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A packaged mindset: How elongated packages induce healthy mindsets

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ABSTRACT

Product packaging is an important instrument for marketers to draw consumer attention to specific product information and influence product perceptions. The purpose of this research is to investigate whether exposure to a product's packaging can also activate specific mindsets that, once activated, alter consumers' food perceptions. The results of three experiments demonstrate that elongated containers activate a health mindset that influences both consumers' perception of the packaged food product but also their health perceptions of subsequently encountered food. Specifically, foods in elongated containers lead consumers to think of concepts related to healthiness, which have differentiable effects on subsequent healthy and unhealthy food products.

1. Introduction

The axiom "what has been seen, cannot be unseen" suggests that visual representations may endure in a consumer's mind long after encountering a stimulus. Given the high impact of visual information on consumer responses, product packages that utilize distinctive visual cues are considered instrumental in driving a product's success (Zarling, 2018). Companies use product packages to both differentiate their offerings from competitors and communicate key information about their products to consumers (Chandon & Wansink, 2012), and, for example, alter consumers' evaluations and mindsets (Romero & Craig, 2017). As such, a staggering amount of money is spent in the design of packaging; it is estimated that marketers spend more than 150 billion dollars a year on product packaging to attract consumers to purchase their product (Consumer Reports, 2013).

Prior research on product packaging has primarily focused on how packaging helps consumers make inferences about the packaged product (Deng & Srinivasan, 2013; Jiang, Gorn, Galli, & Chattopadhyay, 2015; Koenigstorfer, Groeppel-Klein, Kettenbaum, & Klicker, 2013; Madzharov & Block, 2010; Maimaran & Wheeler, 2008; Werle, Balbo, Caldara, & Corneille, 2016; Yarar, Machiels, & Orth, 2019). Particularly relevant for the current research that focuses on packaged food products is the body of work on package elongation. Numerous studies have shown that elongation positively influences volume perceptions; tall, skinny containers are perceived to contain more volume than short, wide containers with the same holding capacity (Piaget, Inhelder, & Szeminska, 1960; Wansink & Van Ittersum, 2003). This difference in volume perception also affects consumption quantity (Raghubir & Krishna, 1999) and calorie estimations (Koo & Suk, 2016). This effect is attributed to a consumer's relative focus on the height of an object (Piaget et al., 1960; Wansink & Van Ittersum, 2003).

Recent research, however, suggests that the relative thinness of elongated packages can serve as a signal to consumers that the food product in the package is relatively healthy (van Ooijen, Fransen, Verlegh, & Smit, 2017). The findings of Van Ooijen and colleagues show that this effect is goal-dependent. That is, container elongation was found to increase choice likelihood when consumers had a health goal, whereas it had no effect on choice likelihood when consumers had a hedonic shopping goal – a goal deemed as health-irrelevant. To more accurately research the effect of package elongation on health perceptions, we focus on the effect of elongation on healthy versus unhealthy products. That is, although we also predict that elongated containers can increase the extent to which a food product is perceived as healthy, this research makes additional propositions. Specifically, we propose and find that the influence of elongated shapes on health perceptions depends on the healthiness of the product, such that an elongated shape enhances (reduces) the healthfulness perceptions of healthy (unhealthy) products. We argue and demonstrate that this is due to the fact that elongation, and the corresponding thinness, actives a health mindset. As such, our work refines and enriches the understanding of how elongated shapes influence product health perceptions.

This research contributes to past research that has examined how

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package elongation aids consumers in identifying relatively healthy products (Koo & Suk, 2016; van Ooijen et al., 2017). Moreover, our research suggests that elongation may not only signal to consumers what is in the package and allow them to make certain inferences about the product's attributes (i.e., the product inside the elongated container). We suggest that elongation also implicitly activates a health mindset. While in this mindset, health-related concepts are highly accessible, earning them greater salience in consumers' evaluations (Chartrand, 2005; Dijksterhuis & Bargh, 2001; Singh & Singh, 2011), which alters consumer health perceptions of products. We propose that the activation of a health mindset not only influences consumers' perception of the packaged product, but also influences their health perceptions of subsequently encountered products (i.e., seen immediately after the product in the elongated container itself). Further, we suggest that the influence of package elongation on subsequently encountered products depends on the nature of the product contained inside the elongated package.

Next, we discuss past research on the effects of elongation on consumer perceptions. Then, we propose that exposure to elongated containers activates health mindsets in consumers, which subsequently carry over to the perceptions of the packaged product and other subsequently encountered products. Subsequently, we report three experiments that provide support for our theoretical framework by demonstrating the influence of elongation on the activation of health mindsets and their effect on the perceptions of packaged food products and other subsequently encountered food products.

2. Theoretical background

The majority of research on elongation has focused on volume perceptions. Perhaps the most robust effect is that elongated objects appear larger than less elongated objects (Ordabayeva & Chandon, 2016; Raghubir & Krishna, 1999), which has typically been attributed to the vertical-horizontal illusion that causes one to overestimate the vertical length of an object relative the horizontal length (Piaget et al., 1960). Beyond volume perceptions, however, packaging shapes and cues have also been shown to help consumers identify products and infer the attributes of the product (Becker, van Rompay, Schifferstein, & Galetzka, 2011; Spence, 2012). For example, just as brand logos and packaging help consumers identify a product's manufacturer, the inclusion of other cues, such as a fruit's name or a fruit's image, leads consumers to believe fruit is one of the product's ingredients (Keller, Parameswaran, & Jacob, 2011). This influence goes beyond these explicit cues - packaging cues may also affect product perceptions through the activation of implicit associations. That is, a picture of fruit can enhance the belief that the product contains the depicted fruit (explicit), yet it may also affect health perceptions of the product due to pre-established mental associations between fruits and health (implicit). As such, the inclusion (vs. exclusion) of this implicit cue in packaging may positively affect consumer health perceptions of the packaged product, because it activates health associations already in consumers' minds (Karnal, Machiels, Orth, & Mai, 2016; van Ooijen et al., 2017).

Even the shape of a product's packaging may be an implicit cue that carries associations that impact consumer judgments about the product (Brasel & Hagtvedt, 2017; Deng & Srinivasan, 2013; Jiang et al., 2015; Madzharov & Block, 2010; Maimaran & Wheeler, 2008; Werle et al., 2016). Specifically, recent research suggests that a package's relative thinness aids consumers in identifying relatively healthy products (van Ooijen et al., 2017), yet our work suggests that the effect of elongation may differentially affect product health perceptions depending on the nature of the packaged product. Importantly, we propose that the elongation of a package may go beyond mere identification and signaling the product's possession of a specific attribute to also implicitly activating associations of healthiness (Chartrand, 2005; Dijksterhuis & Bargh, 2001; Singh & Singh, 2011). This is in line with research that has shown that incidental elements can implicitly activate learned associations and concepts in the minds of consumers that may be assimilated into a consumer's judgment or behavior (Bargh & Chartrand, 1999; McFerran, Dahl, Fitzsimons, & Morales, 2010). For example, past research has shown that stimulating participants to think of a stereotyped population (e.g., the elderly) leads participants to display characteristics of that population (e.g., walking slower, becoming forgetful; Bargh, Chen, & Burrows, 1996; Dijksterhuis, Bargh, & Miedema, 2000).

In the case of elongation, we suggest that the relative thinness of an elongated container may also activate concepts broadly related to health (e.g., Singh & Singh, 2011). In fact, a great deal of research has demonstrated that thin individuals (i.e., those considered to be thin) are thought to be healthier than those who are not (Singh & Singh, 2011; Welborn, Dhaliwal, & Bennett, 2003). Furthermore, recent packaging research has shown that packaging shapes that resemble human forms can activate social constructs, such as self-control, that influence decisions in unrelated financial domains (Romero & Craig, 2017). These findings suggest that, over time, consumers have learned this association between thinness and health.

Given this learned association between thinness and health, we propose that the thinness of elongated packages activates a health mindset for consumers, which not only influences the perceived healthiness of the product contained in the (elongated) package, but may also carry over to perceptions of subsequently encountered products as these health-related concepts still remain active in consumers' minds.

H1. Product packages that are elongated (versus non-elongated) are more likely to activate a health mindset.

The activation of a health mindset is proposed to have a differential influence on product health perceptions depending on the type of the product. That is, the type of food product may also serve as a cue that consumers can use to evaluate a product. Research has shown that when two cues conflict on a single dimension (e.g., healthiness), consumers afford this dimension greater salience, which could polarize judgments on this dimension (Hoegg, Alba, & Dahl, 2010; Millar & Tesser, 1986). This suggests that the influence of elongation may change if consumers also encounter a cue related to health, such as product type, that could lead them to consider a product unhealthy.

In line with this, we propose that consumers inherent (i.e., a priori) perceptions of an unpackaged product's healthiness determine how package elongation influences consumers' health perceptions. For products considered to be healthy, the enhanced salience and accessibility of health-related concepts are expected to enhance the perceived healthiness of food products that consumers already categorize as healthy. A similar, albeit weaker, effect would be expected for products whose healthiness is unknown or neutral, as consumers tend to interpret ambiguous information in line with information that is already activated (Brendl, Markman, & Messner, 2003). For products considered to be inherently unhealthy, consumers are expected to have to reconcile how one cue (the type of product) and another (the shape of a product's container) seem to influence health perception in an opposing manner. This additional attention and salience will polarize consumer health perceptions, making an unhealthy product seem less unhealthy. In line with this, research has shown that consumers sometimes respond to information that conflicts with their inherent product beliefs by forming counterarguments that lead to less positive health perceptions (Adams & Geuens, 2007). As such, we propose that an unhealthy product (e.g., a milkshake) will be considered unhealthier (i.e., lower in healthiness) if a health mindset has been activated by elongated packaging. Therefore, we predict:

H2. The activation of a health mindset by the elongation of food product packages polarizes consumers' health perceptions of the packaged product, such that healthy products are considered healthier and unhealthy products are considered unhealthier.

In line with our argument that package elongation activates a health

mindset, we also expect that the activation of a health mindset will carry over to consumer perceptions of subsequently encountered products. Specifically, we propose that this mindset will continue to be activated after participants have examined the elongated container and evaluate subsequently encountered products. We anticipate that the activated mindset will increase the perceived healthiness of subsequently encountered products based on the past research on health accessibility that suggests that consumers typically *assimilate* the health perceptions of one product to recently encountered information, unless contrasting information is present (Chandon & Wansink, 2007; Mussweiler, 2003). When contrasting information is present, assimilation effects will be attenuated, as the increased consideration of the contrasting information mutes the potential of the cue carryover (Mussweiler, Strack, & Pfeiffer, 2000). More formally:

H3a. The activation of a health mindset by the elongation of food product packages increases the health perceptions of subsequently encountered products.

H3b. The positive effect of the elongation of food product packages on the health perceptions of subsequently encountered products is attenuated by contrasting information.

3. STUDY 1

In this study, we examine if elongation activates a health mindset for consumers and influences the perceived healthiness of food products. In line with previous research, we expect that participants will rate the food product presented in elongated glasses as healthier than the food product in the wide glass of the same volume. Importantly, we also expect that seeing the more (vs. less) elongated container can also alter consumers' mindset, particularly, increase the activation of a health mindset (H1).

3.1. Participants

124 participants (52% male; M_{age} = 31.12) were recruited through Amazon's Mechanical Turk and received financial compensation for their participation.[1]

3.2. Design

We utilized a 2-condition between-subject experiment that manipulated the shape of a 10-ounce drinking glass. Participants either saw an elongated glass that was tall and thin or a non-elongated glass of the same volume that was short and wide.

3.3. Stimuli and procedure

As a cover for the experiment participants were informed that they would be viewing a photo that was being considered for a print advertisement for a new beverage. We used an unfamiliar beverage to control for any pre-existing health perceptions participants may have towards a specific beverage. Participants were randomly assigned to view a picture of either a tall, skinny glass (i.e., 6″ tall with 2″ diameter) or short, wide glass (i.e., 3.5″ tall with 3" diameter). To control for the perceived healthiness of the product, both 10-ounce glasses were filled with 8 ounces of ambiguous dark liquid that could be perceived as juice, a high-sugar carbonated beverage, or even a cocktail.

In order to examine whether elongation activates thoughts of health, we adapted a "quick think" task from past research (Berger & Fitzsimons, 2008). Participants were asked to quickly name 10 things they wanted to do in the next day. The tasks were coded for references of health and fitness (e.g., workout, run) as a proxy for the increased accessibility and salience of health-related concepts. Additionally, we recorded the order of the thoughts and ranked the first health-related item to examine how quickly health-related items came to mind. Following this question, participants completed a 3-item health perception measure and provided volume estimates in a counter-balanced order. For the volume measure, participants were asked to estimate the volume of the container (in fluid ounces). To measure their health perceptions, participants rated the extent they consider the product healthy, nutritious, and vitamin-rich on a 7-point scale (1 = not at all; 7 = very much). We combined the inferences of the product's healthiness, nutrition, and vitamin perceptions to form an aggregate health perception measure (α = 0.90).

3.4. Results

3.4.1. vol estimates

An ANOVA with glass type as a predictor variable demonstrated that participants considered that the elongated glass contained more volume than the identical product in the short, wide glass ($M_{Elongated}$ = 9.94 vs. $M_{Nonelongated}$ = 8.08 fl. oz.; F (1, 122) = 6.43; p = .012; η^2 = 0.05). We also examine the effect of the perceived volume in our subsequent analyses.

3.4.2. Health perceptions

Consistent with H1, an ANOVA with glass type as a predictor variable demonstrated that participants considered the product in the elongated glass to be healthier than the identical product in the short, wide glass ($M_{Elongated}$ = 4.93. vs. $M_{Nonelongated}$ = 4.43 fl. oz.; F (1, 122) = 4.73; p = .032; η^2 = 0.04). The results are similar when controlling for participants volume estimates.

3.4.3. The accessibility of health-related concepts

As the health-related concepts were measured with a count variable, we utilized a Poisson regression with glass condition (1 = non-elongated glass; 2 = elongated glass) predicting the number of thoughts participants listed that were health-related. The results demonstrate that participants who viewed the tall, skinny, elongated glasses reported more healthy activities on their to-do list than those who viewed the short, wide, non-elongated glasses ($M_{Elongated}$ = 0.68. vs. $M_{Non\text{-}Elongated}$ = 0.40; b = 0.541; Wald = 4.764; p = .029). Additionally, an analysis of the relative rank of their first healthy activity on the participants' lists confirmed that participants in the elongated condition mentioned a healthy activity sooner than those in the short, wide glass condition ($M_{Elongated}$ = 7.14 vs. $M_{Non\text{-}Elongated}$ = 9.03; F (1,122) = 7.95; p = .006; η^2 = 0.061). As such, the results of study 1 were consistent with the suggestion that the elongation of containers activates health associations in consumer minds (H1).

3.5. Discussion

The results of study 1 are in line with our main assertion that elongation can lead to enhanced perceptions of a product's healthiness, despite enhanced perceptions of its volume. These results, however, also demonstrate that the exposure to an elongated container can activate a health mindset, as participants were more likely to think about health-related concepts that were unrelated to the focal product evaluation (H1). Although the enhanced health perceptions of the product in the elongated container are consistent with past research (van Ooijen et al., 2017), evidence of a health mindset leads to additional

[1] In order to avoid small sample sizes (Robinson, Bevelander, Field, & Jones, 2018), online samples were determined so that they allowed for at least 50 participants in each condition. Sample sizes for in person samples were determined by lab capacity and participation.

[2] We tested the perceived healthiness of three types of milk (whole, skim, and chocolate) to create three health 'levels' for studies 2 and 3.

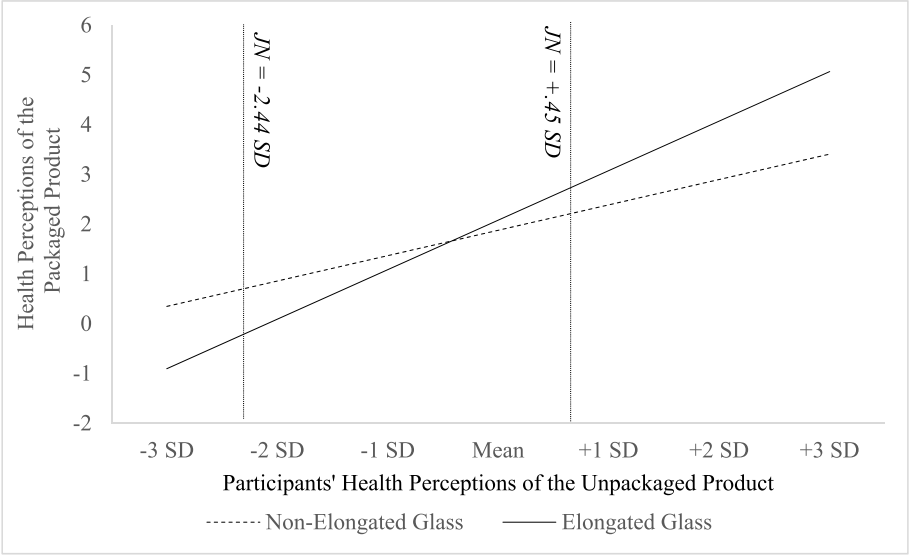

Fig. 1. STUDY 2: Health perceptions of the packaged product According to the perceived healthiness of the unpackaged product and GLASS TYPE.

predictions. As the activation of this mindset increases the accessibility of health-related concepts, it is possible that this health mindset may not only make a new or ambiguous product seem healthier. The activation of a health mindset may also make other types of products, such as those thought to be unhealthy, seem less healthy. In the next study, we investigate this proposition. Specifically, we examine whether the effect of package elongation of health perceptions of the packaged product is moderated by the perceived healthiness of the (unpackaged) food product.

4. STUDY 2

4.1. Participants and design

358 participants completed study 2 on Amazon's Mechanical Turk (50% male; M_{age} = 37.1) in exchange for monetary compensation. The study was a 2 (glass type: elongated vs. non-elongated) between-subjects experiment with perceived healthiness of the unpackaged product as a measured moderating variable. Participants were randomly assigned to a glass type condition.

4.2. Stimuli and procedure

The purpose of this study is to examine if the influence of package elongation on health perceptions of a packaged food is moderated by the perceived healthiness of the (unpackaged) product. To obscurely measure the perceived healthiness of (unpackaged) product, participants were first asked to rate the perceived healthiness of six randomized drinks, including milk, on a 7-point scale (1 = "very unhealthy" to 7 = "very healthy"). Next, participants were told that they would be asked to view an image of a glass of whole milk that was being considered for use in a promotional campaign by the American Dairy Association. Unlike study 1, where participants were not explicitly told the kind of beverage in the glass, participants in this study were explicitly told the product in the container was whole milk. Whole milk was pretested to be less healthy than skim milk ($M_{WholeMilk}$ = 4.34 vs. $M_{SkimMilk}$ = 5.40; t (49) = 3.98; p = .001), but healthier than chocolate milk ($M_{WholeMilk}$ = 4.34 vs. $M_{ChocolateMilk}$ = 3.06; t (49) = 4.72; p < .001).[2] Participants were then asked to view an image that contained either an elongated glass or a non-elongated glass filled with whole milk. The dimensions of both glasses were identical to study 1. Next, participants were asked to rate their health perceptions of the packaged whole milk on six nutritional attributes using a 9-point scale (1 = "not at all" to 9 = "very much"). Three of the nutritional attributes were positively related to healthiness (vitamins, calcium, protein; α = 0.71), and three were negatively related to healthiness (fats, sugars, and preservatives; α = 0.64). To create a singular health perception measure, we subtracted the aggregated unhealthy attribute score from the aggregated healthy attribute score. As such, we allow for and measure the healthy and unhealthy perceptions consumers have about a product and use the tradeoff these attributes to form an overall health perception score.

4.3. Results and discussion

4.3.1. vol estimates

Consistent with expectations, elongated glasses were seen as containing more of the beverage than non-elongated glasses ($M_{Elongated}$ = 10.64 vs. $M_{Non\text{-}Elongated}$ = 8.65; F (1,356) = 10.30; p = .001; η^2 = 0.028).

4.3.2. Health perceptions of the packaged product

To test whether participants' health perceptions of the packaged product were contingent on both container elongation and the perceived healthiness of the (unpackaged) product, (H2), we conducted a regression analysis with glass type, perceived healthiness of the unpackaged product (mean-centered), and their interaction predicting the overall health perceptions. Consistent with our predictions, the results reveal a significant interaction between glass type and the perceived healthiness of the (unpackaged) product (b = 0.33; se = 0.13; t = 2.48; p = .014; Fig. 1). Although there was a significant main effect of perceived product healthiness (b = 0.51; se = 0.07; t = 7.70; p < .001), there was not a significant main effect of elongation in this paradigm (b = 0.13; se = 0.21; t = 0.61; p > .25). We attribute the null effect of glass type in this study to the initial product healthiness measure participants responded to before viewing the stimuli, as it may have increased focus on the products' (un)healthiness.

To better understand the nature of the interaction, we examined the Johnson-Neyman point to identify when the difference between glass types became significant. Participants who viewed the unpackaged product as inherently healthy (+0.45 SD) considered the packaged product to be significantly healthier when in the elongated glass, whereas participants who viewed the unpackaged product as inherently unhealthy (−2.44 SD) indicated the product in the elongated glass to be significantly less healthy. The results are similar when controlling for participants' volume perceptions.

4.4. Discussion

The results of study 2 provide additional confirmation that exposure to an elongated package can enhance the accessibility of health-related concepts (H1) and polarize health perceptions (H2). As such, container elongation can make healthy products seem healthier and unhealthy products seem less healthy. The results also show that this effect cannot be attributed to the influence of elongation on volume perceptions, as we statistically controlled for participants' volume estimates in our analyses. Although we suggest that these findings are due to the way that elongation activated a health mindset, it is also possible that the assessment of the perceived healthiness of the six beverages may have activated this mindset. To overcome this limitation, we next explore whether the influence of container elongation on health perceptions is moderated by product type. This eliminates the need for this question (and the possibility of its influence) and examines the influence of elongation on similar products that have been pretested to be relatively healthy (i.e., skim milk) or unhealthy (i.e., chocolate milk). Furthermore, we examine whether the consequence of this health mindset can carry over to subsequently encountered products (H3).

5. STUDY 3

5.1. Participants

141 undergraduates (48% male; M_{age} = 20.64) received partial course credit in exchange for their participation in the experiment.

5.2. Design

Study 3 was a 2 (glass type: elongated vs. non-elongated) by 2 (product type: healthy vs. unhealthy) between-subjects laboratory experiment. Participants were randomly assigned to both glass and product type conditions.

5.3. Stimuli and procedure

The procedure for this experiment was similar to that of study 2, as participants were told they would be viewing a picture that was being considered for use in a promotional campaign. Participants were randomly assigned to view one of four pictures, of either regular (healthy) or chocolate milk (unhealthy) in the same elongated or non-elongated glasses from the prior studies. However, unlike study 2, participants were not asked to rate any products' healthiness before the experiment.

Unlike the previous two experiments, where we only measured participant's health perceptions of the product contained in the glass, study 3 also examined if a health mindset, activated by encountering an elongated container, alters the health perceptions of subsequently encountered food products. That is, this study examined (1) if this health mindset could polarize judgments of health perceptions depending on the nature of the packaged product, as in study 2, and (2) whether the container shape of a packaged food product influences health perceptions other closely encountered products (H3).

In order to examine the influence of elongation on subsequent perceptions, we used a task adapted from past research on health priming on advertising (Harris, Bargh, & Brownell, 2009). As such, after participants viewed the advertisement, but before answering questions about the healthiness and volume of the product contained inside the glass, participants were asked to rate the perceived healthiness of three snack products on a 9-point scale (1 = "very unhealthy" to 9 = "very healthy"). These snacks consisted of a known healthy snack (carrots), a known unhealthy snack (cookies), and the focal product of interest: an ambiguously healthy/unhealthy snack (goldfish crackers) that was used in past research (Davis, Haws, & Redden, 2016). We expected that carrots and cookies would be rated closer to the end poles of the healthiness scale, restricting their ability to be manipulated; therefore, the health ratings of the goldfish crackers would serve as our primary measure of whether elongation cues participants to think about healthiness in subsequent, unrelated evaluations. Additionally, because participants were asked directly about the perceived healthiness of each snack, we measured health perceptions of milk using the same healthiness measure from study 2.

5.4. Results and discussion

5.4.1. Manipulation check

We pretested our manipulation on a separate sample of 50 participants who rated the perceived healthiness of white and chocolate milk on a 7-point scale (1 = "not at all healthy; " 7 = "very healthy"). A *t*-test demonstrated that the white milk was thought to be significantly healthier than chocolate milk ($M_{RegularMilk}$ = 5.16 vs. $M_{ChocolateMilk}$ = 3.48; t (49) = 7.27; p < .001).

5.4.2. vol estimates

Consistent with expectations, an ANOVA with glass type and product type as predictor variables demonstrated that elongated glasses were seen as more voluminous than non-elongated glasses ($M_{Elongated}$ = 10.26 vs. $M_{Non\text{-}Elongated}$ = 8.29; F (1,136) = 3.67; p = .057; η^2 = 0.026). There was no main effect of the type of the product ($M_{Healthy}$ = 10.08 vs. $M_{Unhealthy}$ = 8.77; F (1,136) = 3.67; p = .17; η^2 = 0.016), nor was there an interaction between glass type and product type (F (1,134) = 0.32; p = .57; η^2 = 0.002).

5.4.3. Health perceptions of packaged product

To examine participants' health perceptions of the packaged product, we ran an ANOVA with glass and product type conditions as predictor variables. The results are similar if we control for participants' volume perceptions. Although there was not a main effect of glass type across both conditions ($M_{Elongated}$ = 2.24 vs. $M_{Non\text{-}Elongated}$ = 2.86; F (1,137) = 0.82; p = .37), there was a significant main effect of product type ($M_{Healthy}$ = 5.17 vs. $M_{Unhealthy}$ = −0.07; F (1,137) = 59.49; p < .001; η^2 = 0.303). Following our predictions, there was also a significant interaction (F (1, 137) = 11.14; p = .001; η^2 = 0.075; Fig. 2). The interaction result appears to be due to the elongated container polarizing health perceptions of the healthy and unhealthy product. Adding further support to H2, planned contrasts show that participants who saw the relatively healthy product (white milk) in the long, skinny glass rated the product as marginally more healthy than those who saw the product in a short, wide glass ($M_{Elongated,\ Healthy}$ = 6.00 vs. $M_{Non\text{-}Elongated,\ Healthy}$ = 4.34; F (1, 137) = 2.86; p = .093; η^2 = 0.02), whereas participants who saw the unhealthy product (chocolate milk) in an elongated glass rated it as more unhealthy ($M_{Elongated,\ Unhealthy}$ = −1.51 vs. $M_{Non\text{-}Elongated,\ Unhealthy}$ = 1.37; F (1, 137) = 9.32; p = .003; η^2 = 0.064).

5.4.4. Perceived healthiness of subsequently encountered product (goldfish)

An ANOVA including glass and product type conditions as independent factors and the perceived healthiness of the unrelated snack as the dependent variable yielded a marginal main effect of glass type ($M_{Elongated}$ = 3.99 vs. $M_{Non\text{-}Elongated}$ = 3.54; F (1, 137) = 3.023; p = .084; η^2 = 0.022). Although there is no effect of product type ($M_{RegularMilk}$ = 3.72 vs. $M_{ChocolateMilk}$ = 3.81; F (1,136) = 0.186; p = .66; η^2 = 0.001), there is a significant interaction between glass and product type (F (1, 137) = 5.77; p = .018; η^2 = 0.04; Fig. 3). This seems to be the strongest for the participants who saw the relatively healthy product (white milk) in the elongated glass, as they rated the focal snack (i.e., goldfish crackers) as more healthy than those who saw the product in a non-elongated glass ($M_{Elongated,\ healthy}$ = 4.25 vs. $M_{Non\text{-}Elongated,\ healthy}$ = 3.13; F (1, 137) = 8.28; p = .005). This supports H3a. However, when participants were also confronted with an unhealthy cue (i.e., chocolate milk) along with elongation, there was no difference in the perceived healthiness of the subsequently encountered product

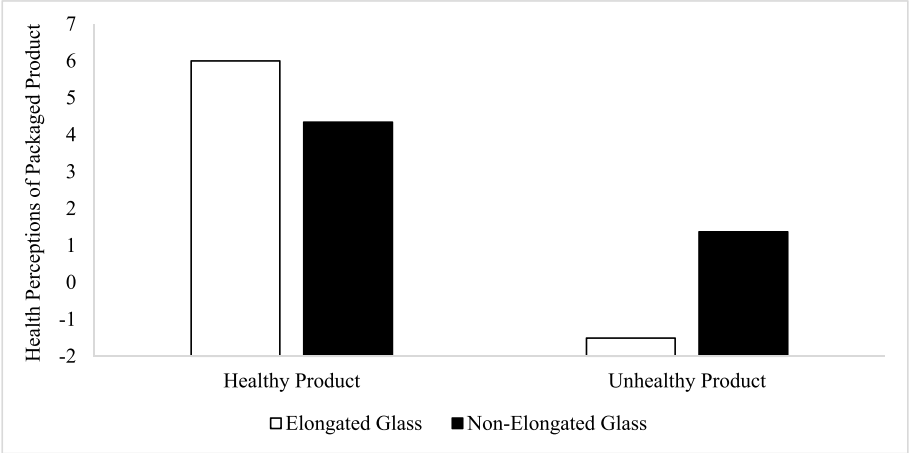

Fig. 2. Study 3: Health perceptions of healthy and unhealthy products according to glass type.

($M_{\text{Elongated, unhealthy}}$ = 3.71 vs. $M_{\text{Non-Elongated, unhealthy}}$ = 3.90; F (1, 137) = 0.23; p = .63), supporting H3b. The influence of product type of the packaged product on health perceptions of the subsequently encountered product was not significant for those who saw the product in an elongated glass ($M_{\text{Elongated, healthy}}$ = 4.25 vs. $M_{\text{Elongated, unhealthy}}$ = 3.71; F (1, 137) = 1.97; p = .163). It was, however, significant for those who saw the non-elongated glass ($M_{\text{Non-Elongated, healthy}}$ = 3.13 vs. $M_{\text{Non-Elongated, unhealthy}}$ = 3.90; F (1, 137) = 1.97; p = .048).

To examine if the perceived healthiness of the subsequently encountered products were driven by how elongated containers activate of a health mindset, we conducted a moderated mediation analysis (Preacher, Rucker, & Hayes, 2007; Model 7; IV = glass type; Moderator = product type [e.g., Regular milk = 1, Chocolate Milk = −1]; Mediator = health perceptions of the packaged product; DV = perceived healthiness of subsequently encountered product [i.e. goldfish]). The index of moderated mediation demonstrates that the influence of elongation on a product's perceived healthiness is significantly moderated by the type of product contained in the glass (95% confidence interval = 0.0640/2.2670; 5000 draws). Furthermore, the confidence interval for the indirect effect of glass type on the perceived healthiness of the subsequently encountered product (i.e., goldfish) is through the perceived healthiness of the milk in the glass is significant in the regular, healthy milk condition (95% confidence interval = −1.7122/-0.1173; 5000 draws), but not significant in the unhealthy chocolate milk condition (95% confidence interval = −0.3425/.8466; 5000 draws).

5.5. Discussion

The results of study 3 provide additional confirmation that exposure to an elongated package can affect health perceptions and activate a health mindset. Specifically, the results of this study are consistent with study 2 and demonstrate that perceived healthiness of the product moderates the influence of container elongation on the health perceptions of the product in the container. In line with our theorizing, we find that an elongated package shape improves health perceptions of a healthy product. However, this effect reverses when the product contained inside the elongated package is unhealthy. Furthermore, the results of this study reveal that the activation of a health mindset carries over to the perceptions of subsequently encountered products, as long as consumers do not encounter contrasting information, such as an unhealthy cue, that may mitigate this mindset carrying over to other products. The results of this study show that when an unhealthy cue is encountered with elongation, the accessibility of health related thoughts on evaluations of subsequently encountered products is attenuated. This means that elongated shapes influence the perceptions of not only a product in the (elongated) container, but also other products evaluated while this health mindset is activated.

6. General discussion

A product's packaging plays a critical role in informing customers of various product attributes at the moment consumers encounter a product in a retailer. As such, marketers and researchers alike have paid

Fig. 3. Study 3: Perceived healthiness of a subsequently encountered product according to glass and product type.

substantial attention to understanding how changes to packaging shapes can affect consumer perceptions (e.g., Brasel & Hagtvedt, 2017; Roberge, 2017). The current research demonstrates that not only does a container's shape impact how consumers evaluate the content inside the packaging, but also that the packaging has broader implications than previously explored.

In line with past research, the results from our three studies demonstrate an interesting paradox. Although elongation increases consumers' estimates of a container's volume, it also alters health perceptions of the packaged product. While this is in line with past research (Koo & Suk, 2016; van Ooijen et al., 2017), our research goes further to suggest that this effect is due to the way the elongated packages activate a health mindset for consumers. This process explanation yields two further contributions. First, container elongation may not only lead consumers to perceive a product as healthier, but it can also backfire if the product contrasts with this healthy expectation. Specifically, while the results of studies 2 and 3 suggest that a relatively healthy product may be perceived even healthier when seen in an elongated container, an unhealthy product is seen as less healthy when it is in an elongated container. Second, these results support our theoretical framework that elongated containers activate thoughts of health that may carry over to perceptions of subsequently encountered products. Critically, this effect could only be explained by mindset activation, as a hedonic goal (van Ooijen et al., 2017) would be unlikely to account for this carryover effect.

While the studies demonstrate how a package's elongation biases health perceptions through activating a health mindset, there are a variety of avenues for future research. Our work documents a carryover effect, in which exposure to elongated product packaging also influences the perceived healthiness of a subsequently encountered product. However, our research demonstrates that this carry over effect seems to be attenuated in circumstances where conflicting information is present. While we explore this carry over effect immediately after exposure to the packaged product, more research is needed on a more diverse set of products to better understand what factors relating to the initial exposure, subsequent products, and their relative health perceptions influence this carry over effect. Although we observed a carryover effect on goldfish crackers after participants encounter a relatively healthy product in an elongated container, the carryover effect may be different when facing other products. That is, although we used goldfish because their health perceptions were considered sufficiently malleable (Davis et al., 2016), given a pretest found them to be relatively healthier than cookies and relatively less healthy than carrots, a different effect may materialize on other products. For example, a negative carryover effect of elongation may be observed on products thought to be relatively unhealthier than goldfish (but relatively healthier than chocolate chip cookies). Also, research is needed to understand the role of experience, knowledge, and the expectations created when consumers are familiar with a product's package or container. For example, as participants were not familiar with the container that they were shown in our studies. It is possible that an elongated container may have been considered especially novel, which could lead it to be considered different than the prototype or exemplar consumers might have considered for comparison. Similarly, it could be possible that our effects are weakened in situations where consumers expect an elongated container. Furthermore, it would be interesting to understand how objective information about the product might interplay with the package shape to influence health perceptions. For example, providing precise calorie content of a product might weaken the direct effect of package shape on health perceptions.

Future research could also examine how mindset activation influences downstream variables, such as whether or which products are purchased, consumed, and how satisfied a consumer would be afterwards. Given that research has suggested that consumers have an implicit association that (un)healthy foods are thought to be (more) less tasty (Raghunathan Naylor, & Hoyer 2006), it could be possible that consumers would be less likely to purchase products whose primary benefit is taste after being exposed to an elongated container. However, if healthy products are thought to better "fit" with a consumer's mindset (Papies & Veling, 2013), one might reasonably believe that consumers would be more likely to purchase healthy products either contained in elongated packages or immediately following encountering an elongated package. It could even be possible the packaging shape could reduce or eliminate the unhealthy-tasty intuition if it activates a health mindset.

Another avenue for future research is to examine whether certain individual differences alter this effect. Although a health mindset may be more likely to arise in consumers more focused on their diet (Provencher, Polivy, & Herman, 2009), these individuals are also more likely to be in a health mindset regardless of any cue. Also, rather than focusing on which individuals may be more susceptible to health-related information, it might be more beneficial to investigate whether the effect is moderated by an individual's ability to perceive the packaging change. For example, individuals who are more sensitive to perceptual differences may be more likely to be influenced by a package's elongation.

In conclusion, differences in product packaging can impact the activation of a health mindset among consumers, which subsequently affects the health perceptions of products. Given that misguided health perceptions of products can affect consumption decisions, we believe that this research can help consumers and policymakers better understand how subtle changes to package designs can affect consumer perceptions. With the vast amount of money that is spent on package design, a thorough understanding of the impact of these innocuous cues in the environment is critical.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appet.2020.104657.

Ethical statement

Two of the three studies (studies 1 and 3) included with this manuscript were conducted with ethical approval from Georgia Tech (Protocol H13165). Study 2 was conducted with ethical approval from the University of Kentucky (Protocol 54,119). As study 3 was completed with student subjects they consent forms were completed in person. Participants in studies 1 and 2 were from Mechanical Turk and were shown a consent form on the first page of the survey (e.g., participants were told that advancing to the survey indicated their consent).

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