Associative and Rule-Based Processing of Product Location on Package Façade

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Consumer choice and decision making at the point of purchase is still an understudied topic. However, over two-thirds of purchase decisions are made in store (POPA1 1995). Packaging is the spokesperson for each product and brand at the point of sale thus plays a key role in the "final five seconds" of marketing (Young 2007). Recently consumer researchers have documented some intriguing effects of product packaging. For example, the shape of package has been shown to influence shoppers' volume perception, preference, choice, and actual consumption (e.g., Folkes and Matta 2004; Raghubir and Krishna 1999; Wansink and van Ittersum 2003). However, although attempts have been made to discern the underlying process of these effects, it is still unclear whether visual package cues such as shape is processed by consumers in an intuitive or analytic way. For instance, Raghubir and Krishna (1999, study 2) showed that container shape affected participants' perceived volume irrespective of their cognitive capacity. On the other hand, Folkes and Matta (2004, study 3) asked participants to list their thoughts in response to beverage containers and found that both "size" and "shape" surfaced in their thoughts, especially for unusual containers. Given this result, it is still unclear the effect of shape on perceived size resides at which level of awareness.

Individuals can operate on two modes of processing when making decisions: intuitive and analytic (Kahneman and Frederick 2002; Sloman 1996). The intuitive mode (i.e., system 1; Kahneman 2003) is quick and associative; it controls such lower-order processes as attention and perception. The analytic mode (i.e., system 2) is slow and rule-based, and contingent on the availability of cognitive resources; it governs such higher-order processes as logic and reasoning. In light of this the dual-process paradigm, this research focuses on the underlying process of the effects of another visual package cue, the location of product image on package façade, on heaviness judgment, taste perception, package preference, purchase intention, and choice.

In the visual arts literature, location is considered as a factor that determines a pictorial object's visual weight (Arnheim 1974). In the physical world weight is measured by the strength of the gravitational force pulling objects downward. A similar downward pull can be observed in pictorial and sculptural objects as well. The principle of "*bottom-heaviness*" holds that, due to gravitational attraction, we observe most things around us anchored on the ground; consequently we draw the inference that items located on the bottom of an illustration frame are heavier than items located on the top. This "location effect" has been demonstrated in the context of product packaging such that product images placed at the bottom of a package façade appear to be heavier than the same product images placed at the top (Deng and Kahn 2007). In this paper, we propose that this location effect will transfer to taste perception. Furthermore, we hypothesize that the location effect on taste perception is through an associative, system 1 processing whereas a rule-based, system 2 processing underlies the location effect on heaviness judgment.

We tested these two hypotheses in a computer-based study that used a 2 (product image location: top vs. bottom) x 2 (cognitive load: low vs. high) between-subject design. Participants were randomly assigned to one of the four conditions. They were asked to remember either a 2-digit or a 12-digit number. Those in the high load condition were further instructed to maintain

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this number in mind during the study. All participants were given a package of "Break Time Chocolate Chips Cookies" that has the cookie image placed either at the top or at the bottom of the package façade. The package stimuli used in these two conditions were identical except for the product image location. The package stimuli were made by a professional designer in a realistic fashion. The package façade shows product image, brand name, product name, slogan, and weight label, and uses a white background color. Inside each package, there was a zip-locked transparent plastic bag. Inside the bag, there was a chocolate chips cookie. Both the bags and the cookies were identical across the four conditions.

Participants were first asked to make a heaviness judgment by rating the statement "This box of cookies are:" on a nine-point scale (-4: weightless; 4: weighty). Then they were asked to open the package, open the bag, and taste the cookie. Afterwards, they made two taste judgments, first on the good-bad dimension by rating the statement "This cookie tastes:" on a nine-point scale (-4: bad; 4: good) and then on the heavy-light dimension by rating the same statement on another nine-point scale (-4: light; 4: heavy). Finally, they recalled and wrote down the 2- or 12-digit number and answered a brief survey containing the following questions (1) How much do you like the "Breaktime Chocolate Chips Cookies" (-4: dislike a lot; 4: like a lot), (2) How much do you like cookies in general (-4: dislike a lot; 4: like a lot), (3) How frequently do you eat cookies (-4: never; 4: constantly), (4) How knowledgeable are you about the different brands of cookies (-4: not knowledgeable at all; 4: very knowledgeable), (5) How knowledgeable are you about nutritional information (-4: not knowledgeable at all; 4: very knowledgeable), (6) How often do you diet (-4: never; 4: very often), as well as several demographic measures.

We argue that, because opening a snack package and tasting the snacks is an action that consumers behave on a daily basis, it is operated on an intuitive mode of processing. Under such a mode, the influence of visual cues such as the location of product image on the package façade on taste perception occurs outside of awareness, through a "bottom→heavy" (Arnheim 1974) then "heavy→tasty" (Yorkston and Menon 2004) associative path. The first link is based on the bottom-heaviness principle, the inference drawn automatically because it has been made so repeatedly since our early childhood. The second link is based on the fact that "heavy" also means containing much seasoning, fat, or sugar thus suggests richness in taste. Therefore, we hypothesize that cookies from the package using the bottom location should taste better than the same cookies from the package using the top location, and this effect should only occur when the cognitive load is high so that an associative processing mode is facilitated.

In contrast, the judgment of a product's visual weight by the location of its image on the package façade is not a habitual behavior. The normal weight perception is the perceived tension in the muscles, tendons, and joints of the body that is mediated by different sensory systems but mainly by kinesthetic and haptic senses. When making judgment about *visual* weight of a *pictorial* object, however, an individual needs to make two perceptual transitions. First, he/she needs to "perceive" weight via vision rather than tension in the body. Second, the pictorial object he/she responds to has only visual "weight" rather than physical weight that can be sensed. As a result, although most weight judgments we experience in everyday life through our bodily perception are made automatically, the visual judgment of visual weight demands an analytic mode of processing. Under such a mode, the bottom-heaviness principle, which is accessed unconsciously most of the time, is brought into conscious awareness as a "rule" to guide the decision making at hand. Hence, we hypothesize that the location effect described earlier should only occur when the cognitive load is low so that a rule-based processing mode is made possible.

Study results confirm our predications (see Figure 1 and Figure 2). The interaction effect of image location x cognitive load on heaviness judgment is statistically significant ($F(1, 149) =$

5.1, p = .03). When cognitive load was low, cookies from packages used a bottom-location design were judged to be heavier than were cookies from packages used a top-location design (p = .02); whereas when cognitive load was high, the location effect disappeared. This interaction effect is also significant on taste perception (F(1, 142) = 4.0, p = .05). Under high load condition, cookies from packages used a bottom-location design were perceived as more tasty than were cookies from packages used a top-location design (p = .07); whereas under the low load condition, the opposite pattern occurred, but the difference is not significant. Interestingly, the result for the heavy-light dimension of taste judgment mirrored the pattern of heaviness judgment.

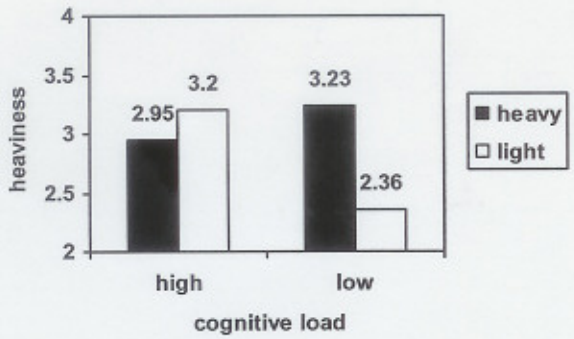

Figure 1

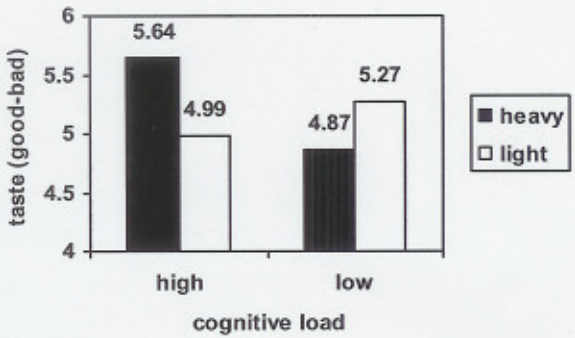

Figure 2

In the next study, we will investigate the consequences of the above location effects by measuring preference, purchase intention, and choice. We believe that this research contributes to the packaging literature and to behavioral decision theory in general. This research also generates insights for retail management.

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