

# Perception and Emotions of Colored Atmospheres at the Restaurant

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## ABSTRACT

The aim of our study was to test the perception and feeling of customers towards different atmospheres using a questionnaire. Three colored atmospheres (Red&Black, Blue&White and Green) were set up during one week at the experimental restaurant of the Research Centre of the Institut Paul Bocuse and were compared to a control one (Reference). We identified three contrasted atmospheres each one related to a specific emotion: Red & Black (R&B) related to “Excitation”, Blue & White (B&W) related to “Serenity” and Green (G) related to “Happiness”. In addition, atmosphere perception and emotional state of customers are shown to depend on gender, time of meal and social environment.

## General Terms

Experimentation, Measurement, Human Factors

## Keywords

Color, Emotions, Restaurant, Atmospheres.

## 1. INTRODUCTION

A consensus of the definition of emotion is difficult to underline. However, an agreement is based on the temporality between emotion and mood. Emotion is any short-term evaluative, affective, intentional, psychological state, including happiness, sadness, disgust, and other inner feelings. In opposite, mood is a temporary but relatively sustained and pervasive affective state, often contrasted in psychology and psychiatry with a more specific and short-term emotion [1].

Otherwise, emotions have been less studied in food domain and recently scales have been developed on the assumption that emotions are linked with a specific food product and to develop an emotion-specific questionnaire to test foods with consumers [2].

The perception of food can be influenced by a variety of parameters such as temperature, smell, color of food, distractions, and wait time [3,4]. The choice of colors can affect consumers’ perceptions and choices of foods [5]. Researches are focused on the identification of such “Situational variables” that affect food acceptability and consumption [6]. These factors will modulate emotional environment and consequently affect food acceptability and consumption.

The present study aims at exploring the perception and feeling of customers towards different atmospheres (i.e., an affective evaluation of the environment [7]) using a questionnaire. Colors, lighting and decoration are modified and this leads to questions how these elements influence customers’ perception, appreciation and emotional states. We assume that customers would be more satisfied if their well-being is higher. Based on this assumption, we propose two hypotheses as follows:

Hypothesis 1: The colors of atmospheres have a significant effect on the customers’ perception, appreciation of atmospheres and emotional states.

Hypothesis 2: Others variables have a significant effect on the customers’ perception, appreciation of atmospheres and emotional states (i.e., gender, time of the meal and social environment).

## 2. MATERIAL AND METHODS

### 2.1 Participants

The experiment takes place at the experimental restaurant opened to the public that agree to participate to research projects in progress at the Research Centre of the Institut Paul Bocuse. More than 600 customers have been participated to our study. Table 1 shows the repartition of participants in each atmosphere.

**Table 1. Participants’ information for each atmosphere.**

<i>ATMOSPHERES</i>	<i>N</i>	<i>% men</i>	<i>Mean age</i>
Atmosphere Ref (Reference)	163	38	43
Atmosphere R&B (Red & Black)	131	39.7	47
Atmosphere B&W (Blue & White)	150	44.7	43
Atmosphere G (Green)	149	41.6	43

Restaurant is open either for lunch or dinner. Participants had to fill in a questionnaire about atmosphere at the end of the meal. Time of the meal and social environment are also collected.

### 2.2 Design of experiment

We tested 4 atmospheres: 3 colored atmospheres compared to the reference (Ref) one. These atmospheres have been created according to colors: Red & Black (R&B), Blue & White (B&W) and Green (G).

#### 2.2.1 Atmospheres

Three experimental atmospheres are clearly contrasted to create different emotional states (R&B, B&W and G) and are tested each one against a control one: Reference (Figure 1). Variations concern Music, Light, Decoration, Dishes, Furniture and Space arrangement.



Figure 1: Pictures of the 4 Atmospheres, Reference (a), Red & Black (b), Blue & White (c) and Green (d).

### 2.2.2 Questionnaire

A questionnaire was developed consisting of 5 questions on the atmosphere perception and participant feelings (e.g., 8 emotional terms, 5 descriptors and 7 elements that have to be rated on a 9-point scale) preceded by socio-demographic and situational questions (gender, age, occasion for lunch, etc).

## 3. RESULTS AND DISCUSSION

Statistical analyses (Analysis of variance and Chi<sup>2</sup> tests) were done to identify differences between atmospheres. Our results are in accordance with our hypothesis about color meanings and the influence on emotions and perception of atmosphere.

### 3.1.1 The atmosphere Red & Black

The effects on emotional terms reveal that customers feel more stressed and less excited in this atmosphere than in the atmosphere Ref (Figure 2). Customers perceived the atmosphere as warmer as atmosphere Ref but less intimate, tenser, less serene and less pleasant. Lighting is described as intense and the style as dark. Most of customers describe the sound environment as noisy.

### 3.1.2 The atmosphere Blue & White

The effects on emotional terms reveal that customers feel less excited in this atmosphere than in the atmosphere Ref and less stressed and less happy than in atmosphere R&B (Figure 2). Customers perceived the atmosphere as more serene and intimate and less tense than atmosphere R&B. Overall, all elements of the atmosphere B&W are very appreciated by customers. Decoration and furniture are more pleasant than in atmosphere R&B. Lighting is described as subdued, the sound environment is calm and relaxing, the style is pale and the space is luminous.

### 3.1.3 The atmosphere Green

No effect of the atmosphere on emotional terms has been revealed. However, from customers' point of view, the atmosphere is less cold, serene and intimate compared with atmosphere Ref. Light and sound environment of atmosphere G are more appreciated than in atmosphere R&B. The light is stimulating, the sound environment is relaxing and the style is colored and happy.

In conclusion, we have identified three contrasted atmospheres based on meaning color, each one related to specific emotions: (1) Red & Black related to Stress, Tension and Warmness; (2) White & Blue related to Relaxation, Serenity and Quietness; and (3) Green related to Stimulation, Warmness and Happiness. Our results are in accordance with color symbolism (e.g., Red is associated to Excitation and Love while Black is associated to Death and Bad in western cultures) [8]. Further analyses are currently in progress to observe the effects of gender, time of the meal and social environment on perception and feelings of customers. The next step will be to observe the relation between atmosphere, emotions and food liking in order to better understand the link between pleasure of eating and the environment.

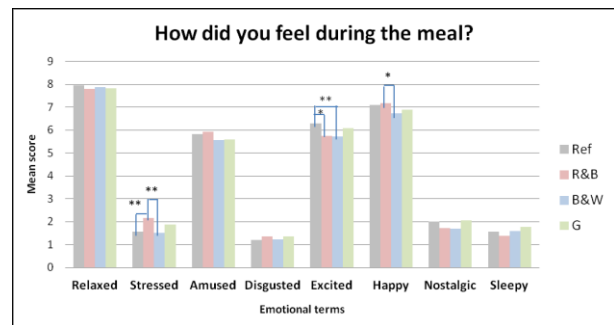


Figure 2: Statistical results for emotional terms in 4 atmospheres (\*\*  $p < .01$ , \*  $p < .05$ ).

## 4. ACKNOWLEDGMENTS

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