



OH MY DARLING CLEMENTINE: PRESENCE VS ABSENCE OF FRUIT LEAVES ON THE JUDGMENT OF A FRUIT-JUICE

Céline Jacob,

Nicolas Guéguen,

Christine Delfosseⁱ

Université Bretagne-Sud,

Vannes, France

Abstract:

Some studies have shown that incidental cues, present in the immediate environment of an individual, affect an individual's behaviour and judgment. However, the effect of such incidental cues on food judgment has never been examined. In this study, participants were asked to taste a clementine juice contained in a bottle and to rate it on several factors (good taste, organic, quality, natural, and fresh). A dozen clementines were displayed on a table either with their leaves or without. Results showed that the fruit-juice was perceived more positively when clementines with their leaves were displayed on the table. The importance of natural cues associated with fruits in order to increase their interest in individuals was discussed.

Keywords: incidental cues, fruit, judgement

1. Introduction

Consumer choice is traditionally assumed to be a deliberative, conscious cognitive process. However, research has consistently reported that a significant part of consumer decision-making is unconscious (Fitzimmons *et al.*, 2002). Dijksterhuis *et al.* (2005) stated that only a low number of consumer choices are based on conscious information-processing strategies. A significant part of these choices is unconscious, and result from subtle cues that are present in the immediate environment of the consumers.

Experimental studies in social psychology confirm that incidental cues present in the individual's environment have an influence on behaviour and decision-making. Berkowitz and LePage (1967) observed that in the presence of a weapon, a participant in a laboratory administered more electric shocks to someone than without the presence of the weapon. Verbal incidental cues also have the same effect. Bargh, Chen, and Burrows (1996) found that participants exposed to words related to older people subsequently

ⁱ Correspondence: email celine.jacob@univ-ubs.fr

walked significantly more slowly than participants who were not exposed to these words. Macrae and Johnston (1998) also reported that participants primed with the concept of helpfulness picked up more items that a research assistant dropped “accidentally” on the floor.

Research has also found that consumer behaviour is influenced by incidental cues that appeared in the immediate environment of the customers. Feinberg (1986) reported that in the presence of credit card cues, an individual had a tendency to provide higher spending estimates or give more generously to a charitable cause than individuals who were not exposed to the credit card. In a similar way, McCall and Belmont (1996) observed that a tip tray stamped with a credit card insignia led customers in a restaurant to leave bigger tips for the waiters or waitresses than when no insignia was printed on the tip tray. Research also shows that incidental real objects present in the consumer’s environment influenced his/her behaviour. In a restaurant, various figurative cues related to the sea (a boat or a sailor’s figurine, a napkin with a picture of a boat, and poetry related to the sea) or not (control condition) were present in the environment of the customers (Jacob, Guéguen & Boulbry, 2011). The results show that figurative cues related to the sea increased the consumption of fish dishes. In the same way, Guéguen (2013) reported that in restaurants customers gave more tips to an employee when the bill was placed under a dish that had a cardioid shape rather than a round shape, or a square shape.

The research reported above consistently shows that incidental physical cues present in an individual’s environment influenced the individual’s behaviour or decision-making process. In this study, we decided to examine the effect of an incidental physical cue on the evaluation of a drink. With food products and drinks, research shows that false information related to the origin of a product or incidental physical cues associated with a product was sufficient to influence the perceived properties and taste of the product.

Research has shown that the labelling information about a product influences the evaluation of the product. Lee, Shimizu, Kniffin, and Wansink (2013) reported that food products (i.e., cookies, potato chips, and yogurt) were perceived to be lower in fat and higher in fibre when they were labelled as ‘organic’ rather than ‘regular’. Caporale and Monteleone (2004) reported in a taste study that information on manufacturing processes has a significant effect on beer acceptability. In the same way, Fernqvist and Ekelund (2013) in a tasting task using a Swedish consumer panel reported that tomatoes labelled “Swedish” received a higher score of liking than tomatoes labelled “Dutch”. Research also shows that the form of glasses/plates or the colour of the plates/glasses are cues that influence the judgment of various foods or drinks. Doorn, Willemin, and Spence (2014) have found that a white mug enhanced the rated intensity of coffee flavour relative to a transparent mug. In a further study, these authors also reported that hot coffee was rated as less sweet in a white mug than in a transparent or a blue mug. With solid food, Piqueras-Fiszman, Alcaide, Roura, and Spence (2012) observed that participants who

tasted a strawberry mousse dessert served on a white plate rather than a black plate perceived the mousse as significantly more intense, sweeter, and it was also liked more. Research also found that the shape of glasses or plates and other cues influenced the perceived properties of various beverages or food products. Hovde (1931) found that the identical net volume of a group of small glass containers influenced the customer's liking of the product. Hummel, Delwiche, Schmidt, and Hüttenbrink (2003) reported that ratings of wine odours from different glasses were influenced by the shape of the glass.

Thus, consistently and in various situations, literature states that individuals are clearly influenced by a host of various cues that appeared in the environment in which they have to behave or make their decisions. Research has also found that some physical cues related to food products and drinks influenced their perceived properties by customers. The objective of the present study was to examine a further factor that had never been examined before which is related to the physical appearance of a food product and not the physical appearance of the container in which the food or the drink is served.

In this study, clementines were displayed on a table and participants were led to believe that the clementine juice they had to taste resulted from the fruits present on the table. According to the experimental condition, the clementines appeared either with their leaves or without. It was hypothesized that the clementine juice would be perceived more positively when the fruits were presented with their leaves.

2. Material and Methods

2.1 Participants

The participants were 100 Caucasian undergraduate science students at the University of Bretagne-Sud in France; they volunteered to participate in a "*study consisting of tasting clementine juice and to evaluate it*". The participants did not receive any remuneration or course credit. They were randomly assigned in the two experimental conditions according to a random distribution (N = 50 in each condition).

2.2 Procedure

Participants were welcomed by a research assistant and invited to enter a room. The room contained a round wooden table and a chair. On the table, a transparent bottle was present containing industrial clementine juice at 6°C. However, the fruit-juice appeared in a transparent glass bottle without any description (brand name, label...). On the middle of the table, a dozen clementines were displayed and the research assistant told the participants that the fruit juice they had to taste came from the same type of clementines as those displayed on the table. According to the experimental condition, the clementines appeared either with their leaves or without (see Figure 1).

Figure 1: Experimental room table in the Clementine leaves condition



The research assistant invited the participant to sit on the chair and informed the participant that he/she had to taste the clementine juice first and then respond to several questions concerning the product that appeared in a form present on the table. The research assistant then asked the participant if he/she was ok to begin and then took a white plastic glass and poured the clementine juice contained in the bottle into it. Then the research assistant asked the participant to taste the product and gave the form and a pencil to the participant. Then the research assistant moved away to the opposite side of the room.

The participant tasted the clementine juice contained in the plastic glass and then reported his evaluation on a hard paper form. The participant was asked to comment on several factors on a 10-point scale; the perceived goodness of the juice, its overall quality, how the juice was natural and fresh, and how this juice was an organic one.

At the end of the experiment, participants were asked what they thought the purpose of the research study was and whether there was anything unusual about the experiment or the materials. None of the participants expressed any suspicion concerning the purpose of the experiment, and none of them commented on the leaves of the clementine.

3. Results

A preliminary data analysis was conducted for participants' gender and showed neither a significant effect of participants' gender nor any interaction of the main effect between the experimental conditions and the participants' gender. Accordingly, the data were combined across gender.

Table 1 shows the results of the experiment.

Table 1: Mean Values of Participants' Ratings

Dimension	Leaves	No leaves	Test F with ddl (1/98)
Goodness	8.10 (1.20)	7.28 (1.46)	$F = 9.44, p = .003, \eta_p^2 = .088$
Organic	6.84 (1.46)	5.20 (1.92)	$F = 23.14, p < .001, \eta_p^2 = .191$
Quality	7.30 (1.46)	6.44 (1.68)	$F = 7.46, p = .007, \eta_p^2 = .071$
Natural	6.56 (1.72)	5.88 (2.19)	$F = 2.98, p = .087, \eta_p^2 = .030$
Fresh	7.46 (1.67)	6.48 (2.11)	$F = 6.63, p = .012, \eta_p^2 = .063$

Note: Standard deviations are shown in parentheses.

A multivariate analysis of variance (Manova) was first performed with the five factors measured in this study. A significant main effect of the experimental condition was reported ($F(5, 94) = 5.45, p < .001, \eta_p^2 = .225$) revealing that an overall higher rating score was observed in the clementine with leaves condition than in the control clementine without their leaves condition. Further analysis examining the difference between the two experimental conditions using a between-group analysis of variance (Anova) reported a significant difference between the two experimental conditions for each dimension except for the level of how the participants perceived the clementine juice as natural which only approached significance (see Table 1).

4. Discussion

The results of the present study confirmed our hypothesis. In the presence of clementines with their leaves, participants more positively perceived the fruit-juice that was supposed to be made by the fruits presented than when the leaves did not appear on the fruit. It was reported that the beverage was perceived to be better in taste, to have a higher quality, to be more organic and fresher in the presence of the clementines with their leaves than without their leaves.

These results are in accordance with previous studies that show that some incidental cues associated with a drink that a participant has to test influenced their perceived taste (Doorn, Wullemin, & Spence, 2014; Hummel *et al.*, 2003; Guéguen & Jacob, 2012; Hovde, 1931). However, in these later studies the form of the glasses in which the beverage was contained, or the colour of the container was the independent variable manipulated. In this study, the container remained the same and we only evaluated the effect of a natural environmental cue associated with the product to test: the leaves of the clementine tree. Thus, our results suggest that manipulating objects containing a food or beverage is not the only way to influence the judgment of the tasting properties of a food product or a beverage. A cue associated with the natural appearance of a food product could also influence the customer's judgment. To our knowledge, this is the first time that the effect of such a cue on a tasting evaluation was examined.

These results have some practical importance for those who study how people perceive a food product or those who work with the objective of increasing the attractiveness of a food product. As it was observed here, the presence of the leaves positively increased the evaluation of the product tasted, our results suggest that it will

be interesting for practitioners who want to increase the consumption of fruits to present them with their leaves. These results also suggest that the presentation of a fruit with its leaves could increase the attractiveness and the perceived properties of a wide range of different fruits (i.e. apples, pears...). It was also reported here that the juice tasted was perceived to be more organic when the leaves were present, suggesting that people who want to emphasize that a fruit is grown in an organic way should keep the leaves with the fruit during the harvest.

In conclusion, this study shows that the presence of leaves with a fruit positively influences how a fruit-juice that comes from the fruit presented is perceived. Of course, further studies using several varieties of fruits are necessary and the cognitive mechanisms of this effect should be examined in the future, but these results already demonstrate some practical interests for those who want to increase the attractiveness of fruits for everyday consumption. These findings also suggest that it will be important in the future to further test natural cues associated with a food product.

Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Author(s)

Dr Céline Jacob (PhD) is Associate professor of marketing at the University of Bretagne Sud in France. She is specialized in consumer behavior and social influence of food consumption.

Dr. Nicolas Guéguen (PhD) is professor of behavioral sciences at the University of Bretagne-Sud. He is specialized in social influence and environmental factors associated with food consumption.

Christine Delfosse (PhD) is Associate professor of marketing at the University of Bretagne Sud in France. She is specialized in consumer behavior and social influence of food consumption.

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