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# THE IMPACT OF FLAT-WATER CONTAINER COLOR ON CONSUMER PERCEPTIONS AND PLEASURES: AN EMPIRICAL STUDY IN SAUDI ARABIA

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## Abstract

The aim of this paper is to determine the consumers' perception and degree of "pleasantness" of flat water would be influenced by the colors (yellow, white, red, and green) of the container in which the water was served. The sensory marketing emphasizes the procedures of flat-water packaging when it is designing because it may influence consumers' perception, decision, judgment and pleasure. In the Saudi context, there is little gap exists in the state of knowledge to link how colorants of flat water impact consumer perceptions and pleasantness. An experimental design was employed to accomplish the set objectives of the present study in a particular context. A set of four colors was used to test each consumer pleasantness of flat water. The total participants were 75 students at undergraduate degree program level that divided into five groups. Each group was randomly selected to taste the flat-water containers in four colors in rotational orders. The variance proportion explained in ANOVA that determines the extent how the analysis is effective in explaining the variance of variables outcomes. A one-way repeated measure ANOVA revealed that consumers' perception of the measure of "pleasantness" to be significantly influenced by the container color in which the water was drunk. More specifically, the white color container water was rated the highest in pleasant scale as compared to the other colors. The finding of this study is consistent with previous similar research studies that were conducted in various contexts. This study has a significant social and economic implications in terms of consumer perception of colors and pleasantness that may instigate the corporate packaging designers, theorists and researchers.

## Keywords

Pleasantness, Flat Water, Consumer, Experimental, Packaging, Perceptions

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## Introduction

It is a universal truth; beverage colorants have the significant impact on consumers' perceptions and pleasures of consumable goods and services. The advertisers of different products and services used a sensory marketing strategy to optimize the ability of colorants to attract consumers' attention that develop their temptation to form their perceptions and likability (Sakarya, & Dortyol, 2021). The visual attractiveness of different colors packages of beverages plays a vital role as a salesperson on stores' shelves (Rettie & Brewer, 2000). The package colors and design may reflect the product itself and its brand to be recognized by consumers. Garber, Hyatt & Nafees (2016) based on their empirical findings suggested that changing packaging color and design might attract new customers especially if the brand has a small base of loyal customers. Moreover, they argued, a brand has a large base of loyal customers, changing the beverage packaging colors and designs would lead existing customers to misidentify the brand (Garber et al., 2016). Based on these perspectives, it might be contended, colors affect consumers perceptions and pleasantness of beverages in several fashions and the most evident one is relevant to beverage itself especially flat water. As Spence et al., (2014) argued, the colorants of ambient light impinge on consumer's perceptions and excitements of beverage when it is offered in a black glass. It is quite obvious, ambient colors do not affect the perceived color of the food itself (Oberfeld et al., 2009).

## Research Background

Different colors have different influence on people's sight experiences and feelings (see Table1). Moreover, colors may stimulate and activate people's thoughts and memories due to the fact that colors affect the central nervous system and the cerebral cortex (Hultén et al., 2009). Choosing the right color might be challenging and complex

Color	Some of its characteristics
Green	This color could be used to link to the earth and the environment.
White	This color could suggest a feeling of snow, cleanliness, safety, and quality in both tactile and visual experience.
Red	This color is the fastest color that attracts the sight sense.
Yellow	This color is known for attracting human attention.

Table 1

Source adopted from: Hultén et al., (2009)

decision for marketing personnel as it could affect the sales of products or services as well as profitability of the enterprise. Hence, Andrivet (2015), evidence-based study indicated colors of products and its contents should be studied and selected thoroughly.

The influence of colors on human perception and pleasantness to develop their behavior towards to make temptation that has been extensively studied in the literature of organizational psychology and sensory marketing (Spence and Wan, 2015; Allace, and Spence, 2014). The different colours may have significant impacts on human behaviour while they are end user of goods or services. Simmonds and Spence (2017) found in their empirical study, colour influenced consumers' feelings of thirsts and desires patterns particularly beverage package colorants and have little reflections in the literature of organizational psychological and sensory marketing. It may safely to say in the era of high-tech the consumption of flat water (drinkable water) dramatically increased because of its scarcity for numbers of reasons which are beyond the limit of present study. A strong realization has been developed among the scientific community and beverage industry to pay the same attentions and techniques to use the optimization of the commercial success of flat water through its packing colorants (Engels, 2015).

Based on these vantage-points, it may not be lost the sight of beverage package colorants are vital for flat-water because it is consumed directly by consumers. An extensive review of literature specifically, empirical studies that showed the package colors of flat-water before and after the consumption moderate various viewpoints of consumer towards their perceptions and pleasantness. It is pertinent to mention, from perceptual and pleasure mechanisms underlying colorants' influence in the case of flat water vs. product packaging may well be, at least to some extent, qualitatively differentiate by the consumers (Spence, 2018). More precisely, flat-water colorants may commonly carry some meaning about the contents in a way that the color of flat water has stipulated its' impact on end user perceptual and pleasure means. As Krishna, Cian, & Aydınoglu, (2017) demonstrated in their study organizations acknowledged the significance of products package colorants that attract consumer attentions and develop their temptations to experience it. In the areas of organizational psychology and sensory marketing, Krishna & Schwarz (2014) argued consumers' senses assist them to form their impression and to meet their mental state of expectations. This view is very much consistent with the logic model "**inputs (senses), processes (perceptions), outputs (expectations)**" for the production and consumption of goods and services by the consumers (Knowlton, & Phillips, 2012).

In the light of the logic model, beverage industry specifically regarding flat water recognized the significance to engage consumers' senses be it the sight, the taste, the touch, the hearing, or the smell to enhance consumers' experiences (Krishna, Cian, & Aydınoglu, 2017). In both organizational psychology and sensory marketing literatures theorists, professionals and practitioner are paying attention to consumers' feelings of thirsts and desires patterns, particularly beverage package colorants (Bix, Seo, & Sundar, 2013). Krishna (2012) recommended in his empirical study perception influenced by many aspects such as brand names, physical attributes, particularly colorant of packaging that ultimately contributes to consumer pleasantness. In the similar fashion the findings of Otto, Strenger, Maier-Nöth, & Schmid, (2021) revealed in their study colorant of containers have significant impact on consumers' inner feelings, desires, perceptions, degree of pleasures and temptations towards products or services.

Based on these studies, it might be inferred beverage packaging colorants containers constitutes conspicuous visual stimulations for consumers towards their choice(s). As mentioned earlier, the main aim of this study is to measure consumers' perception on the scale of "pleasantness" of flat water that may influence by the colors (yellow, white, red, and green) of the container in which the water was served in Saudi context. It is observed in the existing state of knowledge, yet little is known about the significance beverage packaging, specifically flat water colorants containers, stimuli consumers' feelings of thirsts and desires towards flat water. This paper attempts to address the various ways in which seeing images of colorants containers influences the

consumers' perception and pleasantness.

## Design and Procedures

### Study subjects

A total of 75 male undergraduate business administration students at the public sector university in Saudi Arabia took part in the experiment. They ranged in age from 20 to 24 years ( $M = 22.45$  years,  $SD = 1.20$ ). In this study, there were four different colors presented in Figure 1 (yellow, white, red, green) selected within-subjects' conditions in the containers that carried 100ml flat water. These subjects were randomly allocated into 5 groups of 15 participants in each group. Each subjects group came into the experiment room which was fitted with chairs and tables. Before the experiment begun, the researcher explained to each subjects' groups about the purpose of the study, i.e., pure academic and to provide the assurance of confidentiality of their participation. Apiece subjects took part of the experiment individually and they drank the same flat water into four different colorants containers on a four trials basis. The subjects were given a water container one color at a time; they were asked to drink as much water as they want in each trial. Then, immediately the participants submit their rating on a modified eleven-point Likert scale with a survey experiment, the point scale was (0 to 10) as the highest the number indicates the extremely pleasantness, and lowest indicates extremely unpleasantness that perceived by each subject (see table 2).

Level of pleasantness	On a 0 to 10 scale	On a -5 to 5 scale
Extremely unpleasant	0	-5
Very unpleasant	1	-4
Unpleasant	2	-3
Somewhat unpleasant	3	-2
Slightly unpleasant	4	-1
Neutral	5	0
Slightly pleasant	6	1
Somewhat pleasant	7	2
Pleasant	8	3
Very pleasant	9	4
Extremely pleasant	10	5

Table 2: Level of Pleasantness on an 11-point Likert Scale

Source adopted from: Chen, and Fang, 2022

This type of Likert scales is most commonly used in organizational psychology and sensory marketing studies to measure the population's opinions that may ask from simple questions (0-to-10) from negative to positive (Chen, and Fang, 2022).

## Results

A one-way repeated measures ANOVA showed a significant difference between the 4 conditions:  $F(2.666) = 128.4$ ,  $p < .001$ ,  $\eta^2 = .63$ . Before conducting the analysis, the assumption of normally distributed was examined by dividing the skewness value by the standard error of skewness. The Mauchly's Test of Sphericity was not significant ( $P = .022$ ). The results show that there is a significant effect of manipulating water containers colors on the taste rating of the water as more pleasant. Paired samples t-tests was conducted to compare rating of water pleasant in four containers colors: yellow, white, red, and green (Bonferroni Correction threshold = .000). There was a significant difference in water pleasant rating in yellow container ( $M = 6.08$ ,  $SD = 1.47$ ) and white container ( $M = 8.69$ ,  $SD = 1.12$ ) conditions;  $t(74) = -12.46$ ,  $P < .001$ . In the same line, it was observed a significant difference in water pleasant rating in yellow container and red container ( $M = 3.94$ ,  $SD = 1.74$ ) conditions;  $t(74) = 8.93$ ,  $P < .001$ . Also, these results indicated a significant difference in water pleasant rating in yellow container and green container ( $M = 4.74$ ,  $SD = 2.05$ ) conditions;  $t(74) = 4.6$ ,  $P = .001$ . A significant difference was observed in water pleasant rating in white container and red container conditions;  $t(74) = 20.61$ ,  $P < .001$ . After the experiment analysis a significant difference was also seen in water pleasant rating in white container and green container conditions;  $t(74) = 14.11$ ,  $P < .001$ . Finally, a notable difference shown water pleasant rating in red container and green container conditions;  $t(74) = -2.66$ ,  $P < .001$ . These results indicated the selected colors rated by the participants from extremely-to-un-extremely. Interestingly, no color was rated extremely pleasantness and only the white color rated at the scale of 8.69 which is pleasant and so on. It is believed, white color looks like snow and ice which might be close to the mother nature as compared to the other colors though they have significant impact on individuals' perceptions and pleasantness.

## Discussions and Conclusions

The main proposition of this study was to ascertain the consumers' perception and their level of pleasantness that influenced by the package colorants of containers that stimuli their feelings of thirsts and desires towards flat water. For this purpose, four colors were selected, i.e., yellow, white, red, green of the container to identify which colorant is highly rated by the subjects of this experimental investigation. The one-way repeated measures ANOVA ( $M = 8.69$ ,  $SD = 1.12$ ) indicated white colorant of flat water container highly rated comparatively to the other colorants in orderly yellow ( $M = 6.08$ ,  $SD = 1.47$ ) green ( $M = 4.74$ ,  $SD = 2.05$ ) and red container ( $M = 3.94$ ,  $SD = 1.74$ ). These findings supported the key hypothesis of this paper and are also consistent with previous studies (Burkert, Schaufler, and Voigt, 2022; Spence, & Wan, 2015). The results of this study indicated colorants influence consumers' feelings of thirsts and desires patterns, particularly flat water containers. However, these results confirmed from the perspective of organizational psychological and sensory marketing distinction between these four colors such as White, Yellow, Green, and Red have significant impact in respect of consumer behavior and for the design of product and service. This point of view consistent with study of Labrecque, Patrick, Milne. (2013) as they contended colors communicate a lot of senses that impact on consumers' feelings, desires perception, happiness and behaviors in the decision-making processes before the consumption of product or service.

The relevant review of literature review revealed few studies have been conducted in various contexts on the perception of flat water by manipulating certain characteristics of the container in which water is served (see (Maggioni et al., 2015; Ngo et al., 2012; Risso, Maggioni, Etzi, & Gallace, 2019; Risso et al., 2015). This study has its own kind in terms of its' context, yet little is known in Saudi Arabia about the significance of flat water containers. However, in this paper, only one measure has been used about consumers' perception and pleasantness. That might be considered the key limitation of flat water colorants containers and future research may need to consider the taste and gender difference, age factor in respect of their priorities. Future research could test the effect multicolor water container on water taste perception. Also, it might be interesting to study other features of the water container, such as widely recyclable container materials on the taste perception. Colors also have cultural and social significance through their various associations (Hultén et al., 2009), so it might be interesting to study different colors preferences in other regions or countries. Also, further studies can study the pleasant rating of clear color soup and the effect of bowl color.





















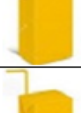



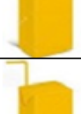



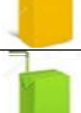



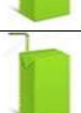
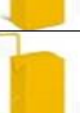















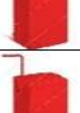



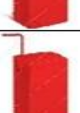
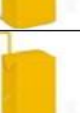





Nevertheless, this paper draws on the managerial and marketing implications as it contributes to the understanding of consumers' perceptions and choice of certain water based on the container color. Moreover, understanding what drive consumers' taste perception can help companies to choose the right color of water container as it could present water in a more appealing way which can enhance water companies' sales and profitability. The main implications of this paper are from the perspective of organizational psychology and sensory marketing for the product and service design that develop consumers' feelings and desires to form positive impression and pleasures.

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Appendix

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