (F (1, 60) = 40.43, $p < .001$). And the same results found in common products indicated that common milk (M = 20.94) was perceived as less novel than common apple juice (M = 31.19) significantly (t (63) = -3.06, p = .003), so a further test was conducted. Further results showed that congruency between health claims and products decreased perceived novelty by 11.31 significantly (t (58) = -2.60, p = .012). *H1 (e) was supported.* The main effects of pictures showed opposite results as well. Since respondents perceived more novelty in products with bone pictures (M = 52.62), compared to products with running figures (M = 47.87), moderate incongruency between claims and pictures decreased the perceived novelty (F (1, 60) = 4.09, p = .048). *H2 (e) was not supported.* No interaction between products and pictures was found (F (1, 60) = 0.19, p = .666).

Purchase intention

Overall respondents showed more intention to buy milk (M = 47.30) rather than apple juice (M = 24.30) significantly (F (1, 60) = 58.23, $p < .001$), and it happened also in common products. Ratings on purchase intention on different products were significantly different (t (63) = 2.63, p = .011), and milk (M = 61.75) was preferred than apple juice (M = 49.75). Therefore further test was applied to check whether differences on buying intention in experiment group were caused by the congruency between health claims and products. Results indicated that the congruency increased the purchase intention by 10.31, and the effects were significant (t (58) = 2.08, p = .042). *H1 (f) was supported.* Main effects of pictures were found significant (F (1, 60) = 15.42, $p < .001$). Respondents showed more intention to buy the products with running figures (M = 39.80) rather than bone pictures (M = 31.80). *H2 (f) was supported.* No interaction effect was found (F (1, 60) = 3.56, p = .064).

8.2 Perceived health benefits

In control group, results showed that the common milk evoked more associations with improving cardiovascular fitness (t (62) = 2.78, p = .007), maintaining healthy cholesterol level (t (64) = 2.13, p = .037), and strengthening bones (t (66) = 12.01, $p < .001$) significantly, but it decreased the association with giving extra energy (t (63) = -2.74, p = .008), compared to apple juice. No significant differences on improving cognitive function (t (62) = 1.88, p = .065) and reducing fat level (t (62) = .452, p = .653) were found between common milk and apple juice.

Gives extra energy

In terms of giving extra energy, the ratings on products with different pictures were significantly different (F (1, 64) = 8.08, p = .006), showing that the mean rating for running figures was 48.38, while it was 43.89 for bone pictures. So the abstract picture evoked overgeneralization on health benefits. *H3 (a) was supported.* With regards to products, no significant effect was found (F (1, 64) = 0.38, p = .541), showing that the rating on milk was 45.40, while it was 46.86 for apple juice. However, with respect to common products, respondents rated lower on common milk (M = 42.23) than common apple juice (M = 50.11) (t (63) = - 2.735, p = .008), suggesting the congruency between health claims and products increased perception on giving extra energy. *H5 (a) was supported.* There was no interaction effect (F (1, 64) = 3.33, p = .073).

Improves cardiovascular fitness

Running figures evoked overgeneralization significantly (F (1, 62) = 4.94, p = .030) on this health benefit, because people believed that products with running figures (M = 37.14) helped improve cardiovascular fitness more than products with bone pictures (M = 33.87) did. *H3 (b) was supported.* Different products influenced consumers' perceptions as well. The rating on milk (M = 38.29) was higher than apple juice (M = 32.71) significantly (F (1, 62) = 11.47, p = .001), and common milk (M = 34.73) also significantly led to higher ratings than common apple juice (M = 28.29). Further test suggested that congruency between health claims and products did not have impacts on healthiness perception on improving cardiovascular fitness, since the mean differences in control group and in experimental group were not significantly different (t (62) = - .429, p = .669). *H5 (b) was not supported.* No interaction effect was found (F (1, 62) = 1.03, p = .313).

Improves cognitive function

No significant effect of pictures was found on this health benefit. The ratings on products with running figures (M = 32.51) and with bone pictures (M = 32.81) were not significantly different (F (1, 61) = 0.02, p = .877), indicating that abstract pictures did not lead to overgeneralization. *H3(c) was not supported.* Since participants' rating on milk (M = 34.20) was significantly higher (F (1, 61) = 4.16, p = .046) than that on apple juice (M = 31.11). *H5(c) was supported.* No interaction effect was found (F (1, 61) = 0.97, p = .328).

Maintains healthy cholesterol level

Results showed that ratings on running figures (M = 30.66) and bone pictures (M = 29.98) were not significantly different (F (1, 65) = 0.27, p = .609), suggesting that respondents did not perceive products with different pictures as different on maintaining healthy cholesterol level. *H3 (d) was not supported.* In terms of products, there was no significant difference (F (1, 65) = 3.56, p = .064) between milk (M = 32.37) and apple juice (M = 28.27). So congruency between health claims and products could not evoke overgeneralization on this health benefit. *H5 (d) was not supported.* No interaction effect was found (F (1, 65) = 0.02, p = .894).

Reduces fat level

Results indicated that different pictures led to different perceptions significantly (F (1, 62) = 8.162, p = .006) on whether products reduced fat level, showing higher rating on products with abstract pictures (M = 27.76) rather than products with concrete pictures (M = 24.18). *H3 (e) was supported.* In terms of different products, ratings on milk (M = 26.71) and apple juice (M = 25.22) were not significantly different (F (1, 62) = 0.908, p = .344). *H5 (e) was not supported.* No interaction effects existed (F (1, 62) = 1.862, p = .177).

Strengthens bones

Although strengthening bones were claimed in the health claim on each product package, the perceptions on this health benefit were different between pictures significantly (F (1, 65) = 4.10, p = .047). Products with bone pictures (M = 57.50) were believed to bring more benefits to bones, compare to products with running figures (M = 54.36). *H4 was supported.* In addition, different products in experimental group led to different ratings as well (F (1, 65) = 47.86, $p < .001$). Although the same claim on bones was presented on each product, people preferred to trust it on milk (M = 66.67) than apple juice (M = 45.19). In control group, common milk (M = 60.63) was more associated with bone benefit significantly (t (66) = 12.01, $p < .001$), rather than apple juice (M = 21.33). Therefore, a second test was conducted to remove the effects of common products because respondents trusted milk better might be caused by the better association between bone benefit and milk, which had nothing to do with the congruency between health claims and products. Results showed that the congruency decreased the mean difference between milk and apple juice by 17.90 (t (65) = -5.14, $p < .001$) (Fig.4). So the health claim on apple juice led to more perception on bone benefit. *H6 was not supported.* Besides, interaction effect was found on this measure (F (1, 65) = 4.58, p = .036) (Fig. 4). The effects of pictures showed significantly different between different products. In milk, the difference between bone picture and running figure (MD = 0.52) was not significant (p = .790), while the difference (MD = 5.77) in apple juice was found significant (p = .006). In terms of different products, the effects of products were found significant in both pictures. In bone picture, the mean difference between milk and apple juice was 18.85 ($p < .001$), while in running figure, the mean difference (MD = 24.11) was higher ($p < .001$).

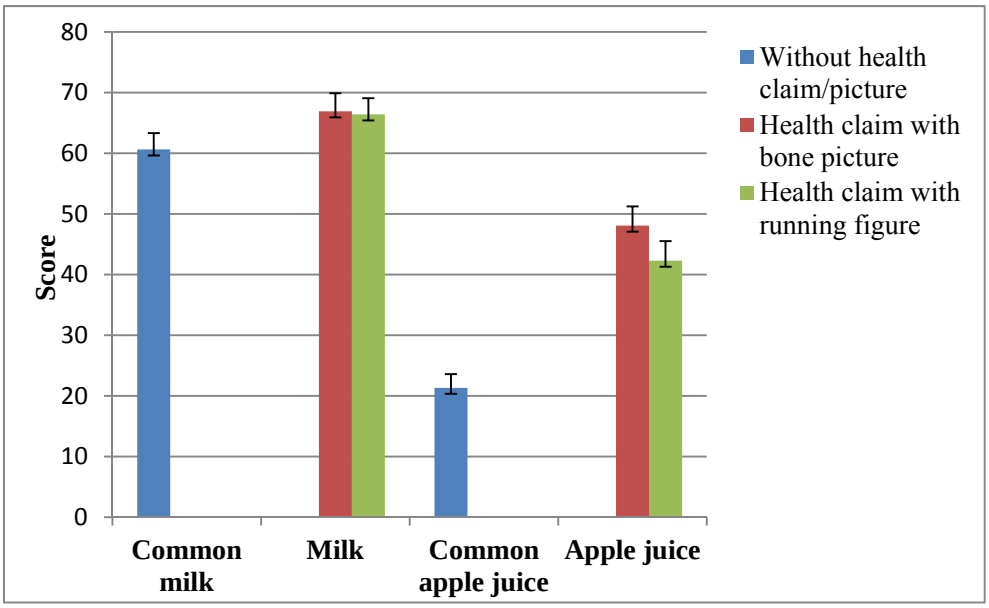


Fig. 4. The effects of health claim/picture in changes (means and standard errors) of perceptions on bone benefit in different products

9. Discussion

Effects of congruency in product-claim-picture on product perception and purchase intention

This study has demonstrated the effects of congruency between health claims and products on product evaluation and purchase intention. In general, the combination of health claims with congruent products leads to favorable product perceptions and purchase intention. Specifically, when the product category schema evoke the association of the claimed health benefit, the product is considered more attractive, more natural, and more credible, i.e. preference for a combination of a claim for strong bones with milk to a combination of the same claim with apple juice. This finding is in line with previous research (Verbeke et al., 2009). Previous finding (Verbeke et al., 2009) indicates that functional foods where the enrichment is naturally present are perceived more attractive and credible, i.e. fibre-enriched cereals versus calcium-enriched fruit juice. In this study, apple juice with calcium-enriched is perceived less natural because fruit juices are not natural source of calcium (Verbeke et al., 2009), which results in less associations with health benefits for strong bones, and in turn negatively influence intention to buy apple juice. One noticeable perception is product novelty. When there is no link between products and the claimed health benefits in consumers' minds, people will perceive the products as more novel.

With respect to purchase intention, it is remarkable that congruency between health claims and products lead to more intention to buy the product. This can be explained by the favorable product evaluations on perceived attractiveness, naturalness, and credibility induced by the congruent products. On the other hand, perceived product attractiveness, naturalness, credibility, and overall healthiness explain only 60% of the variation in purchase intention, indicating that some other factors which are not discussed in this study also have impacts on purchase intention, i.e. nutrition knowledge (Bogue et al., 2005), taste preferences (Verbeke, 2006) and education level (Fullmer et al., 1991), etc.

Results of this study show the effects of congruency between health claims and pictures in functional foods. Overall, an abstract and health-related picture lead to favorable product evaluations and purchase intention compared to a concrete and claimed benefit-related picture. The findings demonstrate that the abstract pictures strongly increase perceived attractiveness and naturalness, and this in turn improves consumers' interests in purchase. In contrast, it is interesting to notice that the effects of pictures on novelty are opposite, since concrete pictures on package make products more novel to consumers. But no similar researches exist about the effects. In this study, this may be caused by consumers' less exposures to food products with bone pictures, compared to abstract pictures. Milk is normally presented with a cow picture on the package, while apple juice is usually with an apple. The application of bone pictures on foods is too limited, since most products are not only related to bones, whereas abstract pictures, i.e. running figure, can evoke many associations either with health benefits or with other aspects, and they are more common for consumers. Furthermore, the levels of congruency between health claims and pictures have impacts on people's buying intention.

Effects of congruency in product-claim-picture on perceived health benefits

Overall, an abstract and health-related picture leads to more perceived healthiness in different benefits.

‘Magic bullet’ effects (Roe et al., 1999) occur in this study, indicating that respondents attribute inappropriate benefits to the product based on different pictures, especially in terms of giving extra energy, improving cardiovascular fitness, and reducing fat level. The associations of these three benefits with a running figure were given the highest scores in pre-test, therefore it is possible that the associations with a picture are transferred to the product and in turn activate the linkage between health benefits and the product even when the benefits are not mentioned in the health claim. This overgeneralization of healthiness occurs when the abstract picture elicits associations with the claimed health benefits, as well as with other health benefits.

As what was expected, different products lead to associations with health benefits to different extents. A product which is congruent with the health claim make consumers infer inappropriate health benefits from the product, for instance, in this study respondents believe that milk provides extra energy and improves cognitive function rather than apple juice. On the other hand, this might be related to the differences on overgeneralization between different common products.

On the other hand, consumers trust the claimed health benefit to a larger extent when the products are exposed with a congruent and concrete picture which elicits only one health benefit association – the benefit in the health claim. But it is interesting to notice the different effects of pictures in different products. Findings in this study suggest that different pictures on milk do not lead to different associations with bone benefit, while they lead to different associations in apple juice. This means that consumers’ perceptions on health benefit that the product is delivering are affected by product carriers, since once the carrier product is congruent with the health claim, the pictures do not affect perceptions strongly. It is also supported by the fact that when a same health claim is presented on different products, people’s acceptances differ. This suggests that people do not trust the information in health claims immediately when the benefits in certain products are novel to them, which is in line with previous research (Lähteenmäki et al., 2010). Previous study (Lähteenmäki et al., 2010) proposed that consumers do not readily accept health claims unless it is confirmed by their existing knowledge and beliefs.

One surprising finding indicates that consumers do not show great differences on perceived overall healthiness in different combinations in product-claim-picture, although overgeneralization on some healthiness aspects may occur caused by abstract pictures or extremely congruent products. Looking at the mean rating on each product, the overall healthiness seems depending on people’s judgement to common milk and apple juice, because the preferences on products with an added health claim and a picture are almost the same with common products. Similarly, different pictures on packages do not influence perceived healthiness of products. The findings support the idea that although consumers generalize inappropriate health benefits with products, the overall healthiness perception depends on their judgment on the common products based on the fact that people perceive common milk as more healthier in this study, rather than additional information on packages.

10. Conclusion

To conclude, the research questions can be answered as followed:

In terms of the impacts of congruency on product perception and purchase intention, congruency between health claims and products leads to higher product perceptions on attractiveness, naturalness, credibility, purchase intention, and lower perception on novelty, while moderate incongruency between health claims and pictures, compared to complete congruency, leads to favorable evaluations on attractiveness, naturalness, and purchase intention. The incongruency between health claims and pictures was not studied because it is not realistic to add an extremely incongruent picture to a package.

Different pictures influence healthiness perceptions differently, since an abstract sport figure leads to overgeneralization, which is called "magic bullet" effects. A health-related picture increases evaluations on some health benefits, including giving extra energy, improving cardiovascular fitness, and reducing fat level. The congruency between health claims and products have impacts on overgeneralization as well, because the congruency make consumers overgeneralize health benefits on giving extra energy and improving cognitive function.

With regards to consumers' intention to buy, product evaluations on product attractiveness, naturalness, credibility, and healthiness account for purchase intention by 59.3%. Other factors also have impacts on purchase intention, i.e. nutrition knowledge (Bogue et al., 2005), taste preferences (Verbeke, 2006) and education level (Fullmer et al., 1991), etc.

Theoretical implications

Recently numerous researches (Van Trjip & van der Lans, 2007; Verbeke et al., 2009; Lähteenmäki et al., 2010; Van Kleef et al., 2005; Williams et al., 2008) have focused on health claims and functional foods, but no intention is paid to whether health claims should be congruent with functional foods. This study contributes to this theoretical blank. The findings show that the congruency between health claims and products make products more favourable and elicits overgeneralization of perceived healthiness, whereas the combination of health claims and incongruent products make the products less appealing.

This study combines health claims and pictorial features on package, which contributes to another blank as well. Researchers believe that visual product features connote symbolic meanings (Childers & Jass, 2002; Rompay et al., 2005; Zhang et al., 2006), and the congruency of symbolic meaning influence product evaluations (van Rompay & Pruyn, 2011). Applying this idea in this study, whether pictures on product packages connote the same meaning with the health claims has been found to affect product evaluations and 'magic bullet' effects. Results reveal that health claims should be combined with abstract pictures since abstract pictures make consumers associate the products with more health benefits which are not mentioned in health claims, and make the products more appealing.

Practical implications

The results have implications for food companies and policy makers. Firstly, some foods companies add additional enrichment in existing products and attach relevant health claim in order to promote the products, but results in this study show that not all health claims are accepted to the same extent, since different product carriers have impacts. This means that companies should consider whether the products can be related to the health benefits, and in turn can lead to preferences. If they add a novel ingredient in products but the products are considered extremely incongruent with the claims, consumers will not trust the information in health claims because they do not have relevant knowledge in minds. If it is necessary to add additional ingredient in products, use marketing tools to communicate the new knowledge to consumers and make links between the benefits and products. For policy makers, it is necessary to take the effects of pictures into account, since an abstract and health-related picture evokes overgeneralization of perceived healthiness, and in turn misleads consumers. A suggestion is to make specific laws on the use of pictorial features on packages, and only concrete and claimed benefit-related pictures should be allowed instead of abstract pictures in order to avoid misleading consumers.

11. Limitations and Further Research

This study tested the effects of different levels of congruency in product-claim-picture on consumers' perceptions and purchase intention, but there are limitations. Firstly, only one health claim was applied in the experiment, with the same framing and the same benefit. Previous findings (Bech-Larsen & Grunert, 2003; Croft et al., 2002; Van Kleef et al., 2005) demonstrate differences of consumers' preferences for different types of claims, but the findings are different. Research in Sweden (Svederberg, 2002) suggests that consumers prefer claims in which the promotion of health is emphasized rather than the prevention of illness, whereas another research (Van Kleef et al., 2005) implies that consumers reduced disease risk-framed health claims lead to higher purchase intention, compared to enhanced functional framed health claims. So if different types of health claims could be involved in our study, consumers' responses may differ. Similarly, consumers show different degrees of interests in health claims (Hilliam, 1998). Our study included only one benefit so that the results may be not suitable for all health claims. In addition, although familiarity factor was consider before this study because the assumptions is that consumers are familiar to these two products to a similar extent, there was no items to check whether this manipulation worked. A check on familiar could minimize the disturbing factor in case some respondents evaluated higher on one product due to more knowledge or information on this product. Furthermore, a limited selection of pictures in this study may result in biased results, since the various preferences for products may be influenced by the liking or novelty of pictures. Less exposure to a bone picture in food market, compare to other concrete pictures that have been approached to consumers more frequently, i.e. a heart picture, is likely to lead to more novelty perception but less trust.

A challenge for further research would be to take demographic variables, personal disease experiences, and familiarity factor into account. It is likely that all these together with product evaluative perception explain a high degree of actual purchase intention. For example, a research (Verbeke et al., 2009) found that previous experience with a product category (or familiarity) boost consumers' willingness to use the products in the future. Another advice for further research is to extend this study to more formats of health claims like framing, wording, or benefits, more products with different levels of familiarity, and more pictures, in order to explore to what extent each factor affects consumers' responses, and in turn form general theory for functional foods.

12. Acknowledgements

This master thesis has been finished with help of my supervisors and my friend. I am indebted to Dr. Erica van Herpen and Dr. Ir. Hans van Trijp for their help and useful comments and feedbacks on earlier version of this thesis, and to Ge Yu for his help with making the pictures used in the survey.

References

Alba, J. W., & Hutchinson, J. W. (1987). Dimensions of consumer expertise. *Journal of Consumer Research*, 411-454.

Anderson, R. E. (1973). Consumer dissatisfaction: the effect of disconfirmed expectancy on perceived product performance. *Journal of Marketing Research*, 38-44.

Ares, G., & Gámbaro, A. (2007). Influence of gender, age and motives underlying food choice on perceived healthiness and willingness to try functional foods. *Appetite*, 49(1), 148-158.

Becker, L., van Rompay, T. J., Schifferstein, H. N., & Galetzka, M. (2011). Tough package, strong taste: The influence of packaging design on taste impressions and product evaluations. *Food Quality and Preference*, 22(1), 17-23.

Bech-Larsen, T., & Grunert, K. G. (2003). The perceived healthiness of functional foods: A conjoint study of Danish, Finnish and American consumers' perception of functional foods. *Appetite*, 40(1), 9-14.

Berkowitz, L. (1993). Towards a general theory of anger and emotional aggression: Implications of the cognitive-neoassociationistic perspective for the analysis of anger and other emotions. *Advances in Social Cognition*.

Berlyne, D. E. (1960). Conflict, arousal, and curiosity.

Bloch, P. H. (1995). Seeking the ideal form: product design and consumer response. *The Journal of Marketing*, 16-29.

Bogue, J., Coleman, T., & Sorenson, D. (2005). Determinants of consumers' dietary behaviour for health-enhancing foods. *British Food Journal*, 107(1), 4-16.

Bottomley, P. A., & Doyle, J. R. (2006). The interactive effects of colors and products on perceptions of brand logo appropriateness. *Marketing Theory*, 6(1), 63-83.

Cacioppo, J. T., & Petty, R. E. (1989). The elaboration likelihood model: The role of affect and affect-laden information processing in persuasion. *Cognitive and affective responses to advertising*, 5, 69-88.

Childers, T. L., & Jass, J. (2002). All dressed up with something to say: Effects of typeface semantic associations on brand perceptions and consumer memory. *Journal of Consumer Psychology*, 12(2), 93-106.

Cohen, J. B., & Basu, K. (1987). Alternative models of categorization: toward a contingent processing framework. *Journal of Consumer Research*, 455-472.

Cox, D. N., Koster, A., & Russell, C. G. (2004). Predicting intentions to consume functional foods and supplements to offset memory loss using an adaptation of protection motivation theory. *Appetite*, 43(1), 55-64.

Creusen, M. E., & Schoormans, J. P. (2005). The different roles of product appearance in consumer choice*. *Journal of product innovation management*, 22(1), 63-81.

Croft, J., Harris, F., & Hayward, W. (2002). Health claims on food packaging: Consumer related qualitative research. *London: Food Standards Agency*.

Doyle, J. R., & Bottomley, P. A. (2004). Font appropriateness and brand choice. *Journal of Business Research*, 57(8), 873-880.

Erdem, T., & Swait, J. (1998). Brand equity as a signaling phenomenon. *Journal of consumer Psychology*, 7(2), 131-157.

Fenko, A., Schifferstein, H. N., & Hekkert, P. (2010). Shifts in sensory dominance between various stages of user–product interactions. *Applied ergonomics*, 41(1), 34-40.

Festinger, L. (1962). *A theory of cognitive dissonance* (Vol. 2). Stanford university press.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and*

research.
Fullmer, S., Geiger, C. J., & Parent, C. R. (1991). Consumers' knowledge, understanding, and attitudes toward health claims on food labels. *Journal of the American Dietetic Association*, 91(2), 166-171.
Grunert, K. G. (2005). Food quality and safety: consumer perception and demand. *European Review of Agricultural Economics*, 32(3), 369-391.
Grunert, K. G., & van Trijp, J. C. M. (2014). Consumer-Oriented New Product Development. *Encyclopedia of Agriculture and Food Systems: 5-volume set* (pp. 375-386). Elsevier/Academic Press.
Hamilton, J., Knox, B., Hill, D., & Parr, H. (2000). Reduced fat products–Consumer perceptions and preferences. *British Food Journal*, 102(7), 494-506.
Hansen, F. (1981). Hemispheral lateralization: Implications for understanding consumer behavior. *Journal of Consumer Research*, 23-36.
Hastie, R., & Kumar, P. A. (1979). Person memory: Personality traits as organizing principles in memory for behaviors. *Journal of Personality and Social Psychology*, 37(1), 25.
Hastie, R. (1980). Memory for behavioral information that confirms or contradicts a personality impression. *Person Memory: The Cognittr~ Basis of Social Perceptions*, 155.
Heckler, S. E., & Childers, T. L. (1992). The role of expectancy and relevancy in memory for verbal and visual information: what is incongruency?. *Journal of Consumer Research*, 475-492.
Henderson, P. W., & Cote, J. A. (1998). Guidelines for selecting or modifying logos. *The Journal of Marketing*, 14-30.
Hilliam, M. (1998). The market for functional foods. *International Dairy Journal*, *8*(5), 349-353.
Hine, T. (1995). The total packaging: The secret history and hidden meanings of boxes, bottles, cans and other persuasive containers. *Little Brown, New York, NJ*.
Houston, M. J., Childers, T. L., & Heckler, S. E. (1987). Picture-word consistency and the elaborative processing of advertisements. *Journal of Marketing Research*, 359-369.
Hovland, C. I., Harvey, O. J., & Sherif, M. (1957). Assimilation and contrast effects in reactions to communication and attitude change. *The Journal of Abnormal and Social Psychology*, 55(2), 244.
Jacobs, L., Keown, C., Worthley, R., & Ghymn, K. I. (1991). Cross-cultural colour comparisons: global marketers beware!. *International Marketing Review*, 8(3).
Jacoby, L. L., Kelley, C. M., & Dywan, J. (1989). Memory attributions. *Varieties of memory and consciousness: Essays in honour of Endel Tulving*, 391-422.
Kardes, F. R., Posavac, S. S., & Cronley, M. L. (2004). Consumer inference: A review of processes, bases, and judgment contexts. *Journal of Consumer Psychology*, 14(3), 230-256.
Krishna, A. (2012). An integrative review of sensory marketing: Engaging the senses to affect perception, judgment and behavior. *Journal of Consumer Psychology*, 22(3), 332-351.
Krugman, H. E. (1977). Memory without recall, exposure without perception. *Journal of Advertising Research*, 17(4), 7-12.
Lähteenmäki, L., Lampila, P., Grunert, K., Boztug, Y., Ueland, Ø., Åström, A., & Martinsdóttir, E. (2010). Impact of health-related claims on the perception of other product attributes. Food Policy, 35(3), 230-239.
Lampila, P., van Lieshout, M., Gremmen, B., & Lähteenmäki, L. (2009). Consumer attitudes towards enhanced flavonoid content in fruit. *Food research international*, 42(1), 122-129.
Lancaster, K. J. (1966). A new approach to consumer theory. *The journal of Political Economy*, 132-157.
Leathwood, P. D., Richardson, D. P., Sträter, P., Todd, P. M., & van Trijp, H. (2007). Consumer understanding of nutrition and health claims: sources of evidence. *British Journal of Nutrition*, 98(03), 474-484.

Lee, A. Y., & Labroo, A. A. (2004). The effect of conceptual and perceptual fluency on brand evaluation. *Journal of Marketing Research*, 41(2), 151-165.
Lee, Y. H., & Mason, C. (1999). Responses to information incongruency in advertising: The role of expectancy, relevancy, and humor. *Journal of Consumer Research*, 26(2), 156-169.
Leventhal, H. (1984). A perceptual-motor theory of emotion. *Advances in Experimental Social Psychology*, 17, 117-182.
Leventhal, H. (1993). A componential, self-regulative systems view of Berkowitz's cognitive-neoassociationistic model of anger. *Advances in Social Cognition*, 6, 135-146.
Loken, B., & Ward, J. (1990). Alternative approaches to understanding the determinants of typicality. *Journal of Consumer Research*, 111-126.
Lyly, M., Roininen, K., Honkapää, K., Poutanen, K., & Lähteenmäki, L. (2007). Factors influencing consumers' willingness to use beverages and ready-to-eat frozen soups containing oat β-glucan in Finland, France and Sweden. *Food Quality and Preference*, 18(2), 242-255.
Mandler, G. (1981). The structure of value: Accounting for taste. *Affect and cognition: The seventeenth annual Carnegie Symposium on Cognition*.
Meyers-Levy, J., & Tybout, A. M. (1989). Schema congruity as a basis for product evaluation. *Journal of Consumer Research*, 39-54.
Michaut, A. M. (2004). *Consumer response to innovative products with application to foods*. Wageningen Universiteit.
Mizutani, N., Dan, I., Kyutoku, Y., Tsuzuki, D., Clowney, L., Kusakabe, Y., ... & Yamanaka, T. (2012). Package images modulate flavors in memory: Incidental learning of fruit juice flavors. *Food Quality and Preference*, 24(1), 92-98.
Morfaux, L. M. (1980). *Vocabulaire de la philosophie et des sciences humaines*. Armand Colin.
Obermiller, C. (1985). Varieties of mere exposure: the effects of processing style and repetition on affective response. *Journal of Consumer Research*, 17-30.
Oppenheimer, D. M. (2008). The secret life of fluency. *Trends in Cognitive Sciences*, 12(6), 237-241.
Orth, U. R., & Malkewitz, K. (2008). Holistic package design and consumer brand impressions. *Journal of Marketing*, 72(3), 64-81.
Peng, Y., West, G. E., & Wang, C. (2006). Consumer Attitudes and Acceptance of CLA-Enriched Dairy Products. *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie*, 54(4), 663-684.
Poffenberger, A. T., & Franken, R. B. (1923). A study of the appropriateness of typefaces. *Journal of Applied Psychology*, 7(4), 312.
Poulsen, J. (1999). *Danish consumers' attitudes towards functional foods* (No. 62). University of Aarhus, Aarhus School of Business, The MAPP Centre.
Reber, R., & Schwarz, N. (1999). Effects of perceptual fluency on judgments of truth. *Consciousness and Cognition*, 8(3), 338-342.
Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: is beauty in the perceiver's processing experience?. *Personality and Social Psychology Review*, 8(4), 364-382.
Roe, B., Levy, A. S., & Derby, B. M. (1999). The impact of health claims on consumer search and product evaluation outcomes: results from FDA experimental data. *Journal of Public Policy & Marketing*, 89-105.
Rompay, T. V., Hekkert, P., Saakes, D., & Russo, B. (2005). Grounding abstract object characteristics in embodied interactions. *Acta Psychologica*, 119(3), 315-351.
Rosch, E. (1999). Principles of categorization. *Concepts: Core Readings*, 189-206.
Singer, L., Williams, P. G., Ridges, L., Murray, S., & McMahon, A. (2006). Consumer reactions to different

health claim formats on food labels.
Schiller, G. (1935). An experimental study of the appropriateness of color and type in advertising. *Journal of Applied Psychology*, 19(6), 652.
Shiv, B., & Fedorikhin, A. (1999). Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. *Journal of Consumer Research*, 26(3), 278-292.
Solomon, M. R. (2006). *Consumer Behaviour: a European perspective*. Pearson education.
Springer, K. (2001). Perceptual boundedness and perceptual support in conceptual development. *Psychological Review*, 108(4), 691.
Stayman, D. M., Alden, D. L., & Smith, K. H. (1992). Some effects of schematic processing on consumer expectations and disconfirmation judgments. *Journal of Consumer Research*, 240-255.
Steenkamp, J. B. E. (1990). Conceptual model of the quality perception process. *Journal of Business research*, 21(4), 309-333.
Svederberg, E. (2002). Consumers' views regarding health claims on two food packages.
Treisman, A. (1998). Feature binding, attention and object perception. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 353(1373), 1295-1306.
Urala, N., Arvola, A., & Lähteenmäki, L. (2003). Strength of health-related claims and their perceived advantage. *International Journal of Food Science & Technology*, 38(7), 815-826.
Unkelbach, C. (2007). Reversing the truth effect: learning the interpretation of processing fluency in judgments of truth. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33(1), 219.
Van Kleef, E., van Trijp, H., & Luning, P. (2005). Functional foods: health claim-food product compatibility and the impact of health claim framing on consumer evaluation. *Appetite*, 44(3), 299-308.
Van Rompay, T. J., & Pruyn, A. T. (2011). When Visual Product Features Speak the Same Language: Effects of Shape-Typeface Congruence on Brand Perception and Price Expectations*. *Journal of Product Innovation Management*, 28(4), 599-610.
Van Trijp, H., & Van der Lans, I. A. (2007). Consumer perceptions of nutrition and health claims. *Appetite*, 48(3), 305-324.
Verbeke, W. (2006). Functional foods: Consumer willingness to compromise on taste for health?. *Food Quality and Preference*, 17(1), 126-131.
Verbeke, W., Scholderer, J., & Lähteenmäki, L. (2009). Consumer appeal of nutrition and health claims in three existing product concepts. *Appetite*, 52(3), 684-692.
Wexner, L. B. (1954). The degree to which colors (hues) are associated with mood-tones. *Journal of Applied Psychology*, 38(6), 432.
Williams, P., & Ghosh, D. (2008). Health claims and functional foods. *Nutrition & Dietetics*, 65(s3), S89-S93.
Williams, P., Ridges, L., Batterham, M., Ripper, B., & Hung, M. C. (2008). Australian consumer attitudes to health claim–food product compatibility for functional foods. *Food Policy*, 33(6), 640-643.
Zhang, Y., Feick, L., & Price, L. J. (2006). The impact of self-construal on aesthetic preference for angular versus rounded shapes. *Personality and Social Psychology Bulletin*, 32(6), 794-805.

Appendices

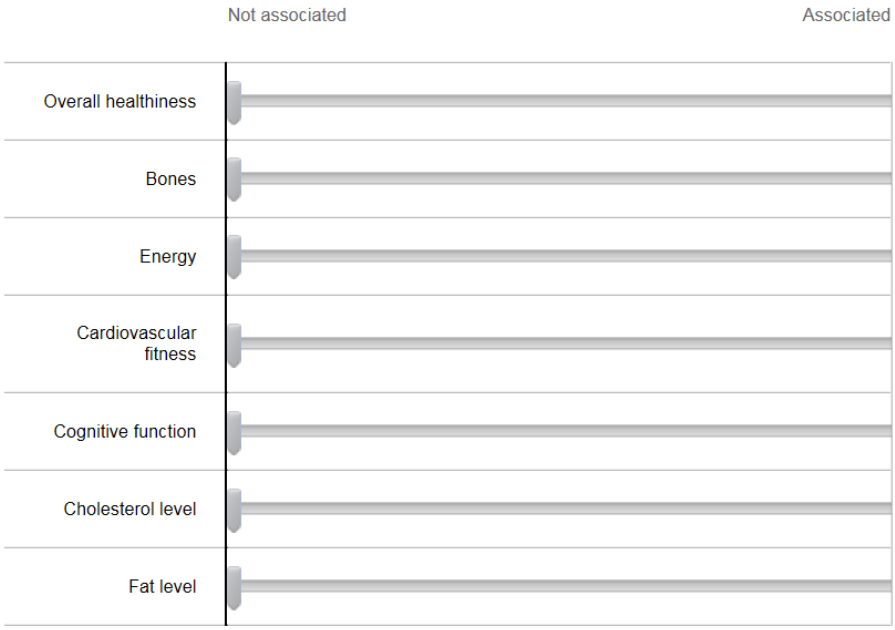
Appendix 1: Survey for pre-test

This study is about people's associations with different pictures or products. It is a pre-test of a study for my thesis. Participation takes 6 minutes. Your answers will not be used for other purposes than my thesis and scientific research.

If you have further questions, feel free to contact Zhihui Yu (zhihui.yu@wur.nl).

----Look at the picture and answer the questions.

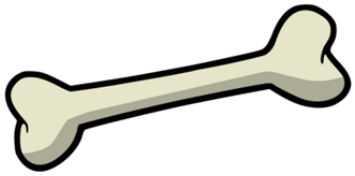
1. To what extent do you think that the picture is associated with following aspects:



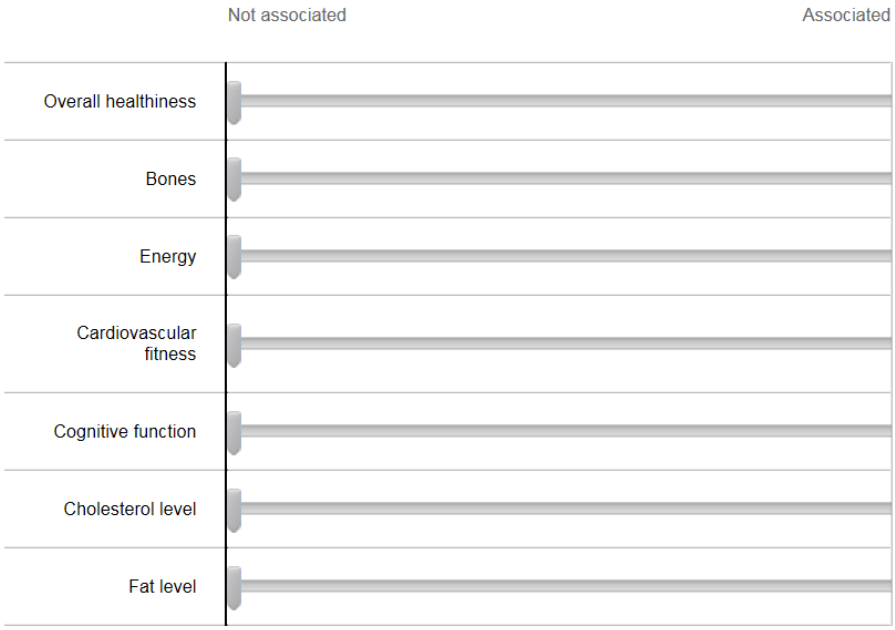
2. What other aspects can you associate the picture with? (If none, keep it blank)

_____

----Look at the picture and answer the questions.



1. To what extent do you think that the picture is associated with following aspects:



2. What other aspects can you associate the picture with? (If none, keep it blank)

_____

----To what extent do you associate calcium with milk?

----To what extent do you associate calcium with apple juice?

Appendix 2: Survey for this study

This study investigates what people think about packages. You will be asked to look at pictures of packages and answer questions. Participation takes about 10 minutes.

You will be assigned a random number, and the data provided by you will be linked to this number to guarantee your anonymity. Your answers will not be used for other purposes than my thesis and scientific research. This survey is for academic purpose only, and does not involve any commercial companies.

If you have further questions, feel free to contact Zhihui Yu (zhihui.yu@wur.nl).

----Please look at this milk package, and answer the following questions.

1. Overall, I would describe the milk as:

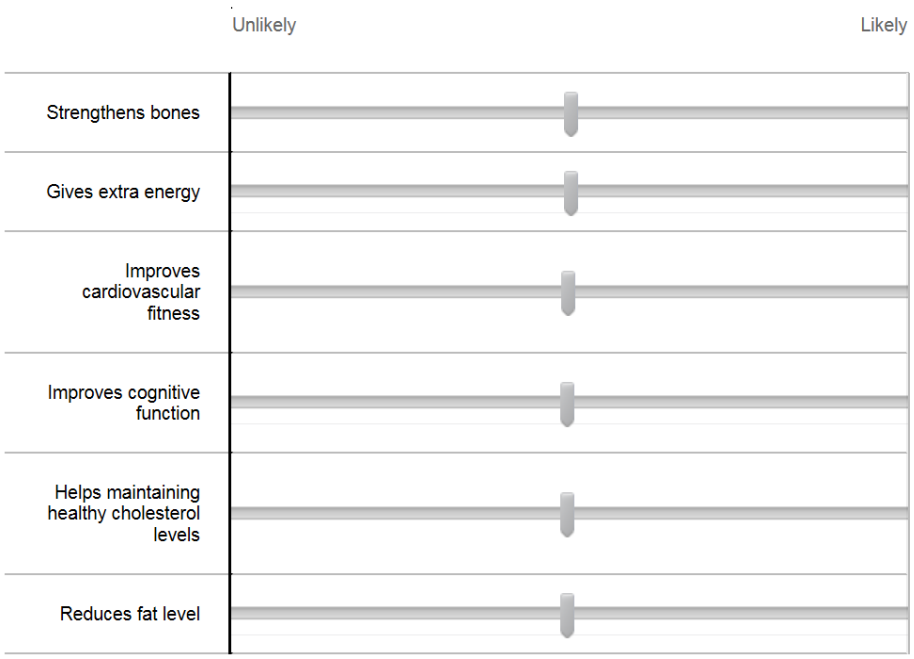
2. To what extent do you feel this milk is natural?

3. The likelihood that the information on this milk package is credible is:

4. To what extent do you think this milk is novel compared to other milk products?

5. The likelihood that this milk helps to enhance your overall healthiness is:

6. The likelihood that this milk helps to enhance healthiness in other aspects is:



7. What other health benefits do you think that this milk brings to you? (If none, keep it blank)

_____

8. Would you buy this milk if you happened to see it in a store?

9. To what extent is this milk different from the general milk you were exposed to previously?

10. Do you think that it is difficult to comprehend the package of the milk?

Please look at this apple juice package, and answer the following questions.

1. Overall, I would describe the apple juice as:

Unattractive Attractive

Attractiveness

2. To what extent do you feel this apple juice is natural?

Unnatural Natural

Naturalness

3. The likelihood that the information on this apple juice package is credible is:

Unlikely Likely

Likelihood

4. To what extent do you think this apple juice is novel compared to other apple juice products?

Not Novel Novel

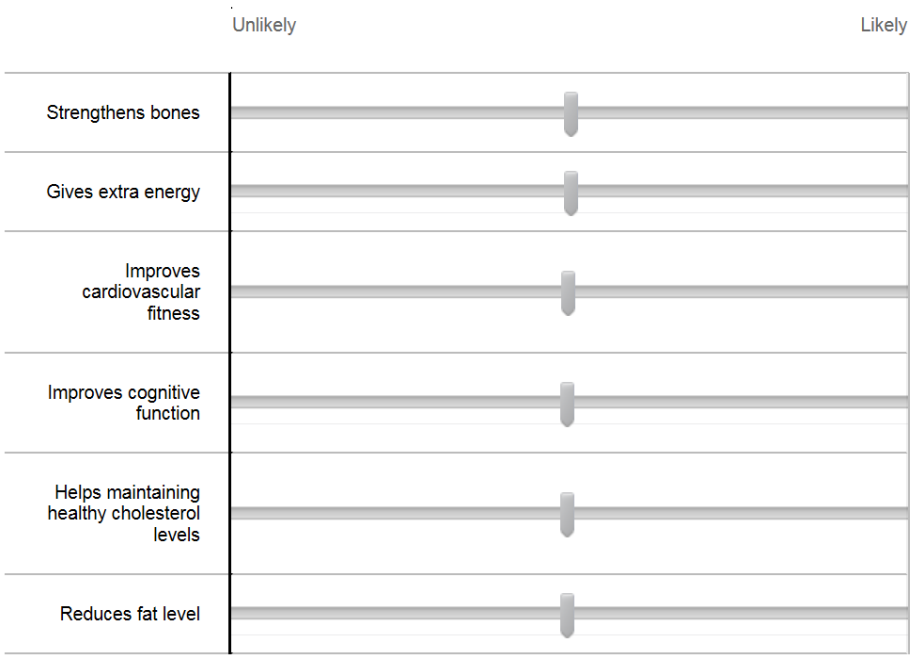
Novelty

5. The likelihood that this apple juice helps to enhance your overall healthiness is:

Unlikely Likely

Likelihood

6. The likelihood that this apple juice helps to enhance healthiness in other aspects is:



7. What other health benefits do you think that this apple juice brings to you? (If none, keep it blank)

_____

8. Would you buy this apple juice if you happened to see it in a store?

9. To what extent is this apple juice different from the general apple juice you were exposed to previously?

10. Do you think that it is difficult to comprehend the package of the apple juice?

Please look at this milk package, and answer the following questions.

1. Overall, I would describe the milk as:

Unattractive Attractive

Attractiveness

2. To what extent do you feel this milk is natural?

Unnatural Natural

Naturalness

3. The likelihood that the information on this milk package is credible is:

Unlikely Likely

Likelihood

4. To what extent do you think this milk is novel compared to other milk products?

Not Novel Novel

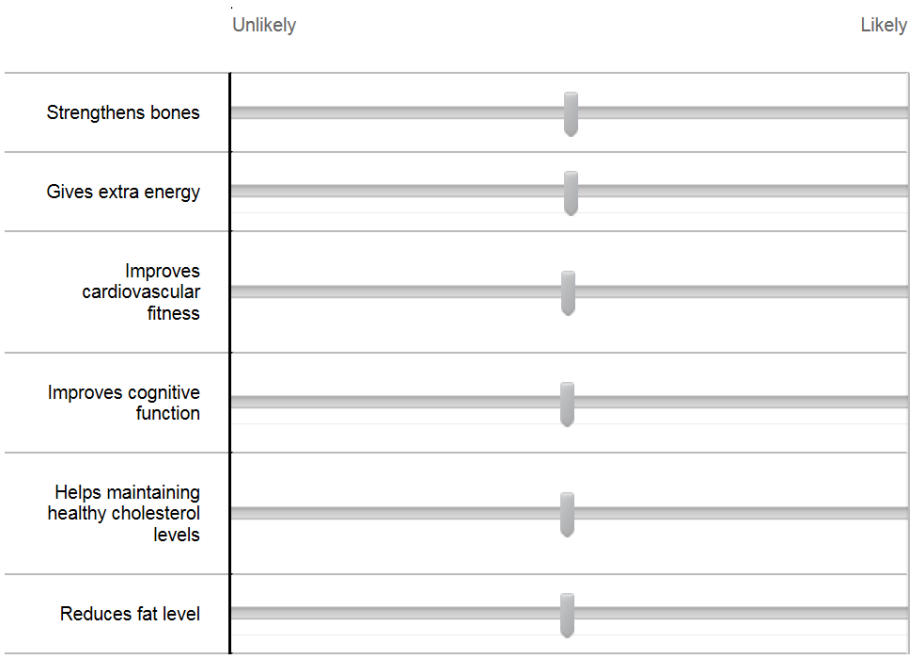
Novelty

5. The likelihood that this milk helps to enhance your overall healthiness is:

Unlikely Likely

Likelihood

6. The likelihood that this apple juice helps to enhance healthiness in other aspects is:



7. What other health benefits do you think that this milk brings to you? (If none, keep it blank)

_____

8. Would you buy this milk if you happened to see it in a store?

9. Do the health claim and picture on package convey a consistent message?

10. Do the health claim and the product convey a consistent message?

11. To what extent is this milk different from the general milk you were exposed to previously?

12. Do you think that it is difficult to comprehend the package of the milk?

Please look at this apple juice package, and answer the following questions.

1. Overall, I would describe the apple juice as:

2. To what extent do you feel this apple juice is natural?

3. The likelihood that the information on this apple juice package is credible is:

4. To what extent do you think this apple juice is novel compared to other apple juice products?

5. The likelihood that this apple juice helps to enhance your overall healthiness is:

6. The likelihood that this apple juice helps to enhance healthiness in other aspects is:

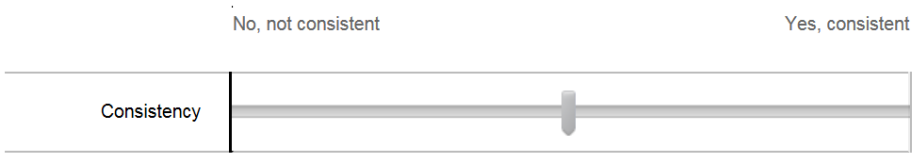
7. What other health benefits do you think that this apple juice brings to you? (If none, keep it blank)

_____

8. Would you buy this apple juice if you happened to see it in a store?

9. Do the health claim and picture on package convey a consistent message?

10. Do the health claim and the product convey a consistent message?



11. To what extent is this apple juice different from the general apple juice you were exposed to previously?

12. Do you think that it is difficult to comprehend the package of the apple juice?

Please look at this milk package, and answer the following questions.

1. Overall, I would describe the milk as:

2. To what extent do you feel this milk is natural?

3. The likelihood that the information on this milk package is credible is:

4. To what extent do you think this milk is novel compared to other milk products?

5. The likelihood that this milk helps to enhance your overall healthiness is:

6. The likelihood that this apple juice helps to enhance healthiness in other aspects is:

7. What other health benefits do you think that this milk brings to you? (If none, keep it blank)

_____

8. Would you buy this milk if you happened to see it in a store?

9. Do the health claim and picture on package convey a consistent message?

10. Do the health claim and the product convey a consistent message?

11. To what extent is this milk different from the general milk you were exposed to previously?

12. Do you think that it is difficult to comprehend the package of the milk?

Please look at this apple juice package, and answer the following questions.

1. Overall, I would describe the apple juice as:

2. To what extent do you feel this apple juice is natural?

3. The likelihood that the information on this apple juice package is credible is:

4. To what extent do you think this apple juice is novel compared to other apple juice products?

5. The likelihood that this apple juice helps to enhance your overall healthiness is:

6. The likelihood that this apple juice helps to enhance healthiness in other aspects is:

7. What other health benefits do you think that this apple juice brings to you? (If none, keep it blank)

8. Would you buy this apple juice if you happened to see it in a store?

9. Do the health claim and picture on package convey a consistent message?

10. Do the health claim and the product convey a consistent message?

11. To what extent is this apple juice different from the general apple juice you were exposed to previously?

12. Do you think that it is difficult to comprehend the package of the apple juice?

1. Are you a student?

__Yes, I am

__No, I am not

2. What is your gender?

__Male

__Female

3. How old are you?

_____

4. Do you have any comments about this study?

_____

Thank you for your participation!