EXPLORING ODOR ASSOCIATIONS BASED ON PACKAGING VISUAL ELEMENTS

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Abstract: Previous studies have shown that packaging design can influence people's expectations regarding product attributes. This study explored the role of packaging visual design in presenting a nonvisual attribute (i.e. odor) by investigating consumers' responses to various graphic designs displayed on perfume packaging. Particularly, the aim was to examine how different visual elements (such as patterns, photographs and illustrations) influence product choices, preferences and odor associations. 136 people participated in the study, with approximately equal numbers of males and females. They were presented with 10 packaging samples. The samples were of the same shape and size but with different visual elements. The results of the experiment confirmed that participants associated highly recognizable objects with their specific odors. For example, a lemon pattern was paired with a fresh smell, and an image of a rose was paired with a floral smell. On the other hand, when packaging presented odor-neutral objects, the participants' responses were not uniform. The design which was associated with the largest range of smells was the one with a photograph of a human body, which was paired with three different perfume types (namely, floral, woody and oriental). When data were split by gender, the results suggested that men had a preference for regular and sharp visual shapes. Another relevant finding is that perception of perfume packaging can be influenced by age. Young participants mostly preferred abstract visual shapes for perfume presentations. The results of the choice task indicated that young participants were more sensitive to variations in design than mature participants. Furthermore, they associated most of the packaging designs with more than one type of smell. The findings can be useful for successful perfume packaging design, especially when young consumers are the main target audience.

Key words: packaging; perfume; graphic design; expectations; choice

1. INTRODUCTION

Previous studies have shown that packaging can be used as a strong strategic tool which can influence consumers' expectations (Kovačević et al., 2022), their product evaluation (Petersson Mcintyre, 2013) and purchase decisions (Salem, 2018). Visual elements on packaging are noticed directly, so they facilitate the transmission of the message which the packaging aims to deliver. Therefore, they can stimulate the first contact between the product and a potential buyer. What is more, the visual elements can evoke particular sensations which are not necessary visual in their nature. Perfume packaging could benefit from this, since it often needs to convey information about a specific odor in order to contribute to the consumers' expectations of the product. Past research demonstrated that certain visual symbols can be paired with specific odors (Martino & Marks, 2000). According to Brianza et al. (2021), lemon odor is associated with rough textures, while rose odor is associated with soft textures and rounded shapes. Rounded forms can also be connected with vanilla smell or raspberry. In contrast, angular shapes are associated with citrus odors and pepper (Blazhenkova & Kumar, 2018; Hanson-Vaux, Crisinel & Spence, 2013). In successful packaging design it is necessary to understand the importance of the visual representation of smells (Silva, 2019). Thus, the main goal of our study was to investigate how different visual elements (such as patterns, photographs and illustrations) influence participants' odor associations. Past research showed that women are often more sensitive to the visual appearance of the product packaging than men (Lidón et al., 2018), and they tend to make purchases based on label design (Barber, Almanza & Donovan, 2006). However, in the case of perfumes it was found that men pay more attention to the perfume selection criteria (such as bottle design) than women (Tien-You, 2012). This confirms the findings of Baruk and Iwanicka (2016) who reported on how the participants' gender influenced their expectations of how the packaging will determine their buying decision. On the other hand, a Vyas's study (2015) showed no significant impact of gender in consumers' responses to packaging design. Given that previous research showed inconsistent findings, the aim of our study was to contribute to the better understanding of the effects of gender in the context of perfume packaging design.

As suggested by some studies, other demographic characteristics may play a role in consumers' perception of product packaging (Baruk & Iwanicka, 2016). Vyas (2015) found that age can influence the

likelihood of selecting products with pictures on their packaging. Tien-You (2012) found that people aged below 35 put more attention to perfume selection criteria than those aged above 36. Again, as with gender, the age was not confirmed as a significant factor in all packaging studies. For example, Elango and Thansupatpu (2020) reported that different age range did not affect consumers' purchases of perfume. Thus, our study investigated the effects of both participants' gender and age.

2. METHODOLOGY

As used in recent packaging studies (Hall et al., 2021; Kovačević et al., 2022; Poslon, Kovačević & Brozović, 2021), an online questionnaire was used to collect the participants' responses. 136 adult consumers ranging from 18 to 65 years of age participated in the study. There were an approximately equal number of women (54%) and men (46%). Since later analysis used age as an independent variable, the age data were split into two groups. One group included young consumers (aged between 18 and 40 years, n = 72), while the other group included mature consumers (aged between 41 and 65 years, n = 64).

The design of packaging samples was carefully controlled. It consisted of pictorial elements such as patterns, photographs and illustrations. There was no text. A recent study showed that brand names influence the way in which consumers form olfactory imagery (Meng, Zamudio & Jewell, 2021) and therefore packaging samples contained no brand markings. To minimize the influence of colour (Schifferstein & Tanudjaja, 2004), all packaging samples were grayscale. The packaging visual design was presented on both the outer cardboard packaging and the perfume bottle. The samples were of the same shape and size but with different visual elements. The goal was to include a large amount of visual representations which could be used in packaging design. There were two packaging designs containing fruit, two designs presenting a piece of paper, two designs with floral depiction, two designs with animal representations, and two dark designs with elegant objects.

The questionnaire consisted of four parts. In the first part of the questionnaire, basic demographic data were obtained. In the second part, there was a series of choice-tasks. The participants were presented with five pairs of packaging designs (ten packaging designs in total). For each pair, they were asked to select the one which they consider more attractive. The packaging pairs are presented in Figure 1. In the third part of the questionnaire, all ten packaging samples were presented and the participants had to indicate the samples they prefer the most. The final (fourth) part consisted of odor association tasks and its goal was to get data about the consumers' scent expectations based solely on the packaging visual design. The participants viewed the packaging designs one by one and answered the closed-ended question "Which odor do you associate this design with?" by selecting one of the following options: "Floral", "Oriental", "Woody", "Fresh". These scents were also included in previous perfume-oriented works (Kim, 2013; Veramendi, Herencia & Ares, 2013).

There was no time limitation for completing the survey. The average completion time was approximately 3 minutes. None of the participants failed to answer any of the questions. The participants were informed that all the responses were anonymous and no identifying information was collected.



Figure 1: Packaging pairs used in the choice-tasks

3. RESULTS

3.1 Product choices

McNemar's tests were performed to analyse the results of the choice-tasks for each packaging pair by using IBM SPSS 23. The statistical tests were made with 0.05 as the level for statistical significance, unless otherwise noted.

For the young participants, the results showed a significant difference between packaging samples in all the presented packaging pairs. They selected the design with centrally-composed lemon graphic (70.83%) over the design with the continuous lemon pattern (29.17%), p < 0.05. They selected the paper-cut design (72.22%) over the paper photo (27.78%), p < 0.05. Furthermore, the design with the photo of a flower (86.11%) was selected over the design with the floral pattern (13.89%), p < 0.05. The packaging design with realistic animal representation (63.89%) was selected over the packaging with metaphorical animal representation (36.11%), p < 0.05. When choosing between two dark elegant packaging designs,

the young participants selected packaging with the frame (63.89%) over the packaging with the woman's body (36.11%), p < 0.05.

The mature participants were less sensitive to the packaging variations. There was no statistically significant difference between the packaging samples with the lemon (p = 0.71), the animal (p = 0.38), and the dark elegant designs (p = 0.90). However, similar to the young participants, they selected the paper-cut design (64.06%) over the paper photo (35.94%), p < 0.05. They also selected the design with the photo of a flower (73.44%) over the design with the floral pattern (26.56%), p < 0.05.

When the responses were split by gender, the results indicated a noticeable difference in packaging choices between women and men. The female participants selected the paper-cut design (80.82 %) over the paper photo (19.18%), p < 0.05, whereas there were no significant differences in these two packaging designs for the male participants (p = 0.61). On the other hand, there were no significant differences in packaging with the lemon designs and packaging with the dark elegant designs (both p = 0.64) for the female participants, while the male participants selected the continuous lemon pattern (80.95%) over the design with the centrally-composed lemon graphic (19.05%), p < 0.05, and the packaging with the frame (68.25%) over the packaging with the woman's body (31.75%), p < 0.05. The only concurrence between men's and women's choices was found in the case of the design with flowers, where both groups selected the design with the photo of a flower (91.78% of the women and 66.67% of the men) over the design with the floral pattern (8.22% of the women and 33.33% of the men), both p < 0.05.

3.2 Preferences

The consumers' preferences for packaging designs were calculated as the number of participants' selection in the third part of the experiment, in which they indicated the packaging designs they prefer the most when presented with all ten packaging samples at the same time. Figure 2 and Figure 3 show the number of selections for each packaging sample. The most interesting finding is that three groups of participants (namely, the young, mature, and female) preferred the design with the photo of a flower, followed by the paper-cut design. Only one group of participants (male), performed different choices. Men preferred the packaging with the frame, followed by the packaging with the centrally-composed lemon graphic.



Figure 2: Young and mature participants' preferences



Figure 3: Female and male participants' preferences

3.3 Odor associations

The statistical significance between odor associations among the groups was analysed with McNemar's tests. A Bonferonni correction was applied, and therefore p < 0.008 was accepted to be statistically significant.



Figure 4: Packaging-odor associations (bars represent the number of odor associations)

Figure 4 summarizes the number of participants' odor associations. The design with the continuous lemon pattern was associated with a fresh odor by all the participants. Both the paper-cut design and the design with the flower photo were associated with a floral odor. For all the participants, the packaging design with the realistic animal representation was associated with both an oriental and woody odor, while the packaging with the metaphorical animal representation was associated with the same odors,

but also with the fresh odor. For the other packaging designs, the associations with the odors varied across the participants' groups.

The design with the paper photo was associated with a woody odor, but young participants also associated it with an oriental odor. The packaging with the centrally-composed lemon graphic was associated with both an oriental and woody odor, but mature participants associated it only with an oriental odor. The mature participants associated the floral pattern design with a floral and oriental odor, whereas all the other participant groups associated it with a floral and fresh odor. The packaging with the frame was associated with the oriental odor by all the participants, but young participants and women also associated it with a woody odor.

The packaging with the photo of a woman's body evoked the most diverse associations. It was associated with a floral, woody, and oriental odor by all the participants, but young participants also associated it with a fresh odor.

4. DISCUSSION

The results of the study showed that the participants associated highly recognizable objects with their specific odors. For example, the lemon pattern was paired with a fresh smell, and the image of a rose was paired with a floral smell. The packaging design with the picture of a rose also contained a very soft texture which was found to be related to flower connotations in previous studies (Brianza et al., 2021). On the other hand, when the packaging presented odor-neutral objects (such as the human body or abstract shapes), the participants' responses were not uniform. The design which was associated with the largest range of odors was the one with a photograph of a woman's body, which was paired with three different odors (namely, floral, woody and oriental).

When data were split by gender, the results suggested that men had a preference for regular and sharp visual shapes, which was in accordance with previous research that reported on the men's inclination toward sharp (cubical) packaging shapes (Sivagnanasundaram, 2019). Among all the packaging designs in our study, they appreciated the centrally-oriented visual elements (such as the geometric form of lemons) and stable compositions (such as the symmetrical frame) which deviate from fully realistic representations.

Another relevant finding is that the perception of perfume packaging can be influenced by age. In the choice tasks, the young participants mostly selected the perfume presentations based on abstract visual shapes over the highly-recognizable images such as the photo of a human body or the photo of the pieces of paper. This finding was in contrast with previous studies in food packaging which reported on preferences for photos on food product packaging (Kovač et al., 2019; Kovačević et al., 2022). However, given that a food product can be more easily presented by realistic imagery than a fragrance product, this inconsistency between these results should not be surprising. Furthermore, the results of the choice tasks indicated that the young participants were more sensitive to variations in design than the mature participants. The mature participants responded differently only in two cases – when presented with two versions of the floral design and two versions of design presenting paper. In contrast, the young participants responded differently across all conditions.

The analysis of the odor associations revealed that young participants associated many of the presented packaging designs with more than just one type of odor. These findings can be useful for successful perfume packaging design, especially when young consumers are the main target audience. Since they indicate a high diversity, our results suggest that successful perfume packaging design requires a detailed examination of young consumers' perceptions before starting the creative process of packaging design. Better understanding of their inclinations, values and behaviours can lead to effective communication on perfume type and people's expectation of the products non-visual attributes, which can lead to greater consumer satisfaction.

5. CONCLUSIONS

This study explored the role of packaging visual design in presenting a non-visual attribute such as odor by investigating consumers' responses to various graphic designs displayed on the perfume packaging. The results indicated that different age and gender groups of consumers respond differently to variations in packaging design, at least when analysing their choices, evaluations and odor associations. This finding should be taken into consideration when developing new packaging designs and planning marketing strategies in the cosmetic industry. The main limitation of the study was the online form of the survey, which limited the possibility of getting additional spontaneous explanations from the participants and a wider insight into their impressions regarding the perfume packaging. Given that the packaging samples were presented on the participants' personal screens, the viewing conditions could not be fully controlled. Despite the limitations, the study revealed important findings which can be useful for packaging experts in future perfume research. They suggest that both the participant's age and gender should be defined in testing the effectiveness of packaging visual design, especially when it comes to adequate odor associations.

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