Emotional Contagion Interfering on Product Evaluation

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Emotional Contagion is the mechanism that includes mimicking and the automatic synchronization of facial expressions, vocalizations, postures, and movements with another person and, consequently, convergence of emotions between the sender and receiver. Researches of this mechanism conducted usually in the fields of Psychology and Marketing tends to investigate face-to-face interactions. However, the question remains to what extent, if any, emotional contagion may occur with facial expressions in photos, since many purchase situations are brought on by catalogues or websites. This article has the goal to verify this gap. Emotions have been studied because it is intuitively apparent that emotions affect the dynamics of the interaction between a salesperson and customers (Verbeke, 1997); in other words, emotions may significantly affect consumer behavior. Therefore, this article also verified whether the facial expressions that transmit emotions could be associated to product evaluations. To investigate these questions, an experiment was done with 171 participants, which were exposed to either smiling (positive emotion) or neutral advertising. The differences between the individual advertisements were limited to the facial expressions of figures in the advertisements (either smiling or neutral/without smiling). One specialist and two students analyzed videotaped records of the participants' responses, and found that participants who saw the positive stimulus mimicked the picture (smiling back) confirming the Emotional Contagion in Photos (the first hypothesis). The second hypothesis was related to whether the positive emotions versus neutral emotions acquired from the positive facial expression in the photo are associated to a positive evaluation of the product also displayed in the photo. Evidences show that the ad with a positive expression could change more positively the attitude, the sympathy, the reliability, and the intention of purpose of the participant compared to those who were exposed to the neutral condition. Therefore, the analysis concludes that the facial expressions displayed in photos produce emotional contagion and may interfere on the evaluation product. On the theoretical implications, this research brought theories commonly used in psychology to Consumer Behavior, i.e. bringing to the Marketing field question of Emotional Contagion. As managerial implications, companies can use positive facial expressions to influence their consumers. In general, the static media (newspapers, magazines, catalogs, billboards, and websites) can benefit from these results. At the end of this article some limitations and future research are presented; including for example possibilities to use electroencephalography (EEG), electromyography, autonomic nervous system measurements, brain imaging, FACS (Facial Action Coding System) and neuromarketing in new researches.

1. INTRODUCTION

Expressions have been studied since Darwin's (1809 – 1882) *The Expression of the Emotions in Man and Animals*, and today still allow for extensive explorations (Ekman, 2003). Some facial expressions are considered expressions of emotion, as they are not mere body physical changes and, therefore, they have the function of assisting in communication (Ekman, 1993, 1997; Shimamura, Ross, & Bennett, 2006). They demonstrate the emotion of the sender to the receiver without the need for verbal communication (Goldie, 2000). Facial expressions are a rich and important manner of expressing moods and emotions to other people.

The idea that one person can be influenced by the emotion of the sender is called *emotional contagion*. Hatfield, Cacioppo, and Rapson (1994) argue that the process of emotional contagion is automatic, fast and fleeting, and also ubiquitous, and that it can be accounted for by a combination of cognitive, associative, and self-perception processes. They proposed that, as people attend to others, they continuously and no consciously mimic the other's fleeting emotional expressions and synchronize their facial, vocal, postural, and instrumental expressions with those to whom they are attending. The afferent feedback generated by this mimicry produces a simultaneous congruent emotional experience, and consequently, leads to a convergence of emotion.

Emotional contagion is an important topic for sales and salespeople because it is intuitively apparent that emotions affect the dynamics of the interaction between a salesperson and customers (Verbeke, 1997). The consequences of emotional contagion in the event of purchase can bring practical benefits to retail and service (Howard & Gengler, 2001; Pugh, 2001). Therefore, the display of appropriate emotions comprises a substantial part of the large number of retail and service functions that require direct interaction with clients.

Since the late 1980s studies have described the dimension and the influence of emotions on the satisfaction or dissatisfaction of consumers (Mano & Oliver, 1993). Edell and Burke (1987) studied about the relative importance of feelings and judgments in several advertising outcomes, finding that negative and positive feelings are important predictors of the ad's effectiveness, and contribute to the attitude toward the ad, beliefs about the brand's attributes, and attitude toward the brand (for brands that were unfamiliar). Their research shows evidence that feelings matter in assessing the effectiveness of advertising. It is also important to note explicitly that feelings are generated by the advertisement, including feelings activated by nonverbal elements.

Many studies about Emotional Contagion have been conducted in different situations: when people are watching movies (Ekman, 1993; Ekman, Davidson, & Friesen, 1990; Ekman & Friesen, 1982; Soussignan, 2002); or in face-to-face situations (Howard & Gengler, 2001; Pugh, 2001); or with picture/photo, showing a context of happiness or sadness. However, there is a questioning to what extent, if any; facial expressions that transmit emotions may have an effect on customer attitudes toward products in ads/photos. In other words, the purpose of this study is examines whether facial expressions, as perceived by looking at pictures of facial expressions, can convey a specific emotion from sender to receiver, and if so, whether such transmissions can also be converted to a better evaluation of a product associated with the expression.

Studying the gap presented; using positive emotions. Positive emotions were chosen because smiles in facial expressions in general show happiness or enjoyment, whereas sad expressions without a clear context might communicate more than one emotion, including unhappiness, anger, or fear.

The article is divided into five chapters. The first one introduces the theme and the topic's relevance. In the second chapter the theoretical background is presented, divided into three basic pillars: emotion, facial expression, and emotional contagion. The third chapter describes the methodology applied in the research. In the fourth, the analyses are presented. In the fifth and last chapter the conclusions, theoretical and managerial implications are presented, as well as the work's limitations and proposals for future studies.

2. THEORETICAL BACKGROUND

This section is divided into subsections. First, the definition of emotion is given, followed by a further explanation about the differences between emotions and mood. Then, a background on facial expressions is given, helping to describe the question of whether facial expressions can demonstrate emotions. Next, emotional contagion is presented followed by the influence of emotion in people behavior.

2.1. Emotion

There is no consensus in the literature on a definition of emotion (Cabanac, 2002; Kleinglnna & Kleinglnna, 1981). Colloquially, the term emotion is defined with reference to a list of feelings. Often people think of emotion in categorical terms such as "I was scared" or "I am happy today".

Some definition however exist, for example, for Kappas (1991), emotion is a mental state, and somatic signals participate in this mental experience. It is the result of nervous activity taking place in the brain. For him, emotions are part of communication. Other researchers define emotion as an action of dispositions, states of vigilant readiness that vary widely in reported affect, physiology, and behavior; in other words, emotions are systemic responses that happen when highly motivated actions are delayed or inhibited (Lang, 1995). Kappas (1991) defines emotions as responses to external or internal stimuli which are manifest at several levels. Cabanac (2002, p. 80) proposes that emotion is "any mental experience with high intensity and high hedonic content (pleasure/displeasure)". The author explains that emotion is a response to a stimulus that can be sensorial, originated from any afferent nervous pathway, or mental, resulting from the subject's imagination or memory.

Although there are many descriptions about what emotions really are, nevertheless most researchers agree insofar as they argue that emotions are complex processes which involve several components (Kappas, 1991). While specific definitions include different components, according to Kleinglnna and Kleinglnna (1981), there are components that are common across each definition: affective, cognitive, physiological, and emotional/expressive behavior. It is believed that the emotions are "all intense mental events aroused by exposure of the subject to situations more or less related to motivation, either positive or negative but all resulting in a behavior oriented to, or away from, the stimulus" (Cabanac, 2002, p. 76). Therefore, emotions evolved a rapid and coordinated response system that allow humans to quickly and efficiently response to events that affect their welfare (Ekman, 2003).

2.2. Differences Between Emotion and Mood

Emotion and mood are frequently used interchangeably; however most academics agree that they are different constructs (Beedie, Terry, & Lane, 2005; Frijda, 1994). They are closely related but distinct phenomena. A study conducted by Christopher Beedie and his colleagues (2005) discovered a variety of different views about these terms.

They analyzed 65 published articles that included criteria to distinguish emotion from mood, finding eight themes that differentiated the terms: duration (62% of authors), intentionality (41%), cause (31%), consequences (31%), function (18%), intensity (17%), awareness of cause (13%) and physiology (13%) (Beedie, et al., 2005).

Most researchers cite duration as a criterion of differentiation between the terms, and they agree that moods endure longer than emotions (Beedie, et al., 2005). In this article the 4th first will be explained.

The literature is consistent when differentiating emotion and mood based on intention. Emotions are about or directed at something, while moods may not be. In other words, an emotion is specifically about something, while a mood can be nonspecific. For example, the emotion of being in love or of hating requires a person to be the object of the love or hate, whereas mood is a general background state of mind - "I woke up in a bad mood today".

The relevant causes also differ between the two terms: emotions are caused by specific events localized in time; whereas a mood is a consequence of many minor incidents, persistent conditions in the environment, and/or internal metabolic or cognitive processes.

Different consequences for emotions and moods have been proposed in the literature. Fridja (1994) explains that emotions can alter action readiness, whereas moods produce generalized cognitive consequences. In other words, emotions serve to rearrange the priorities of goals and change the flow of action, whereas moods maintain a distinctive readiness that continues despite events that might disturb it. In conclusion, an emotion prepares the organism for action, whereas mood influences cognitive processes, for instance the memory.

Therefore, considering that there is a difference between emotion and mood, this article will explore only emotion, which can alter consumer action, and can be manipulated.

2.3. Facial Expression

According to the Facial Action Coding System (FACS), there are more than 2000 expressions classified. The FACS, devised by Ekman and Friesen (1978), measures the facial muscle contractions involved in a facial expression. This allows researchers to measure the activity of facial muscles from video images of faces.

Researchers as Ekman (1993, 1997) and Shimamura, Ross and Ben (2006) agree that facial expressions are a mean of communicating, transmitting the emotion of the person who conducts them. For Goldie (2000), the main function of expression is communication, showing a feeling to the other without need for verbal communication. Darwin (1872/1955) noted that many shades of expression are instantly recognized without any conscious process of analysis on our parts. Ekman (1997) points out that there are exceptions, for instance when an expression is unusual, or its occurrence at a particular moment in time is incongruous with everything else which is happening.

The main and distinctive facial expressions that were found through the coding system of facial action (FACS) are six in number: anger, disgust, joy (or happiness), sadness (or distress), fear and surprise (Ekman & Friesen, 1978; Ekman, Friesen, & Ellsworth, 1972). It is known that there is no ambiguity evident in the universal expressions of anger, joy, sadness and disgust of different cultures (Ekman & Oster, 1979). In other words, regardless of ethnicity, people can distinguish without equipment or methodologies these expressions.

Among facial expressions, the smile is the easiest to recognize. Hager and Ekman (1979) were able to show that generic smiles can be distinguished from other emotions at a distance of up to 45 meters. Research studies conducted in the 1980s indicated that joy was indexed by generic smiling, any smiling involving the raising of the lip corners by the zygomatic major (Ekman & Friesen, 1982). According to Ekman, Davison and Friesen (1990), just one muscle is needed to produce a generic smile, while other expressions (of, e.g., anger, sadness, fear) need two to four muscles.

Freitas-Magalhaes (2004) studied smiles and manifestations of affection, concluding that neutral facial expressions say little to an observer (i.e., do not transmit or communicate emotion), while the smile is perceived as closely associated with the construct of happiness / joy.

In addition, facial movements may produce changes in self-reports of emotional experience on a positive/negative spectrum. Movements of the face may foster more differentiated emotional experiences, such as enjoyment, anger, fear and sadness (Soussignan, 2002). A number of experiments have been done demonstrating that when people are induced to act happy they feel happier, when they are asked to act angry they feel angry, and the same occurs for facial expressions of some emotions (Duclos et al., 1989).

Another ongoing discussion regarding facial expression involves the uniqueness of expressions. Is it possible that one facial expression can show more than one emotion at the same time? Research by Ekman et al. (1987) explains that facial expressions resulting from happiness, sadness and surprise were recognized by people as each conveying a unique emotion. Ekman and his colleagues (1987) believe that some emotions show up more strongly than others, and suggest that maybe people realized the primary emotion more easily in these cases. This is the case of happiness, probably because the happiness emotion is stronger than others; people do not distinguish other emotions in a facial expression associated with happiness. This topic is especially relevant to this study because in the research that follows, for an expression to be identified as happy, whether people perceive one or more emotions it is necessary that they identify happiness as the strongest emotion in the face.

2.4. Emotional Contagion

Emotional contagion is generally defined as an outflow of emotions transmitted by facial expressions, voice, posture, movements and other instrumental behaviors from one person to another (Hatfield, et al., 1994). It can also be explained in terms of a receiver "catching" the emotions displayed by a sender (i.e. the sender transmits the emotion that the receiver then also gets).

Evidence for the existence of emotional contagion has been found for different emotions (happiness, sadness, fear and others) (Dimberg & Lundquist, 1990; Hess & Blairy, 2001). It has been proposed that mimicking another's facial expressions can lead us to "catch" that person's emotions, because mimicking facial expressions provides the emotional arousal information specific to that emotion, thus causing that emotion to be felt as well (Hatfield, et al., 1994). Therefore, emotional contagion can be considered a mechanism that includes mimicking and automatic synchronization of facial expressions, vocalizations, postures and movements with another person and, consequently, a convergence of emotions between the sender and receiver (Hatfield, et al., 1994).

Facial expressions sometimes are almost instantaneous; people seem to be able to track the more subtle evolution of each other's feelings with each facial movement. Investigations show that emotional experience and facial expressions, as measured by

electromyography (EMG), tend to reflect the characteristics of rudimentary emotional expression changes of those who observe (Hatfield, et al., 1994).

The emotional contagion hypothesis suggested by Hatfield, Cacioppo, and Rapson (1994) has sought to explain how two people's emotions, transmitted through nonverbal cues, affect the dynamics of conversation. The emotional contagion hypothesis specifically suggests that some psycho-physiological processes cause facial reactions. (Verbeke, 1997)

According to Hatfield and her colleagues (1994) there are three assumptions that characterize their theory of emotional contagion: In conversation people tend automatically and continuously to mimic and synchronize their movements with the facial expressions, voice, posture, movements and other instrumental behaviors of their conversation partner. Each person's subjective emotional experiences are affected moment by moment by the activation of emotion and/or response by mimicking (command central nervous system). People tend to "catch" / "feel" the emotion of the other, moment to moment.

The first two parts of this process is called primitive emotional contagion. Subjective emotional experiences are affected, moment-to-moment, by the activation of feedback from such facial mimicry. As a consequence people tend to catch others' emotions (Verbeke, 1997).

In other words, the process of primitive emotional contagion, as discussed by Hatfield et al. (1994), involves two mechanisms: (1) mimicry and (2) feedback. Mimicry is synchronous imitation of others' expressions that facilitates social interactions (Barger & Grandey, 2006; Hatfield, et al., 1994). The facial feedback hypothesis states that facial movement can influence emotional experience. For example, when somebody is forced to smile, he will actually come to find the event more enjoyable.

The act of perceiving, imagining or mentally representing a behavior can excite the motor programs necessary for the activation of that same behavior, causing imitation of it. In cases of positive emotions, smiles are able to automatically induce the same behavior in an observer, even if she or he is not familiar with the target person (Chartrand & Bargh, 1999). There is evidence that people will automatically mimic what they see in another's face without knowing it, including unfamiliar others (Chartrand & Bargh, 1999; Neumann & Strack, 2000). In other words, mimicry occurs both in situations where people know each other and in situations where they do not know each other.

Hence, people will catch others' emotions if they (a) pay close attention to others, (b) construe themselves as interrelated to others rather than as independent and unique, (c) are able to read others' emotional expressions, (d) tend to mimic facial, vocal, and postural expressions, and (e) are aware of their own emotional responses (Doherty, 1997; W. Doherty, L. Orimoto, T. M. Singelis, E. Hatfield, & J. Hebb, 1995; Hatfield, et al., 1994). Participants performed the requested behavior significantly slower when they saw an incongruent behavior than when they saw a congruent behavior (Aylward, 2008).

It has also been shown through laboratory experiments that mimicry can occur in interactions composed of facial expressions exclusively, without voice or body language (Hess & Blairy, 2001). However, the observation of the facial expressions of senders by receivers, (thus allowing the mimicking of smiling) is a necessary condition for emotional contagion to occur (Howard & Gengler, 2001).

Researchers also have been showing how movies are very effective instruments for producing emotions. Several studies have obtained evidence that Duchenne smiles appear in participants who are watching pleasant movies (Ekman, 1993; Ekman, et al., 1990; Ekman & Friesen, 1982; Soussignan, 2002). Many studies have also been using photos as stimulus. Photos are convenient laboratory stimuli that permit controlled exposure in

timing and intensity, and exact reproduction within and between experiments and laboratories. Laboratory studies present photos either as photographic slides or, when digitized, as displays on a computer monitor (Lang, 1995). According to Lang (1995), pictures can evoke affect. Presentation of photos can also incite startle reflexes. The startle reflexes occur in response to both pleasant and unpleasant pictures. The high degree of arousal induced by the picture explains the intensity of the reflex (Lang, 1995).

Obviously, the arousal created by a picture is less intense than that produced by observing facial expressions in movies or face-to-face situations. However, the question here is whether it is possible to believe that pictures of emotional faces can verifiably transmit emotions to any significant degree.

The first hypotheses of this study relate to emotion and emotional contagion in cases where observers view photographs of facial expression of an unknown person:

H1 – Emotional Contagion occurs through the observation of a facial expression on a photo.

There is a basic economic assumption that individuals will maximize the beneficial outcomes of their decisions through careful and thorough analyses of alternatives. However, these environmental explanations appear incomplete in light of the complexity of human decision-making processes. A growing amount of research has been devoted to studying other influences on human decision-making process.

It has been proved that there is an interaction between human rationality and rational cognition on the one hand, and subjectivity and emotion on the other, that takes place in human decision-making and behavior.(Cacioppo & Gardner, 1999). Accordingly, in this study, emotion will be emphasized as part of the process of decision-making.

According to Elsbach and Barr (1999), theorists have suggested that affective state may be an important variable in models of individual decision-making – evaluation. Psychological research suggests that emotion felt and expressed by decision makers can influence how those individuals make decisions and evaluate products. The authors, after reviewing studies that used mood (referred to variously as emotion, mood and affect) as part of the process of perception or making decision, conclude in their article that people in negative emotion use a more structured approach to decision-making. The results of their positive emotion review are shown in Table 1.

Table 1 – Findings on the Effects of Positive and Negative Emotion on Decision-Making

Positive Emotion	
Potential Benefits	Potential Costs
• Cues positive material in memory (Isen et al. 1978)	• Promotes risk aversion, more negative subjective utility for losses (Isen et al. 1988)
• Promotes creative problem solving (Isen et al. 1987)	• Promotes behavior designed to protect positive mood (Isen & Simmonds 1978)
• Promotes efficiency in decision-making (Isen & Means 1983)	• Promotes use of heuristics and quick decision-making (Isen & Means 1983)
• Promotes effort on pleasant or interesting tasks (Staw & Barsade 1993)	• Difficulty discerning weak and strong arguments (Smith & Shaffer 1991)
• Promotes more flexible categorization of items (Isen & Daubman 1984)	• Persuaded by peripheral cues (Mackie & Worth 1991)
• Promotes thoroughness in interesting tasks (Isen	• Less likely to use a structured decision protocol

et al. 1991)	completely and correctly (Ellsbach & Barr 1999)

Font: Adapted from Elsbach & Barr (1999).

As demonstrated, positive emotions promote behavior designed to protect a positive mood, i.e. when people are happy they want to continue feeling happy. It also promotes use of heuristics and quick decision-making; which explains that happy people can be affected by distraction, making decisions less structured. In this emotional state people can have more difficulty discerning weak from strong arguments.

2.5. Emotional Contagion Determining the Perceptions of Product / Service

Howard and Gengler (2001) conducted two experiments to verify whether the existence of emotional contagion may influence the attitudes and analysis of a product (specifically, a palekh box). The idea was to examine the existence of emotional contagion effects on product attitudes in a face-to-face interaction. In the first experiment, emotional contagion occurred among "receivers" who "caught" a happy emotion from "senders" whom the receivers liked. After that event, they evaluated a palekh box, proving that emotional contagion influenced their attitudes. Sender emotion (happy vs. neutral) and receiver liking of the sender (liking vs. neutral) were manipulated. Happy versus neutral emotion was induced for the sender. The authors manipulated the variable of liking by making some receivers believe that they had gotten a Coke as a gift from the sender. The results support all the hypotheses, with the product scored most highly by those receivers who had been exposed to a sender who was smiling and also whom they had liked on the basis of the gift of Coke. The emotion and appeal of the receiver (received by the senders) caused a positive bias on consumer attitudes about a particular product.

The researchers tracked the presence of positive emotion (joy/happiness) through facial expression (smiles) only to verify the occurrence of emotional contagion; no voice or body behaviors were present. The article ended by explaining that when the senders were happy and receivers liked the sender, the receiver's emotions converged with the emotion of happiness, and a positive attitude about the product occurred.

There are many examples in customer service proving the benefits of service with smile. For example, it enhances customer tipping (Tidd & Lockard, 1978), intentions to return to a store (Tsai, 2001) and satisfaction (Brown & Sulzer-Azaroff, 1994). Pugh (2001) did a study where customers captured the affect of employees through the process of emotional contagion. In this case, the positive emotion of employees is related to customers, and that positive affect interferes positively with the latter’s assessments of quality of service. Another study, realized by Grandey et al.(2005), about the Duchenne Smile showed that the authenticity of employee expressions influenced the impressions customers formed of the employee’s friendliness and their overall satisfaction with the encounter. The interesting situation that we can note is that in all the studies the face-to-face interaction exists.

Therefore, considering that emotional contagion can affect customer evaluation product leads to the second hypothesis:

H2 – The positive emotions vs. neutral acquired from the positive facial expression in the photo is associated to a positive evaluation of the product.

In this article the idea is to study the facial expression in a photo influencing in the product evaluation. Evaluations can be measure with different forms. Measuring this construct it was adapted the scale from Berens et al (2005). They considered product evaluation in product attitude and purchase intention. This scale fit in this research,

because they studied the product evaluation per customer, and also used as stimulus print ads. The use of the variables of perceived quality, perceived value, and willingness to buy follows the observation by Petroshius and Monroe (1987) that the evaluative dimension, perceived value, needs to be separated from the intentions dimension and purchase intention. Therefore, the categories used were: quality, appeal, reliability and purchase intention (Berens, et al., 2005; Petroshius & Monroe, 1987). Price was added to this scale as another measure to evaluate the product– "how much the participant would pay to buy the product".

3. METHOD

This part of the project describes the experimental design and stimulus, the product used in the experiment, the pretest used to define the stimulus, the procedure adopted, the cover story and the scales used in the instrument of data collection. This information can be summarized into a simplified explanation as follows: this experiment consisted of exposing randomly selected receivers to photos containing both a product and a facial expression, happy or neutral. A pretest was also done to analyze and define the stimulus.

Twelve classes of undergraduate students from FGV-EAESP Business School São Paulo were invited to take part in the experiment. Professors were first asked if their students could participate in the study. In total 9 professors of public or private business administration agreed to let their students participate in the experiment during their class time. Data collection occurred over 8 days spread throughout August of 2010. The time of each section's visit to the lab varied based on the schedule of the professor's classes. The research was done in the computer laboratory, and Media Lab 2008 was the program used. In total 171 students participated in the study as part of a class assignment. To encourage the students to participate, 5 gifts were raffled.

The emotional contagion literature suggests that students are good object for study as they are at the stage of thinking about starting a career. In a previous study, people with different occupational backgrounds (Physicians or Marines) reported different sensitivities to emotional contagion. It is known that people show more evidence of contagion, both for general and specific emotions, at the beginning of their careers (W. Doherty, et al., 1995).

The factorial design of the experiment is 2 (Expression of Joy and Neutral; varied between subjects) by 1 (Students). Participants were randomly assigned to one of the two experiments (positive expression or neutral expression). The dependent variables were: existence or not of mimicry (physical response) and evaluation of the product (subjective measures). The independent variables are the variables that are manipulated in the experiment. In this case, the independent variable is the facial expression in the photo shown to the participant (positive expression / smile vs. neutral expression / no smile). Background variables such as age, race, marital status, course, and studying semester were included in the design to explore the relations with independent and outcome variables.

To make the situation reflect actual marketing situations more closely, the photo was incorporated into a piece of advertising. Qualitative research was done to define the best type of product to use in this experiment. Eleven in-depth interviews were carried out with undergraduate students from FGV-EAESP Business School São Paulo. The average duration of the interviews was approximately 30 minutes. A script of questions was prepared, and an initial test interview done to identify and eliminate problems and bias, after which the script was modified. The age of the participants was between 19 and 21 years old. The interviews were conducted in Portuguese. The results of these interviews showed that the products with definite appeal to both genders in the test group were: books, tickets for shows, CDs, DVD and electronics. Out of these unisex products a MP3

player was chosen, because there are fewer varieties compared to books, tickets for shows, CDs or DVDs.

For the development of stimulus, it was used a facial expression, a product and some basic product information. The female photos were chosen from a set of photos developed by Paul Ekman, photos that had already been tested and proven to show different emotions. The model is an American Blonde Woman, age estimated in 35 years old. Two different photos of the same model were chosen to develop this research. In one picture the model is in a positive emotions (happiness/joy) and in the other picture she is neutral (not happy or sad). Because the influence of brand is not a topic of inquiry in this study, the brand name used is not real and subjects could not recognize or have associations with it. In addition, the information about the product was described in Finnish, so that the content of the text would have no influence on the subjects.

The participants were placed individually in front of computers that were already prepared for the activity. All the participants received a paper with all the procedures. Any question was allowed during the experiment. On the first screen, it was explained that there would be 2 short questionnaires: one about a movie, another about a new product in Brazil. The same rules and procedures were presented to all the experiment cells. First, all the participants watched a very short documentary movie. The idea was to neutralize their moods and expectations. This documentary was chosen because it was used in a previous study (Andrade, 2004) and by convenience. It is a documentary about John Nash. It took around two minutes and five seconds. After the movie and the question related about, respondents were informed before the second stimulus that they would see, a foreign advertisement for an MP3 player.

This cover story concentrated the participants' thoughts on the product and not just on the facial expression. Some descriptions of the product were made available after 8 seconds of the advertisement, with no option to skip forward faster. This time lapse was important in order to analyze whether the subjects suffered emotional contagion. Freezing the stimulus for 8 seconds was important to keep the subjects looking at the picture. After the picture some questions about the product and the participant's intention to shop were asked.

The scale participants used to evaluate the product a multiple-item scales consisting of seven-point Likert or semantic differential scales were used, following Berens et al. (2005). Because the research was done in Brazil, the scale was translated to Portuguese. The original scale is in English; therefore, English translations were done respecting the rules of translating.

During this second stimulus, all the participants were videotaped with a webcam (VGA 640x480) for 15-20 seconds. A trial version of YupSoft Cam Video Capture Monitoring was used. This program consists of an application that enables recording of both video and still images with a webcam. At the end of the experiment, each participant was asked if they gave permission to use the video records in the research.

To verify whether emotional contagion occurred, the videos were analyzed for unconscious mimicking by three people: the author of this study and by two individuals blind to experimental condition from the Kelley Business School MBA Program – Indiana University. Smiling was defined as "eyes open and the corners of the mouth turned up" and was obtained from Gump and Kulik (1997. p. 308). The mimicking face may be up to 1/8 of a second. The two individuals received all the movies mixed, and they didn't know which conditions the participants were. At the end of the videotape scoring, there were three answers for each participant. The majority of the answers were used to define the final answer. As manipulation, at the end of the research, participants were asked what

they suspected the research was about and what its objective was (a check on how the manipulation worked).

4. ANALYSES RESULTS

In this chapter, the experimental results are presented. A pre test and a manipulation check were made and discussed. Then study hypotheses are investigated by means of various statistical analyses.

A pretest was conducted with a sample of students of Fundação Getulio Vargas during June 2010. Twenty participants were observed while participating in the experiment in the lab to determine if difficulties arose at any particular point. No major problems were revealed in this pilot study, and consequently a few minor changes were done.

For the experiment, from the 171 participants, data of only 154 were used: 95.5% of the students are from Business Administration, 3.2% from Public Administration and 1.3% from other courses. 99.4% are single, between 17 and 23 years old, the majority considered themselves as white (90.9%). Students have varying amount of schooling (from 1-10 semesters). Some participants did not follow the laboratory experiment rules correctly or in some cases, the software Media Lab inadvertently shuttled down before the students had finished answering the questions, losing some data and invalidating the participant answers. The date of two students who suspected or knew the research topic was disregarded. The distribution of the 154 participants is as follows: 48.1% of neutral condition (74) and 52.0% of smiling condition (80).

Two manipulation checks were done to verify whether the stimulus worked as planned. The first stimulus, the John Nash movie, was intended to neutralize the participants' emotions. The second stimulus was the ad, which had the goal to interfere positively or keep the emotions neutral.

The first manipulation check was intended to verify if the subject had their emotions neutralized. To analyze it, participant evaluated the movie. Each participant was asked to rate which emotion the movie transmitted, after watching, using one of the three categories: happy, neutral or sad. 92.2% of the participants (n=154) evaluated the movie as neutral, in accordance with the previous study (Andrade, 2004) and with the desired manipulation check that the movie be considered neutral.

Because John Nash's story might be known and therefore could influence subjects' emotion during the experiment, participants were asked whether they knew the John Nash story. This question was used to identify whether previous knowledge was interfering in the analysis of the movie. 30.5% of the subjects answered that they knew the John Nash's story. An univariate analysis of variance shows that whether or not the participants knew the John Nash story is not a relevant factor in changing their movie opinion $F(1.153)=0.019$, $p=.890$. Therefore, there is no significant difference between those who had knowledge and those who didn't have knowledge.

The second manipulation check is about the print manipulation and it was checked with two questions. Firstly, subject in the smiling expressions condition should indicate that the woman was smiling and those who are in the neutral conditions should answer that the model was not smiling. For this question, one out of 74 participants from a neutral condition said that the woman in the picture was smiling, and 8 out of 80 participants of the smile condition said that the facial expression was neutral. The Pearson Chi-Square $\chi^2_{(1)}= 121.165$, $p\leq.001$ shows that the two groups are able to appropriately recognize the stimulus.

Secondly, it was tested whether the participants perceive the smiling-woman ad as expressing positive emotions, and whether the neutral-face ad expressed a neutral emotion (not happiness or sadness). Although the woman's pictures used as stimulus were already

tested by Paul Ekman and evaluated again in the pre-test; the manipulation check was important to show that the experimental participants are also able to perceive the facial expressions as an expressions of emotion. In the neutral condition 66.2% of the subjects were able to identify the model in the neutral expression. And, in the smiling condition 83.8% identified the model as happy or very happy. The Pearson Chi-Square $\chi^2_{(4)}$= 88.070, p≤.001 shows that the two groups are able to appropriately recognize the stimulus differently.

In conclusion, the manipulation check showed that respondents correctly perceived the movie as neutral. And the majority answered that the smiling ad shows happiness while the non-smiling ad expressed neutral emotion (no emotion) with p≤.001.

4.1. Hypothesis

The first hypothesis has the idea to support that people tend automatically to mimic and synchronize their movements with facial expressions through the observation of a facial expression in a photo. To test it, all facial expressions from the participants in the positive and neutral conditions were recorded. From 154 participants randomized into the two conditions, only 129 could be used, some were lost or not authorized by the students. In the smiling condition 67 participants' facial expressions were recorded, and 62 in the neutral condition.

To verify whether emotional contagion occurred, the videos were analyzed for unconscious mimicking by three people as explained before. The Cronbach's Alpha coefficient α=.774 had adequate values, indicating reliable measurements for this goal, showing that the analysts were highly consistent internally when analyzing the facial expression of the studied sample.

In the neutral condition 11.3% of the participants exhibited emotional contagion from the ad, while and in the smiling condition, the emotional contagion occurred in 37.3% of participants.

A Chi-Square test was used to compare the percentage differences between the two conditions. The result confirms that participants tend automatically to mimic and synchronize their movements with facial expressions when observing the facial expression on a photo of an unknown person (Pearson Chi-Square $\chi^2_{(1,\ n=129)}$ = 11.691, p≤.001). A two-sided Fisher's exact test further confirms that the two conditions are significantly different (p≤.001).

In the case of neutral condition, the difference between Yes and No (people catch the mimicry or not) is significant $t_{(61,n=62)}$=2.786, p≤.007). The same situation occurred in the smiling condition ($t_{(66,\ n=67)}$=6.268, p≤.000). This answer confirms that there is a difference in number of people who caught emotional contagion in each condition. To explore more, it was verified if there is difference between condition in each situation (when occurred mimicry and when did not occurred). The answer is that there is a significant difference in number of people who caught contagion or did not catch it in each condition ($t_{No\ (96,n=97)}$=87.659, p≤.000 and $t_{Yes\ (31,\ n=32)}$=64.395, ≤.000). Confirming that the mimicry occurs (yes) more in the smiling condition and it occurs less in the no mimicry for the neutral condition.

Based on these results, the conclusion is that Hypothesis 1 is supported. There is emotional contagion when people see pictures with positive facial expressions. And, since the first hypothesis is supported, the second hypotheses can be tested.

The second hypothesis is related to whether the positive emotions acquired from the happy facial expression in the photo used for the experiment interferes with the subject's evaluation of the product also displayed in the photo. This analyses presents,

firstly the dependent variable as a global score scale (Evaluation Product), then in categories.

The Evaluation Product scale consisted of 12 items (distributed in four categories) and 154 participants answered it (74 participants in the neutral condition and 80 participants for the smiling condition). The Cronbach's Alpha coefficient α=.932 had adequate values and can be considered to analyze the consistence of this scale.

The results F (1.153)=17.276, p≤.001confirms that there was a significant difference between the two conditions, supporting the hypothesis that when the participants saw the ad from the positive emotion. The participants evaluated the product displayed in the photo as better in smiling than in the neutral condition, which is consistent with prior research on the prominence effect. The Welch and Brown-Forsythe test F_{Welch}=17.154; p≤.001 also confirmed the result from the ANOVA.

Product evaluation was composed of four dimensions, the Cronbach's Alpha coefficient for each was: Attitude (α=0.809; 4 items and n=154); Reliability (α=0.816; 2 items and n=154); Intention (α=0.847; 3 items and n=154) and Appeal/Sympathy (α=0.862; 3 items and n=154). In all the cases the Alpha Coefficient had adequate values and can be considered in analyzing the consistency of this scale.

Considering the ANOVA assumption as valid; it is possible to verify that differences were also significant for each product evaluation dimension $F_{Attitude}$ (1.153)=10.983; p≤.001; $F_{Reliability}$ (1.153)=18.978; p≤.001; F_{Appeal}(1.153)=15.295; p≤.001 and $F_{Intention}$(1.153)=10.787; p≤.001. All the cases confirmed the predicted results; the smiling face expression had a positive interference in products evaluation. The non-parametrical statistic model Welch and Brown-Forsythe also confirms the ANOVA results; the means of condition in each category had a significant difference (p<.001). These analyses confirmed that the smiling face interfered positively in all the dimensions of product evaluation and the first results from total score of Evaluation Product**.** With these results, it is possible to say that the hypothesis 2 is supported.

5. CONCLUSION

The first and most important result of this study was the evidence that emotional contagion can occurs with photos, present in many print media and websites. The data showed that about 33% of participants suffered emotional contagion when they saw smiling ad. On the other hand, the data demonstrate that only 10% suffer emotional contagion when the stimulus was a neutral face expression ad. It can translate into quite an impressive amount of emotional contagion in the positive expression. Therefore the first hypothesis is confirmed; participants tend automatically to mimic and synchronize their movements with facial expressions through the observation of a facial expression on a photo of an unknown person.

Mimic and synchrony are a pervasive influence in social interactions (Hatfield, et al., 1994), and it can also occur spontaneously in situations where people do not interact with other; as example in exposition to movies or photos. The participants automatically imitates the ad unknown person; however, the model from the ad was not face-to-face with the participant and where unknown.

Whether the participants mimicked others, the theory presents that people tend to "catch" other people emotions (Hatfield, et al., 1994; Verbeke, 1997). In the case of mimicking a Duchenne smile, the participants could feel a better emotion (more positive), and then change their behavior and attitudes (Doherty, 1997; W. Doherty, et al., 1995; Hatfield, et al., 1994). Thus, the participants would evaluate the products more favorable. This was also confirmed; people evaluate products in ads, which have a face expression

that shows a positive emotion (for example a Duchenne Smile) as better than products presented in ads with model with a neutral facial expression. The smiling model in the ad has made people judge the product as more favorable, with a higher quality, more sympathetic, more attractive, brings on pleasant feelings, and indications that the product is more reliable and safe. The positive condition also shows to be more interesting as to what participants are willing to pay and in the recommendations. The evaluation products seem to be a better score for a positive condition. In this, the second hypothesis was supported by the data.

Overall, the present study has demonstrated that emotional contagion can occurs with photos, and positive face expression in ads can positively influence in the evaluation products.

On the theoretical implications, this research brought theories commonly used in psychology to Consumer Behavior, i.e. bringing to the Marketing field question of Emotional Contagion. This union of fields of study enriches the science and theories created. This study also brings the possibility of some managerial implications. With the support of the hypothesis two, that the photos of smiling people, that convey positive emotions, are associated with a better evaluation product, companies can use positive facial expressions to influence their consumers. In general, the static media (newspapers, magazines, catalogs, billboards, and websites) can benefit from these results. It is worthy to note that, this study was exploratory and more researchers could confirm the results and develop them. Therefore, the findings in this study are important to managerial implication because if positive emotion (catch from face expression) can indeed impact performance in consumer behavior, we need to know how to best utilize and elicit those emotions in the media.

Despite the findings of the study, there are some limitations. First, people tend automatically and continuously to mimic and synchronize their movements with the facial expressions, voice, posture, movements and other instrumental behaviors of their conversation partner (Hatfield, et al., 1994), this studied focus in only one stimulus the facial expression. Future researches could explore individually other stimulus to Emotional Contagion, as posture. One hypothesis could be: the emotional contagion's receiver mimicry the posture from a photo.

As almost all the experiment done in a laboratory, it is need to proceed with caution to generalize the results from the current study to a wider array of markets, because of the diversity and specificity for each market (food, clothing, automobile, cosmetics, and other). The product used in this study was a MP3 player, it is a specific product from an electronic market, it is important that future research use different products and markets to strengthen the results. Therefore, this research also brings insights for new researches: exploring the facial expression in different brands or prices.

Another limitation is the sample was one of convenience. According to Hatfield and her colleagues students are good subjects to study emotional contagion (Doherty, Orimoto, Singelis, Hatfield & Hebb, 1995), the sample was drawn from a population of college-aged individuals. While this is not problematic in and of itself, it does limit the generalizability of the results to other populations, i.e. young or elderly. Future research should include a different population of individuals (not just in the age, but also in race and culture).

This study, as many other studies, i.e. Howard & Gengler (2001), assumed the theory that the primary emotional contagion, that the mimicry brings emotional contagion (people feel better). It is important that other studies use different ways to measure the emotional to develop the theory about emotional contagion.

As commented on the theoretical background of this article, it is proved that mimicry can occurs in situations where people know each other and in situations where they do not know each other. This study used only the second situation; therefore new researches can be done with known models, i.e. artists and actors.

In addition, this study worked the variable emotional contagion as dummy (coding presence or absence), but different approach can be used paying attention to the intensity or strength of facial expressions. FACS 2002 allows for five levels of intensity coding (A, B, C, D and E) with A being the least intense (a trace) action and E the maximum strength of action. Guidelines for intensity coding are somewhat subjective, however, and it may require special effort to establish and maintain acceptable levels of reliability, especially in the mid-range (Ekman, 2003).

In this article, it was used three people to code the mimicry, what is common in these kinds of studies (Aylward, 2008; Howard & Gengler, 2001). Although computerized digital analysis (i.e. electroencephalography (EEG), electromyography, autonomic nervous system measurements and brain imaging) could be used to analyze more dippers the facial expression. Computer programs are being developed to measure the muscles used during a facial expression. This sort of analysis could help remove the subjectivity inherent in human ratings and improve the validity of the measures

As future researches it is also possible and important to use different models (as stimulus) from different ages, races and cultures. In this case, an American female model in the ad was used, but future researches could use a male and verify if there is a difference between genders. And also model with different ages i.e. babies, children or elderly.

Hence, in this study, only one positive expression was used to compare with neutral; however, many other emotions and expressions (expressions of pain, laughter, affection, embarrassment, discomfort, disgust, and other) can be used as a stimulus to verify whether different emotion by means of emotional contagion can influence the product evaluation.

At the end, this article can stimulate studies that translate research on emotional contagion into workable options for marketing management and neuromarketing.

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