



# Consumer acceptability of coffee as affected by situational conditions and involvement



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## ABSTRACT

For understanding consumer behaviors more closely to what would be observed in real-life, “situational” tests has been widely studied using two main approaches: ‘physical environment’ or ‘cognitive evocation’. Both approaches have shown advantages in adopting consumption context in consumer tests. However, it has not been investigated whether either one of the approaches may be more effective or whether using these approaches together would be more advantageous than using each solely in terms of bring in consumption context. The aims were to understand the effects of evocation in different environmental settings on consumers liking and to explore the differences of these effects based on consumer involvement levels. Consumers participated in one of the 4 contextual conditions of  $2 \times 2$  factorial design, consisting of ‘evocation’ factor (with vs. without evocation instruction) and ‘environment’ factor (booth vs. simulated café), respectively. Consumers evaluated liking for two coffee samples and responded to a coffee involvement questionnaire. The results showed that both factors have influenced on consumer liking. These effects were different according to coffee types differing in hedonic levels. Vividness of evocation lasted longer in the simulated café setting, implying physical cues reinforcing cognitive evocation. When consumers were classified according to involvement scores, liking score of the high involvement group was little affected by either situational factors, while low involvement group was highly affected by the ‘environment’ factor. The findings of the study provide important perspectives to be considered for researches into “situational” tests, including which situational approach to apply as well as consumer involvement.

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## 1. Introduction

Consumer behaviors for food products can be affected by sensory properties of the products themselves but also by the various contextual factors including consumption environment (Bell, Meiselman, Pierson, & Reeve, 1994; Meiselman, Johnson, Reeve, & Crouch, 2000; Verlegh & Candel, 1999), social facilitation (Berry, Beatty, & Klesges, 1985; De Castro, Brewer, Elmore, & Orozco, 1990; De Castro & de Castro, 1989; Sommer & Steele, 1997), ambiance (Delarue, Boutrolle, Jaeger, & MacFie, 2010; Ferber & Cabanac, 1987; Kasof, 2002; Stroebele & De Castro, 2004; Westerterp-Plantenga, 1999), consumption motivation (Labbe, Ferrage, Rytz, Pace, & Martin, 2015), etc. These factors need to be adequately considered in tests in order to reduce the

likelihood of inaccurate results and the drawing of incorrect conclusions, both of which may lead to the market failure of the products.

In terms of the evaluation environment, sensory tests including consumer tests have frequently been conducted under controlled conditions using individual booths in a laboratory. It has been advocated that controlled laboratory conditions allow panelists to concentrate on the products being analyzed, making it easier to identify the characteristics of products in descriptive analyses and discriminative tests (Meiselman, 1992). However, in consumer tests, it has also been documented that context variables affects the assessments of consumers, such as the location, time, social conditions, and culture (Bisogni et al., 2007; Köster, 2009; Petit & Sieffermann, 2007). This has led to questions about whether the results of consumer tests that have been carried out in a controlled laboratory situation reflect real consumer liking by many researchers (Boutrolle, Arranz, Rogeaux, & Delarue, 2005; Meiselman, 1992; Stroebele & De Castro, 2004). Simulating the natural situation where a product is normally consumed can make consumers to feel less different from their daily event and be more familiar with the

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atmosphere, and so the results of such tests may differ from those performed in a controlled laboratory situation (Hersleth, Ueland, Allain, & Næs, 2005; Meiselman et al., 2000). However, in consumer research involving natural situations, it is difficult to control the evaluation methods and test procedures, resulting in an increase of experimental noise.

Many studies performed in recent years of tests of consumer liking have examined “situational” tests, which have used a controlled set-up but have included important context variables based on real eating situations. These studies using a situational condition have appeared in two forms. One is providing physical elements that create an environment similar to the natural situation either in actual forms (Fernandez, Bensafi, Rouby, & Giboreau, 2013; García-Segovia, Harrington, & Seo, 2015; Köster, 2003; Petit & Sieffermann, 2007; Stroebel & De Castro, 2004) or in a virtual sense, known as immersive technologies (Bangcuyo et al., 2015; Ischer et al., 2014). The other form is the evocation protocol, which presents the consumption contexts of products to consumers by instructing them to imagine the situations, so that consumers can individualize their own experiences (Hein, Hamid, Jaeger, & Delahunty, 2010, 2012; Hersleth, Monteleone, Segtnan, & Næs, 2015; Jaeger & Meiselman, 2004; Lusk, Hamid, Delahunty, & Jaeger, 2015; Piqueras-Fiszman & Jaeger, 2014; Piqueras-Fiszman & Spence, 2015; Russell, 1975). The evocation method has been implemented in various forms, such as using a brief text (Jaeger & Meiselman, 2004), pictures (Hersleth et al., 2015), audio recordings (Köster, 2003), and written scenarios (Hein et al., 2010, 2012). However, no study has investigated whether using these approaches together would be more advantageous than using each solely in terms of bringing in consumption context in consumer response. That is, it has not been proven whether the two approaches may conflict when used together or whether consumers may evoke their memories better in an environment that is set up to mimic the real than in a controlled laboratory setting, which can allow consumers to connect better to their actual consumption context in consumer tests.

In addition, authors of this study hypothesized that situational factors would act differently according to the level of consumer involvement to a certain product, although no studies have investigated this topic. Product involvement has been defined as the feelings of interest, enthusiasm and excitement consumers have about specific product category (Goldsmith & Emmert, 1991). The level of involvement may be classified based on the degree of effort that consumers devote a product-related activities, and consumers with a high involvement have more interest in product information, compare product characteristics in more detail (Lockshin, Spawton, & Macintosh, 1997; Recchia, Monteleone, & Tuorila, 2012; Zaichkowsky, 1985), and hold stronger beliefs about product attributes (Robertson, 1976). Several scales and questionnaires for measuring involvement on food products have been developed, such as Personal Involvement Inventory (PII) (Zaichkowsky, 1985; Marshall & Bell, 2004) and Food Involvement Scale (FIS) (Bell & Marshall, 2003). These scales have been applied to several products and have shown differences in consumer liking or purchase intentions according to their involvement level (Ares, Besio, Giménez, & Deliza, 2010; Kang & Jeong, 2008; Ohly et al., 2013; Recchia et al., 2012; Verbeke & Vackier, 2005).

The objectives of the study were to explore the effect of cognitive evocation method on different physical environment settings on consumer liking and to investigate how these situational factors would differently play a role on consumer liking when the level of involvement of consumers for a certain product category differed. In this regard, coffee, which is frequently consumed in a café, was considered as an appropriate product to focus for investing about situational factors. Also, coffee was thought to be a proper item to examine about influence of product involvement because it is

a typical high involvement food product (i.e. product that consumer involvement levels largely differs) along with wine, cheese, green tea, etc. It was assumed that when a change in hedonic score from the controlled setting was observed for situational conditions, this was considered as a reflection of one accounting consumption context in their measurement of hedonic. This was based on the rationale that when simulated test is applied, the hedonic score would be somewhere in the middle of the control and the real settings, because the situational test may partially reflect the real.

## 2. Materials and methods

### 2.1. Materials

Two types of coffee samples differing in sensory profiles but also in hedonic levels were selected. Among various coffee species, *Coffea arabica* (Arabica) species and *Coffea canephora* (Robusta) species are the two most abundant species in the market that accounts more than 99% of the world's consumption (Bertrand, Guyot, Anthony, & Lashermes, 2003; Mendes, de Menezes, Aparecida, & Da Silva, 2001; Rogers, Michaux, Bastin, & Bucheli, 1999; Rubayiza & Meurens, 2005). These two species are known to largely differ in its sensory profiles (Leino et al., 1992; Maeztu et al., 2001). Hence, in this study, the two coffee species were selected as sample of interest. Hedonic scores of the two coffee samples were compared in a preliminary test, and were confirmed to largely differ, showing Arabica coffee being preferred about 2.2 points more on a 9-point hedonic scale than Robusta coffee. Both coffee samples were roasted (i.e. medium roast) and ground to the same degree by Coffee Roasting Co. (Hanam, Gyeonggi-do, Korea). Ground coffee was put in small coffee pouches (100 g) and was stored in a freezer (−24 °C) before being used.

### 2.2. Consumer test

#### 2.2.1. Experimental design

Consumer testing was conducted in 4 situational conditions using  $2 \times 2$  factorial design (Fig. 1): Environment (0, 1) and Evocation factor (0, 1). That is, environment factor consisted of individual booth and simulated café, with and without evocation, making 4 situational conditions. It should be noted that café context was adopted for construction of physical environment, since consumption of coffee in a café is one of the most highly occurring situations of consuming coffee for young Korean females. Experiments of all four situational conditions were conducted at the same room.

For the simulated café condition, the room was made up to look like a common café. There were two tables with brown-color tablecloths, and on several items such as pictures of café, mug cups, whole coffee bean in glass bottles, books and two sacks of coffee on one table. On the other table, there were table mats and tray of same pattern and color as the tablecloth. When giving an instruction to consumers, the experimenter wore an apron to look like an employee of a café. For the booth condition, on the other hand, long table was divided into 3 booths, using portable dividers (800 × 600 × 795 mm, Lisent Co., Pocheon, Gyeonggi-do, Korea). Also, the experimenter was wearing a lab coat instead.

For the evocation condition, subjects were given with a sheet of paper with evocation phrases, and were instructed to read it and imagine about the situation. The following phrase was used to evoke subjects: “You are now opening the door and coming into the cafe. In the café, a calming music and fragrant aroma of coffee flows. You are ordering coffee at the counter. After taking the coffee, you are sitting in a comfortable chair and drinking it.” For

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