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GIULIANA ISABELLA

**THE INFLUENCE OF EMOTIONAL CONTAGION ON PRODUCTS
EVALUATION**

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2011

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Business Administration of São Paulo
of Fundação Getulio Vargas as a
requirement to obtain the title of Master
in Business Administration

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Committee members:

Prof. Dr. Eliane Zamith Brito
FGV – EAESP

Prof. Dr. Delane Botelho
FGV – EAESP

Prof. Dr. Valter Afonso Vieira
UFPR

My dedication is to everybody who tries
to make the world better.

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ABSTRACT

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 thesis has the goal to verify this gap and, in addition, verify whether emotional contagion is more common in females than in males as stated in previous studies. 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 thesis 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 to analyze if there is difference based in gender. The results demonstrated that there is not a significant difference between genders; female and male equally suffer Emotional Contagion. The third hypothesis was related to whether the positive emotions vs. 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. A discussion of the theoretical and practical implications and limitations for these findings are presented.

Keywords: Consumer Behavior; Emotion; Emotional Contagion; Experiment

RESUMO

Contágio Emocional é o mecanismo em que imitando e sincronizando automaticamente as expressões faciais, de vocalizações, as posturas e os movimentos com outra pessoa ocorre uma convergência de emoções entre o emissor e o receptor. Pesquisas deste mecanismo realizado geralmente nas áreas de Psicologia e de Marketing tende investigar as interações face-a-face. No entanto, uma questão permanece em resposta, pode o contágio emocional ocorrer com as expressões faciais em interações com fotografias; situações que podem ocorrer compras por catálogos ou sites. Esta tese tem o objetivo de verificar essa lacuna e, em além disso, verificar se o contágio emocional é mais comum entre as mulheres do que os homens como apresentado em estudos anteriores. As emoções têm sido estudados porque é intuitivamente evidente que as emoções afetam a dinâmica da interação entre um vendedor e clientes (Verbeke, 1997), em outras palavras, as emoções podem afetar significativamente o comportamento do consumidor. Portanto, essa tese verificou também se as expressões faciais que transmitem emoções podem estar associadas a avaliações de produtos. Para investigar essas questões, um experimento foi realizado com 171 participantes, estes foram expostos a uma propaganda onde a modelo estava sorrindo (emoções positivas) ou estava na condição não sorriso (neutro). Como resultado, há diferença do número de indivíduos que sofreram contágio entre as duas condições. Um especialista e dois alunos analisaram os registros filmados das expressões dos participantes, e descobriram que os participantes que viram o estímulo positivo imitou mais a imagem (sorrindo) confirmando o Contágio emocional nas fotos (primeira hipótese). A segunda hipótese era verificar se existia diferença entre os sexos. Como resultado tem se que não houve uma diferença significativa no gênero, demonstrando que tanto homens como mulheres sofrem contágio emocional. A terceira hipótese está relacionada se as emoções positivas versus neutras adquiridas a partir da expressão facial positiva da foto estão associadas a uma melhor avaliação do produto, também exibido na foto. As evidências mostram que o anúncio com expressão positiva pode alterar de forma positiva a atitude, a simpatia, a confiabilidade, e a intenção de compra dos participante comparados com aqueles que foram expostos à condição de neutra. Portanto, a análise conclui que as expressões faciais exibidas em fotos produz contágio emocional e pode interferir na avaliação do produto. Essa dissertação termina com uma discussão sobre implicações teóricas e práticas além das limitações desse trabalho.

Palavra Chave: Comportamento do Consumidor; Emoção; Contágio Emocional; Experimento

1. INTRODUCTION

Psychology and marketing theories have been researching emotions as a package of components, including consciousness; facial, voice and body expressions; neuropsychology; automatic activity of the nervous system; and the operationalization of behavior (C. E. Izard, 1992; Kappas, 1991; Russell & Barrett, 1999; Smith & Ellsworth, 1985). Most assent that an emotional package is comprised of many components (Hatfield, Cacioppo, & Rapson, 1994). The current thesis emphasizes one of the common components found in emotion: facial expressions.

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, 1992; Sobol-Shilder, 2011). 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 (Buck, Savin, Miller, & Caul, 1972; Ekman, 1993). They demonstrate the feeling (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.

Theorists have considered the congruent reactions of one individual to the observed emotional experiences of another to be the result of empathic processes. There is general agreement that empathy consists of both cognitive and more primitive emotional components. Hatfield and her colleagues (1994) made a distinction between these sophisticated cognitive forms of empathy and the primitive, basic process of emotional contagion, and provide evidence that people can feel what others are feeling and respond in a congruent manner.

The idea that one person can be influenced by the emotion of the sender is called *emotional contagion*. People tend to imitate each other's postures, mannerisms, vocal expressions, and emotions during interactions with others (Hatfield, et al., 1994).

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 nonconsciously 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.

An important consequence of emotional contagion is related to attention, emotion and timing of behavior, such as: adaptive utility (or influential) in social situations (Hatfield, et al., 1994). The consequences of emotional contagion in the event of purchase can bring practical benefits to retail and service (Howard & Gengler, 2001; Pugh, 2001). 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). For instance, the emotions displayed by service providers when they interact with customers can be a factor in the quality of service offered (Bozionelos & Kiamou, 2008). 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). Some researchers have also shown that facial expressions as empathic systems can influence customer perception of the environment or product (Howard & Gengler, 2001; Pugh, 2001). 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). This 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; Tsai & Huang, 2002); 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 addition, this study has also the goal of verify whether female and male can suffer Emotional Contagion, since many authors support the idea that female has more facility to recognize emotions in facial expressions than men in situations as face to face interaction or movies (Buck, et al., 1972; Dimberg & Lundquist, 1990; Freitas-Magalhães, 2004; Schwartz, Brown, & Ahern, 1980).

This thesis proposes to study 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.

In other words, this study 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.

This research is relevant not only to direct sales (face-to-face), where there are many studies of emotional contagion (Howard & Gengler, 2001; Pugh, 2001; Tsai & Huang, 2002). The research in this area can also bring direct benefits to e-commerce, catalog sales, outdoor ads and seller TV channels. Indirect benefits may also occur in other forms of dissemination of products such as e-mail marketing, pictures in magazines, billboards, brochures, or leaflets. In general, marketing managers make decisions based on presumed causal relationships (Vieira, 2002); therefore, this research provides interesting information about facial expressions affecting the purchasing behavior of costumers.

The thesis 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. Distinct theoretical views about culture and genders are explicated. Next, previous research on the transmission of emotion through photos and films is analyzed in relation to the current thesis. Finally, there is an explanation of emotional, as well as how the process occurs in individuals.

2.1. Emotion

There is no consensus in the literature on a definition of emotion (Cabanac, 2002; Kleinglnna & Kleinglnna, 1981; Russell & Barrett, 1999). Colloquially, the term emotion is defined with reference to a list of feelings. For example, according to the *American Heritage Dictionary*, emotion is a mental state that arises spontaneously rather than through conscious effort and is often accompanied by physiological changes. It is a feeling: the emotions include joy, sorrow, reverence, hate and love (The American Heritage 2009).

Often people think of emotion in categorical terms such as “I was scared” or “I am happy today”. The categorical approach to the study of emotions is also common in psychology (Smith & Ellsworth, 1985).

Many people think about emotion in categorical terms. The categorical approach to the study of emotions is common in psychology (Smith & Ellsworth, 1985). Science tries to define what emotions really are, and categories a means to do that. And as said before, sometimes, categories are a way to try to explain what emotion is. Science tries to define what emotions really are. 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 a state of physiological arousal and of cognition appropriate to this state of

arousal (Schacter & Singer, 1962). Others, 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). Or, emotion is considered as an irruptive motivational complex in higher cognition (Griffiths, 1998). 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. After studying 92 definitions and 9 skeptical statements about the concept of emotions, the authors finalized their article with an attempt at a unifying concept:

Emotion is a complex set of interactions among subjective and objective factors, mediated by neural/hormonal systems, which can (a) give rise to affective experiences such as feelings of arousal, pleasure/displeasure; (b) generate cognitive processes such as emotionally relevant perceptual effects, appraisals, labeling processes; (c) activate widespread physiological adjustments to the arousing conditions; and (d) lead to behavior that is often, but not always, expressive, goal directed, and adaptive. (Kleinglnna & Kleinglnna, 1981, p. 355)

This conception by Kleinglnna and Kleinglnna (1981) is an attempt to explain what emotions really are. Additionally, as explained before, researchers have accepted a usual list of emotions, for example: anger, disgust, fear, joy, sadness, and surprise (Cabanac, 2002; Ekman & Friesen, 1971; Ekman, Levenson, & Friesen, 1983; Russell, 1980). This list of emotions can be divided into a dichotomy of pleasure and displeasure. Fear, anger, pain, sadness, disgust, sorrow, contempt, and jealousy all possess a strong negative dimension (displeasure); and love, joy, hope and happiness possess a strong positive

dimension (pleasure). Both desire and surprise can be unpleasant or pleasant, depending on the nature of the stimulus or event expected or presented (Cabanac, 2002).

Emotions are also relative among situations or people or when comparing objective outcomes with imagined outcomes that might have been. Brendl and Higgins (1995) found that the bronze medalists at the 1992 Summer Olympics apparently were happier than silver medalists even though an Olympic silver medal is of higher value than a bronze medal. The author's explanation for this was that the third place is more positive when it is compatible with a person's goal. In other words, the second-place winner usually wants to be in first place, but the third does not (Cacioppo & Gardner, 1999).

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).

Table 1 – Summary of the concept of Emotion

Authors	Emotion
American Heritage Dictionary (2009)	Mental state that arises spontaneously It is accompanied by physiological changes It is a feeling
Cabanac (2002)	Mental experience with high intensity and high hedonic content Response to a stimulus Originated from afferent nervous pathway or mental
Kappa (1991)	Mental state Somatic signal participate in mental experience Nervous activity Part of communication Response to external and internal stimuli
Kleinglnna & Kleinglnna (1981)	Neural and hormonal system interaction Is related to affective experience Generate cognitive process Activate widespread physiological adjustments to the arousal condition Can lead to behavior
Schacter & Singer (1962)	State of physiological arousal and cognition appropriated to this state of arousal

Font: Produced by the author

Therefore, emotions evolved a rapid and coordinated response system that allow humans to quickly and efficiently response to events that affect their welfare (Eckman et al., 2009). For me, as a student and a marketing professional, emotion is a complex set of interactions

that includes affect process, cognition process and reflex. It is a mental state, which helps people to communicate. Emotion can also activate widespread physiological adjustments (including facial, voice and body expressions) as said Kleinglnna (1981). The Table 1 summarizes the definitions of emotions.

2.2. Differences Between Emotion and Mood

Despite of all the definitions mentioned, there is still no consensus about the concept of emotion. While researchers have now been trying to produce a unique definition for some time, so far what we have is a number of partially overlapping definitions. The same is true of the term mood, with which many different, if related, conceptions are also associated.

Emotion and mood are frequently used interchangeably; however most academics agree that they are different constructs (Beedie, Terry, & Lane, 2005; Frijda, 1994; Schwarz & Clore, 1983). 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 among both academics and non-academics. The difference between the two concepts will be described based on their study. Only the academic views will be considered. The non-academic views are less relevant here because they say more about common-sense theories than about scientifically informed ideas. Therefore, for more information about the non-academic views, refer to Beedie et al. (2005).

Christopher Beedie and his colleagues (2005) analyzed 65 published articles that included criteria to distinguish emotion from mood, finding 8 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%). Usually, the articles cite two or three distinctions between emotions and mood; however distinctions vary widely across articles. 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).

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. Oatley and Jenkins (1992) argue that 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.

The functions of emotion and mood are another unclear theme. Some authors have proposed that emotions bias action and moods bias cognition (Mendl, Burman, Parker, & Paul, 2009); others have said that mood signals the state of the self-whereas emotion signals the state of the world (Frijda, 1994; Schwarz & Clore, 1983). Nonetheless there is no general agreement about which is the function of each term; they assert that "both help the organism adapt and survive in an ever-changing environment" (Beedie, et al., 2005, p. 872).

About intensity, Beedie and his colleagues (2005) explain that researchers concur that mood is less intense than emotion, but is a more persistent state of feeling. In other words, it is "a persisting state of low level emotion" ((Mandler 1983 p. 145) cited in (Beedie, et al., 2005)); the arousal involved in a mood is less intense, but the duration is longer.

On awareness of cause, the conclusion of the study of Beedie, Terry and Lane (2005)'s study is that usually it is possible for people to remember a specific event that called forth an emotion, but this may not be the case for a mood. While emotion results from specific

stimulus, a mood can occur without apparent cause, or it is more difficult for people to identify the causes. They quote Russell and Feldman-Barrett (1999) on this difference: “compared to emotion which is highly object-focused, mood represents free-floating affect ... subject to many causes from specific events such as the weather to diurnal cycles, some of which are beyond the human capacity to detect” (Beedie, et al., 2005, p. 871).

The review done by Beedie et al. (2005) conclude by focusing on the physiology of emotion *or* mood differences as opposed to proposing distinct physiological responses for each. Table 2 summarizes the differences between the two terms as discussed previously.

Table 2 – Summary of the Differences between Emotion and Mood

Themes that differentiated the terms:	Emotion	Mood
Duration	Endure less time	Endure longer
Intentionality	Directed at something	Nonspecific
Cause	From specific events	From many minor incidents or cognitive processes
Consequences	Alter action readiness	Produce generalized cognitive consequences
Function	Bias action	Bias cognition
Intensity	More intense / arousal	Less intense arousal
Awareness of cause	Highly object-focused	Free-floating affect
Physiology	Distinct physiological patterning	

Font: Produced by the author, based on Beedie et al. (2005)

Therefore in this thesis, for me the duration of the feeling, the cause, and the action are the main difference between the conceptions. When you think about what happened, it is mood; when it is more spontaneous and the action is more irrational, it is emotion (Frijda, 1994). The intensity is also relevant; when is more intense, it is emotion (Beedie, et al., 2005).

2.3. Facial Expression

The human expression is a very complex area of research. There is a popular proverb that says “A gesture is worth 1000 words, but it takes more than 1000 words to cover the act of an expression”. Research has been done on nonverbal expressions proving that people place great emphasis on nonverbal cues when forming impressions of individuals

(Depaulo, 1992). According to Verkebe (1997), perhaps 50% of the information that is transmitted during a conversation is nonverbal.

According to the Facial Action Coding System (FACS), there are more than 2000 expressions classified (Lien, Kanade, Cohn, & Li, 2000). 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. Ekman and Friesen (1978) defined 46 distinct action units, each of which corresponds to activity in a distinct muscle or muscle group and produces characteristic facial distortions which can be identified in the images.

The face has more than 40 independent muscles, which results in a surprising number of expressions. Figure 1 lists the muscles involved in facial expressions.

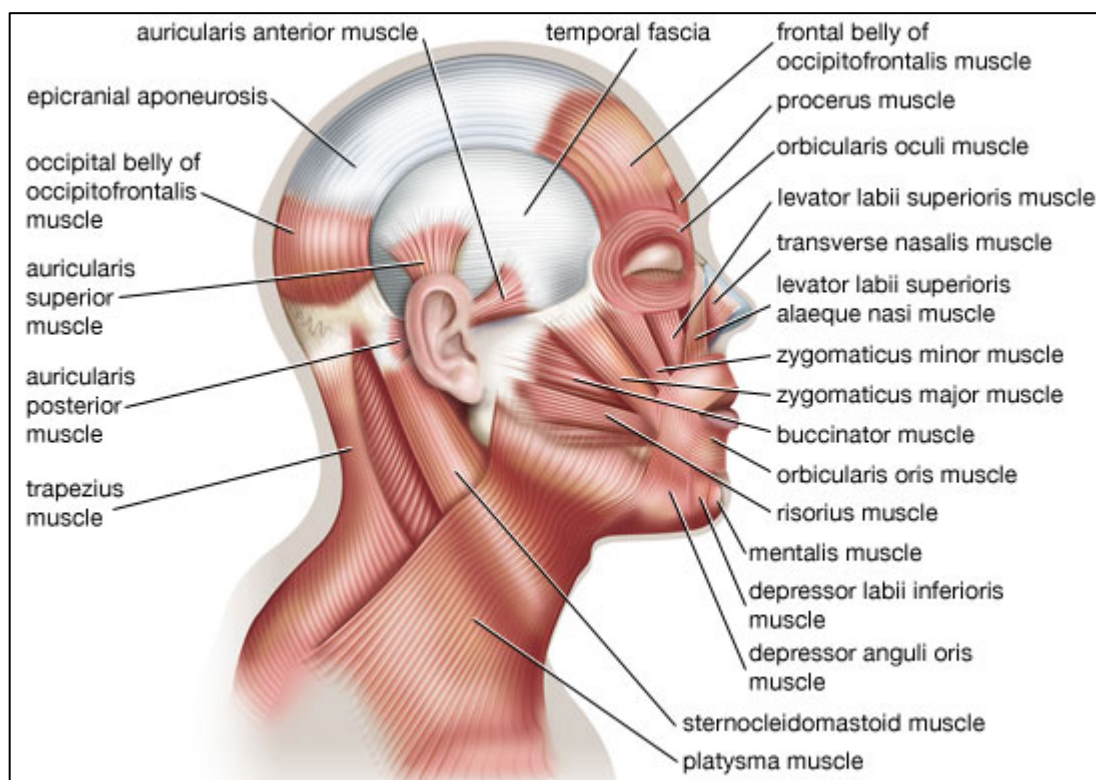


Figure 1 – Muscles involved in facial expressions
Font: Encyclopedia Britannica, 2008

There are doubts about whether facial expression could be part of human communication or not, and also if expressions can be considered a way to transmit emotion to others.

Researchers as Buck et al (1972), Ekman (1993, 1997) and Shimamura, Ross and Ben (2006) agree that facial expressions are a means of communicating, transmitting the emotion of the person who conducts them. Therefore the facial expressions are the most rich and important way to express our feelings and emotions between people.

For Goldie (2000), for instance, the main function of expression is communication, showing a feeling to the other without need for verbal communication. For Ekman (1993) facial expressions often foreshadow, amplify and even supersede verbal communication. For example, a smile, a frown or a surprised expression can convey powerful socio-emotional dispositions.

In this discussion, Ekman (1997) offers an important word of caution: “Facial expressions do communicate information, but we have to be careful, for the word communication may seem to imply that expressions are made intentionally to send a message. While people can make facial movements deliberately to send a message, facial expressions of emotion are not so made” (Ekman, 1997, p. 337) So, we can send information without thinking about it. For instance, when you are talking to another person you make many expressions of emotion without making a conscious point of doing so, and they are usually consistent with your message. Fox and Spector (2000) affirm that nonverbal cues are seen as less controllable than words or directed action.

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.

Ekman (1997) also explains that there are differences between conversational signals and facial expressions of emotion. The most important explanation is that a conversational signal is part of the structure of a conversation, and “is governed by the rules which govern the production of speech”. The flow of both verbal and nonverbal signals is related to the semantic content of the conversation. Now it is true that like conversational signals, facial expressions of emotion can occur during a conversation and reveal emotions in response to what is being said or not being said. However they can be recognized as a different

category based on a second distinction related to the scope of the facial movements deployed. To Ekman (1997) facial expression of emotion involve activities across the face, in other words, change more muscles than conversational signals, which usually move just one region of the face. It is thus, in physical terms, much easier to perform a conversational signal than a facial expression of emotion – even though often the latter occur without conscious effort.

The main and distinctive facial expressions that Ekman and his colleagues 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 (however, their intensity is perceived differently among different ethnic groups).

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. More recent research suggests that the unique smile associated with positive emotion involves a contraction of the muscle around the eye, raising the cheeks high (cheek-raise or Duchenne smiling). “In contrast to smiling without cheek raising, adults engaged in more smiling with cheek-raising while watching positive than while watching negative films, and their cheek-raise smiling was significantly correlated with self-reported positive emotion” (Ekman, et al., 1990). Based on such evidence, it is proposed that cheek-raise smiling or Duchenne smiling is uniquely associated with enjoyment.

Therefore, analyzing the smile itself, researchers have posited that in theory there are three distinct types of smiles: the felt smile (spontaneous expressions of positive emotion, often a Duchenne smile), the false smile (deliberate attempts to appear as if positive emotion is felt when it isn't), and the wretched (miserable) smile - when you have a miserable feeling (not positive) that occurs spontaneously, or when you are in a situation that you do have anything to do and the smile appears (for example: in embarrassment or shame) (Ekman & Friesen, 1982).

2.4. Facial Expression as Emotion

There is ongoing discussion among researchers about whether emotional behavior is part of emotion. However, evidence has now accumulated suggesting that adopting a requested facial pattern of emotion may induce a feeling of this particular emotion, even in the absence of any eliciting event (Duclos et al., 1989; Ekman, 1992; Ekman, et al., 1990).

“Emotion responses” may include certain changes in surface skeletal muscles, breathing, vocal or other sound-producing structures, hair, surface capillaries, or exocrine gland secretions. Kleinglnna and Kleinglnna (1981) reviewed various papers on the topic, to write the paper “What Emotions Really Are”. In their paper they analyzed 69 definitions of emotion. Out of these, only two definitions emphasized emotional behavior strongly enough to fit into the category of emotion responses described above. But, 43 others mentioned behavior as a part of emotion.

Emotion can result from sensation, perception, memory recall, reckoning (assessment) and imagination. The signs of emotions are autonomic responses, facial expressions, tachycardia, and sweating (Cabanac, 2002).

Some researchers assert that facial expression is part of emotion and try to correlate each facial expression with a specific emotion (Dimberg & Lundquist, 1990; Ekman, 1992; Hess, Philippot, & Blairy, 1998). In this vein, in “Basic Facial Expression” Ekman and his colleagues presented their theory that there are universal facial expressions that can be easily identified and understood across cultures (Ekman & Friesen, 1978; Hatfield, et al., 1994). These basic facial expressions include: anger, disgust, fear, joy, sadness and surprise.

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).

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.

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. However, more than one emotion “was perceived for the disgust, fear, and anger expressions” (Ekman, et al., 1987, p. 716). According to this paper, the failure to find any secondary emotions for the expressions of happiness or many secondary emotions for either the sad or the surprise expressions was not consistent with past findings. Ekman et al. (1987) offer some possible explanations about why their research did not find secondary emotions for the expressions of happiness, sadness or surprise, but carefully clarify that there was no statistical explanation (Ekman, et al., 1987). They 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.

Since it is hypothesized here that there is a relationship between emotions and facial expressions, it is important to explain what a facial expression of positive emotion is. The facial muscles which are usually analyzed by the researchers (Ekman, 1992; Ekman & Rosenberg, 2005; C. E. Izard, 1992) are: M.frontalis, M.corrugator supercilii, M.orbicularis oculi, M.zygomaticus major, M.levator labii superioris, and M.depressor angulioris. Positive emotions typically move the following muscles: M.orbicularis oculi, M.zygomaticus major, and M.levator labii superioris.

In addition, it must be noted that the intensity of positive emotion is not the same in all the situations. When positive feelings are weak the smile involves only slight muscular contractions, which are infrequent and short, but rarely less than two-thirds of a second. When positive feelings are very high, the smile involves very strong muscular contractions, which happen often and are long, but rarely more than four seconds (Ekman & Friesen, 1982).

2.5. Cultural Differences in Facial Expressions

Continuing research has shifted the picture about whether emotions are universal. Some earlier studies (from the 1950s to the 1970s) concluded that the meanings of facial expressions differ from culture to culture, i.e., cultures can vary in how they deploy these expressions to serve other social functions. A particularly nuanced example is Ekman and Friesen's study (1982) suggesting that Japanese and Americans showed the same facial expressions when experiencing fear, disgust and distress when they were alone; however, when they were in a social situation, they would follow different display rules. In these cases, the Japanese covered the negative emotions with a smiling mask (more than the Americans did). On the other hand, new research has been showing that a number of facial expressions are universal; the differences are found more in the intensity of emotional expressions or in the situations where the culture can be involved (Ekman, et al., 1987).

A study conducted by Ekman et al. (1987) isolated the facial expression, which transmitted the emotions (happiness, sadness, disgust and surprise) to be distinguished by observers. They tried to take each facial expression out of social context, eliminating simultaneous speech, vocal clues, and body movements; freezing the expression in photographs; forcing

attention to it; to ask them for judgments which emotion each facial expression has. In this study facial expression from different cultures were used.

The observers could not easily identify anger and fear. The result replicated previous findings from (Carroll E. Izard, 1971). There was some evidence of cultural differences in intensity judgments but not whether people could identify the expressions. They used three expressions for each of six emotions judged by members of 10 cultures (total of 180 combinations). The high level of agreement across cultures and expressions is presented in Table 3. For instance, the participants saw three expressions of happiness from an Estonian model, and had 90% of congruence that the model was expressing happiness.

Table 3 –Single-Emotion Judgment Task: Percentage of Subjects within Each Culture Who Chose the Predicted Emotion

	Happiness	Surprise	Sadness	Fear	Disgust	Anger
Estonia	90%	94%	86%	91%	71%	67%
Germany	93%	87%	83%	86%	61%	71%
Greece	93%	91%	80%	74%	77%	77%
Hong Kong	92%	91%	91%	84%	65%	73%
Italy	97%	92%	81%	82%	89%	72%
Japan	90%	94%	87%	65%	60%	67%
Scotland	98%	88%	86%	86%	79%	84%
Sumatra	69%	78%	91%	70%	70%	70%
Turkey	87%	90%	76%	76%	74%	79%
United States	95%	92%	92%	84%	86%	81%

Font: Ekman, et al. (1987)

Another study used European-American and Asian-American women as stimulus of emotion to provide emotional expressions. In this experiment, they proved that people can recognize emotions and be affected by different cultures and races. However, they found that the European-American people in the study were more expansive (a term fully discussed below) and “caught” the emotional contagion more easily than the Asians (W. Doherty, L. Orimoto, T. M. Singelis, E. Hatfield, & J. Hebb, 1995)

Facial expressions of emotion are universal because the same expressions are observed and modeled around the world in response to the same types of emotionally evocative

situations. Universal expressions originate from an evolved emotion-response system (Czymek et al., 2009).

This topic is relevant to this study because shows that any culture and ethnicity can recognize emotions. This research is applied in Brazil, where the culture is very mixed, being easily found many different cultures and races in small samples. It is also important, because shows that anyone can be express their emotion in your face, and can be recognized. In this case, regardless of race of the model receivers may identify the expression of emotion.

2.6. 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; Lundqvist, 1995). 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).

Emotional contagion can occur in a conscious or unconscious manner (Barsade, 2002). The theory of the conscious level of emotional contagion explains that people compare their emotions with the other people around them in order to adapt themselves when appropriate. According to Barsade (2002), in the absence of other social information people try to observe the other's expressions in order to copy them and produce similar behavior. For instance, persons visiting a lawyer for the first time observe the emotion expressed by the lawyer as they attempt to create an appropriate social interaction, mimicking his/her affect with minor discrepancies. This unconscious mimicry process leads to emotional contagion when the body's automatic tendency to mimic and synchronize with the facial expressions, vocalization and movements of other people converts those actions into emotion. This mimicry is considered to be a primitive behavioral reflex that occurs at a physiological and nonconscious level (Lundqvist, 1995).

Studies on emotional contagion have been conducted showing that the emotional reactions of observers exposed to the facial expressions of "transmitters" suggest an affective response (mimicking or sympathetic reaction). "The typically argued motive for this mimicry is to affiliate or empathize with others" (Barger & Grandey, 2006, p. 1230). Cognitive and affective synapses do not occur when there is difficulty in encoding the receptor expression (Hess, et al., 1998; Howard & Gengler, 2001). That is, the mimicry (a primary reaction) occurs as part of the empathic process underlying the decoding of emotional facial expressions.

On the other hand, Bavelas et al. (1986) explain that in a previous study (1985) in an experimental laboratory they studied expressions of pain, smiling, laughter, discomfort and disgust among others, and found that apparently the motor mimicry was not a simple reflex but, rather, was sensitive to social and, especially, communicative conditions. One year later, the authors supported their thesis in two studies, arguing that motor mimicry is not only an informative act but a communicative one.

Bavelas (1986) explains that motor mimicry has been conceptualized as primitive empathy, as a reflex based on cues previously conditioned to one's own direct experience, as an expression of vicarious emotion, and as a manifestation of a trait (empathic ability)

or of a cognitive operation. This mimicry is, rather, an expression of emphatic feeling from one person to another. The intent of mimicry is to communicate affect to others.

Psychologists have suggested that mimicry may serve the adaptive function of aiding social survival; that mimicry is social glue binding people together (Chartrand, 2005). Therefore, motor mimicry is an unintentional imitation of emotional expressions of interactants that represents the first step of the contagion mechanism (Neumann & Strack, 2000).

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)

Figure 2 shows how the process of emotional contagion occurs. (1) There is an interaction between two people; (2) the brunette girl shows happiness through a smile; (3) the mimicking face occurs in the blonde girl (this may take up to 1/8 of a second); and finally, (4) contamination of emotion appears in the blonde girl's happiness.

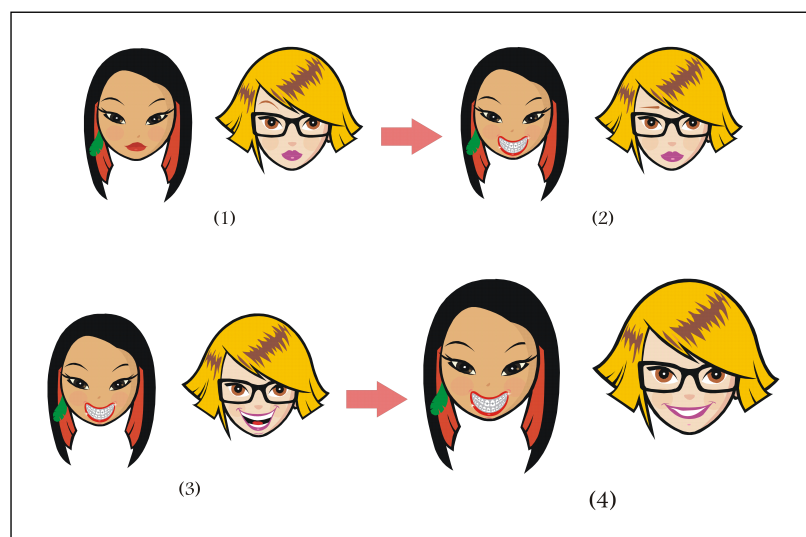


Figure 2 – Process of Emotional Contagion
Created by the author.

According to Hatfield and her colleagues (1994) there are three assumptions that characterize their theory of emotional contagion:

1 - 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.

2 - 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).

3 - People tend to "catch" / "feel" the emotion of the other, moment to moment.

Parts 1 and 2 of this process are called "Primitive Emotional Contagion", but in the emotional contagion hypothesis the facial expressions in particular are targeted. Subjective emotional experiences are affected, moment to moment, by the activation of feedback from such facial mimicry. "This point of view reflects the thesis that emotion-related movement in the face is controlled by an innate circuitry. This innate circuitry affects physiological loops in the body that give rise to specific emotions" (Tassinari, Cacioppo, & Geen, 1989). As a consequence people tend to catch others' emotions (Verbeke, 1997).

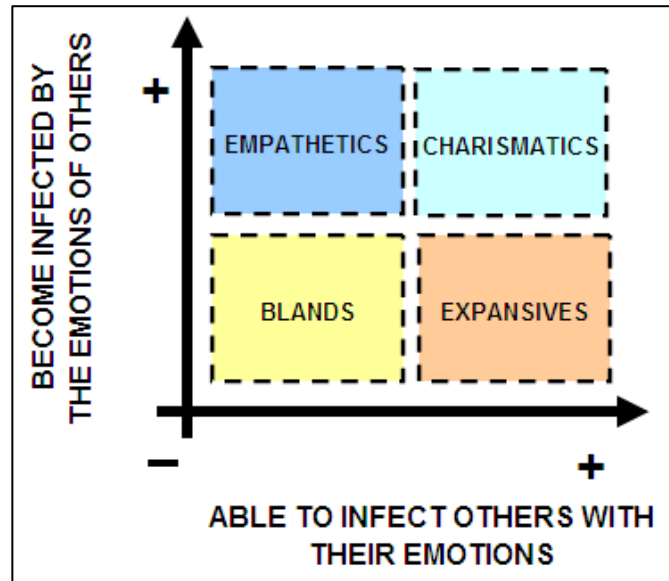
In other words, the process of primitive emotional contagion, as discussed by Hatfield et al. (1994), involves two mechanisms: (1) mimicry and (2) feedback. Mimicry is synchronous imitation of others' expressions that facilitates social interactions (Barger & Grandey, 2006; Hatfield, et al., 1994). The 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 involuntary imitation of emotional expressions (motor mimicry) may be due to a more general mechanism whereby an image or thought can cause or facilitate behavior in the observer. 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).

Field studies show that the mimicry occurs in affiliation goal, for instance between mother and child (Meltzoff & Moore, 1992) or to facilitate social interaction, for example during interviews (Barger & Grandey, 2006). In other words, mimicry occurs both in situations where people know each other -- babies of a certain age start to imitate their mother's smiles -- and in situations where they do not know each other -- newborns will cry if they hear another, unfamiliar, baby cry. For both adults and infants the motor mimicry occurs in many types of forms, including postural, facial, emotional and motor (Aylward, 2008). Researchers argue that mimicry can also occur among strangers who have no affiliation goal (Chartrand & Bargh, 1999). Pugh (2001), in research done among employees and guests of a hotel, found mimicry between guests and the front desk staff, who had had no prior interaction with each other.

The emotional contagion hypothesis focuses primarily on two main components. First, as explained previously, it suggests that some processes are responsible for emotional contagion. The second part of the hypothesis is that there is strong individual variation in the degree to which some people are susceptible to emotional contagion or are able to transmit their emotions to others (Verbeke, 1997). Genetics, gender, early experience, and personality characteristics should contribute to individual differences in susceptibility to emotional contagion (Doherty, 1997). Then, some "people might be powerful transmitters of emotions (they are able to infect others with their emotions) and others might be powerful catchers of emotions (they assume the senders' emotions)" (Verbeke, 1997, p. 621). Although in theory some people are catchers of emotions and others transmitters of emotions, these categories are not mutually exclusive. Some catchers might be transmitters and vice versa.

Verbeke (1997) divided people into four groups: charismatic, empathetic, expansive and bland. Graphic 1 illustrates these types in four quadrants.



Graphic 1 – Classification of Different Susceptibility to Emotions
Font: Adapted from Verbeke (1997).

The charismatics are people who are able to infect others with their emotions and also to become infected by the emotions of others. The empathetics are susceptible to emotions, but are not able to infect others with their emotions. The expansives are able to infect others, but they do not “catch” emotions from others (as evidenced by their insensitive behaviors). The blands are people that neither are able to infect nor to be infected.

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, et al., 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). For example, if a sender fails at a task and then tries to express a positive emotion, his/her behavior may seem incongruent. This is true of the false smile, for example. In such cases, receivers can still display emotional contagion but it will be less intense and slower than in the case of a real emotion.

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 & Blair, 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). The Duchenne smile is what is perceived as the more affective smile. The muscle movement is reduced and the configuration of the smile is total and complete (Freitas-Magalhães, 2004). The Duchenne smiles are of greater intensity, differ in dynamic markers and social signal value, and hence are more likely to induce empathy than other smiles (Ekman, et al., 1990).

Duchenne smiles occurred more often than other types of smiles when adult participants watched pleasant films or when they self-reported amusement during both solitary and social situations. Participants who displayed Duchenne smiles also reported more positive experiences when pleasant scenes and humorous cartoons were presented (Soussignan, 2002).

A study that utilized FACS (Facial Action Coding System) to measure the facial behavior of adult females when viewing motion picture films demonstrated a significant correlation between the amount of happiness reported in response to each positive film and the frequency, duration, and intensity of zygomatic major actions. In this study, the subjects were alone and did not know that a camera was recording their behavior. Two films were shown to the receiver: a puppy playing with a flower, and a gorilla dancing in a circle in a moat of water (Ekman & Friesen, 1982).

Another study, conducted by Edell and Burke (1987), examined whether feelings could occur as a result of viewing television commercials. They found that both negative and positive feelings could occur and that both are important predictors of the ad's effectiveness, proving again that movies can transmit positive affect.

In situations in which participants are watching an unpleasant medical procedure on video it is easy to perceive that emotion can be transmitted and it can have a corresponding facial expression. Usually people display the classic "disgust" face (Bavelas, et al., 1986).

In addition, participants that watched a prerecorded videotape of a target person describing the happiest or saddest events of his or her life tended to experience the emotions of the target person. More specifically, they felt happier and expressed more happiness if they had watched an interview with a happy target person (Hsee, Hatfield, Carlson, & Chemtob, 1990).

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).

The emotional stimuli provided by pictures can be in the form of people, animals, nature, objects, events and scenes, sometimes sampling the range of visual representations of the world (Lang, 1995). According to the Lang, as of 1994, the Center for the Study of Emotion and Attention (IAPS) has a collection of many pictures that can be used in laboratories. They are selected on the basis of normative affective ratings and can be organized into affective classes; for example: unpleasant (poisonous snakes, aimed guns, and pictures of violent death), pleasant (happy babies, appetizing food, and attractive nudes), and neutral (umbrellas, hair dryers, and other common household objects) (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.

Studies have also proven that there is a difference between the expressions of women and men. For example, Freitas-Magalhães (2004), in a study on smiles, asserts that both women and men perceive women's smiles as brighter than men's. In the evaluation, the factor of female gender led observers to perceive a stimulus as more positively expressive than a stimulus with male gender. Studies using facial EMG and emotional imagery have presented evidence that females actually generate larger facial muscle activity than males. In other words, females are more facially expressive than males in emotion-provoking situations (Buck, et al., 1972; Dimberg & Lundquist, 1990; Schwartz, et al., 1980).

Females also tended to be more reactive when exposed to pictures of different facial expressions (Dimberg & Lundquist, 1990). In the case of fear emotions, Thunberg and Dimberg (2000) demonstrated that females, as compared to males, produced a larger corrugators muscle reaction to fear-relevant stimuli. However, there were no differences in response between males and females in SCRs (skin conductance response) or ratings of unpleasantness. Studies on mimicry of facial expressions have shown that mimicry occurs rapidly and for different types of stimuli (Chartrand & Bargh, 1999).

Studies explain that women tend to outwardly display/manifest more sensations than men, who seek to internalize the emotion (Buck, et al., 1972; Schwartz, et al., 1980). According to Doherty et al. (1995) traditionally wives and mothers, and members of traditionally feminine professions -- nurses, social workers, and so forth -- are trained to "tune in" to the suffering of others, so that they may help them; while many men -- warriors, athletes, etc. - - may be trained to "tune out" their own and others' suffering. Therefore, women have usually been socialized to be nurturing, emotionally expressive, and emotionally

responsive, whereas men have usually socialized to try to deal logically, coolly, and instrumentally with the demands of the outside world. In their study about differences between women and men, results show that women were significantly more susceptible than men to the emotions of others on all subscales except anger (W. Doherty, et al., 1995).

Thus, traditionally, the two genders have different sensitiveness to the emotional states of others. According to the review made by Doherty et al. (1995), men and woman differ with respect to five characteristics that are the building blocks of contagion.

- First, from birth onwards, girls and women seem to be especially attentive to others' emotional expressions. They establish eye contact faster and spend a greater percentage of time locking eyes with others. Boys and men tend to avert their gaze.
- Second, in some cultures men and women differ in their social orientations.
- Third, they differ in how they interpret emotional cues. For example, in general, women are better than men at decoding nonverbal communications; women and girls are more accurate at judging emotional states and means of communication (face, voice, posture, or some combination of these).
- Fourth, as previously mentioned, men and women differ in their tendency to mimic emotional expressions.
- And finally, men and women have been found to differ in awareness of their own emotional responses. However, Women have more emotional responses than men (W. Doherty, et al., 1995).

Based in this information, the second hypothesis is:

H2 – Emotional contagion from photos occurs more frequently in women than in men in the situations of smiling

This hypothesis will investigate whether emotional contagion that is stimulated by a photo of an unknown person is more frequently perceived by women than men, following the pattern established by studies of gender-differentiated perceptions in face-to-face situations.

2.7. Emotion Influencing the Process of Evaluation

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.

The assumption of rationalists going back to the Ancient Greeks has been that higher forms of human existence, like rationality, foresight, and decision-making, can be hijacked by the emotions (Cacioppo & Gardner, 1999). 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. Accordingly, in this study, emotion will be emphasized as part of the process of decision-making.

Emotion-based distortions in person and object perception have been interpreted in terms of peripheral or heuristic processes, classical conditioning and similar associative phenomena. For many researchers emotions are much more than primitive reflexes. Emotions are not a disruptive force interfering with rationality, but adaptive actions (Cacioppo & Gardner, 1999). A telling illustration can be found in the neurological case of Elliot. Elliot was a businessman who developed a brain tumor that damaged his prefrontal cortex. Although Elliot began behaving irrationally, testing revealed that his intelligence, attention, and memory remained unaffected by his illness. However, Elliot lost the ability to experience emotion, undergoing a radical personality change and becoming quite inept at making good decisions (Damasio, 1994)

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 review are shown in Table 4.

Table 4 – Findings on the Effects of Positive and Negative Emotion on Decision-Making

Positive Emotion	
Potential Benefits	Potential Costs
<ul style="list-style-type: none"> • Cues positive material in memory (Isen et al. 1978) • Promotes creative problem solving (Isen et al. 1987) • Promotes efficiency in decision-making (Isen & Means 1983) • Promotes effort on pleasant or interesting tasks (Staw & Barsade 1993) • Promotes more flexible categorization of items (Isen & Daubman 1984) • Promotes thoroughness in interesting tasks (Isen et al. 1991) 	<ul style="list-style-type: none"> • Promotes risk aversion, more negative subjective utility for losses (Isen et al. 1988) • Promotes behavior designed to protect positive mood (Isen & Simmonds 1978) • Promotes use of heuristics and quick decision-making (Isen & Means 1983) • Difficulty discerning weak and strong arguments (Smith & Shaffer 1991) • Persuaded by peripheral cues (e.g., "expert" label) (Mackie & Worth 1991) • Less likely to use a structured decision protocol completely and correctly ("Ellsbach and Barr 1999")
Negative Emotion	
Potential Benefits	Potential Costs
<ul style="list-style-type: none"> • Not affected by distractions and engage in more message elaboration (Bless et al. 1990) • Less likely to rely on peripheral cues (Worth & Mackie 1987) • Motivated to engage in effortful analysis to change situation & mood (Bless et al. 1990) • More likely to use a structured decision protocol completely and correctly ("Ellsbach and Barr 1999") 	<ul style="list-style-type: none"> • Reliance on well-known decision rules (Mano 1992) • Increased pessimism (Wright & Bower 1992) • Increased negative judgments of others (Fiske & Taylor 1984) • Risk-taking when potential benefits /losses are large (Dunegan et al. 1992)

Font: Elsbach & Barr (1999).

As demonstrated in Table 4, 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.

People's evaluations of other people, objects, events, and interpersonal situations are biased by their emotional state in a mood-congruent manner: people in positive and negative moods tend to make more positive and negative evaluations, respectively (Isen, Daubman, & Nowicki, 1987). Numerous research studies have confirmed that positive

affect can have a favorable biasing effect on product attitudes (Batra & Stayman, 1990; Edell & Burke, 1987).

Subjects in positive emotion have been shown to perceive and evaluate stimuli more favorably than subjects in other emotions (Isen & Simmonds, 1978). The research of Batra and Stayman (1990) shows that emotion appears to affect the amount of total cognitive elaboration and peripherally to affect brand attitudes for readers of print advertising. In other words, this experiment reveals “that positive emotion create less elaboration, which results in more heuristic processing and reduces the extent to which message evaluation -- itself favorably influenced by positive moods -- mediates brand attitudes” (Batra & Stayman, 1990, p. 203).

2.8. 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 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.

Some 120 women took part in the experiment. They did not know each other. “Female participants were used given evidence that women are more susceptible to emotional contagion than men” (Howard & Gengler, 2001, p. 192). 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 experiment demonstrated that observation of the facial expressions of senders by receivers, and the possibility of mimicking their smiles, was a necessary condition for emotional contagion to occur. When receivers were unable to detect their senders' facial expressions, emotional contagion did not occur, and product attitudes were not favorably biased. Therefore, without facial expression emotional contagion does not exist. The article ends 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 enhance 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 process of how emotional contagion affects the perception of product / service is developed in Figure 3. The sender transmits emotion that has changed his affect, changing the perception of the final product or service.

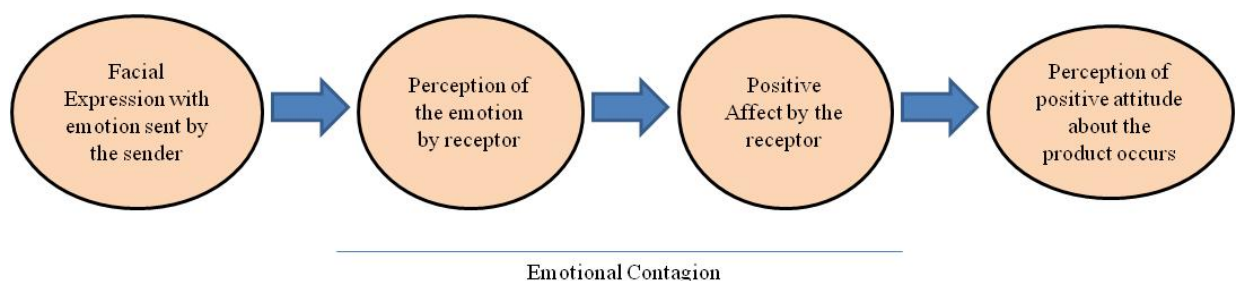


Figure 3 – Process of Emotional Contagion affecting the Product Evaluation
Font: Adapted from Pugh 2001

In this article the idea is to study the facial expression influencing in the product evaluation. What is product evaluation? It is the process of judging the value, importance, or quality of something after considering it carefully (Collins et al., 2009).

Evaluations can be measure with different forms. In this thesis, to measure this construct it was adapted the scale from Berens et al (2005). They used the Evaluation Product scale to analyze different companies' brands influencing in the products evaluation. 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 Petroschius 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; Petroschius & 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”.

Follow by there are a brief summary concepts describing the categories from the Evaluation Product:

Quality is the totality of the characteristics or performance that can be used to determine whether or not a product fulfills its intended application. Defined as that a firm must meet when offering its products or service in competitive markets (Aubert et al., 2010).

Appeal is a quality that the product has that makes people like it or want it. It can be an inclination to support or be loyal to or to agree with an opinion. ("The American Heritage," 2009). In other words, it is the person perception along the appearance of the product.

Reliability: is related to a product that can be trusted or believed because it works or behaves well in the way you expect ("The American Heritage," 2009). It is related to a product that you can be relied on; dependable in achievement. It is product that looks honest.

Purchase intention is a plan to purchase a particular good or service in the future. It is an intended future course of action (scheme) aimed at achieving specific goal(s) or objective(s). According to theories of buyer behavior, purchase intention helps predict subsequent purchase (AubertBona, et al., 2009). Note that some studies report a significant and positive relationship between intention and behavior (AubertBona, et al., 2009; AubertKaryotakis, et al., 2009).

Price represents what must be sacrificed to obtain a product but also the influences perceptions of product quality (Petroshius & Monroe, 1987). In the case of this study is how much (in reais (R\$)) the participant is willing to pay.

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

H3 – The positive emotions vs. neutral acquired from the positive facial expression in the photo is associated to a positive evaluation of the product also displayed in the photo.

If this hypothesis were supported, then many media would have evidence in favor of using emotional faces in their ad in order to get better results for their companies. The companies could have good usufructs exploring facial expression in catalogues, e-commerce and print advertising. This is particularly relevant for makeup, skin care and hair care products that usually include beautiful faces as part of their demonstration of the product.

In summary, the purpose of this study is to examine 3 hypotheses: Emotional Contagion occurs through the observation of a facial expression on a photo; Emotional contagion from photos occurs more frequently in women than in men in the situations of smiling; The positive emotions vs. neutral acquired from the positive facial expression in the photo is associated to a positive evaluation of the product also displayed in the photo.

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.

Emotions can be explored productively in the laboratory and yet provide a framework for studying practical concerns about emotion in society and in the media (Lang, 1995). Therefore, for this study of the influence of emotional contagion in the evaluation of a product, one laboratory experiment was conducted.

3.1. Participants

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. Some of these professors were chosen because the author of the project already knew them, making it convenient to ask them to provide part of their class time to the research. Other professors were randomly selected. Randomization is a process that assigns research participants by chance, rather than by choice. In other words means random allocation of participants to the various treatments; ensuring against systematic errors (bias). 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. In two cases, it was not possible to align the class schedule with the laboratory schedule, so the students were invited to participate outside of class time. 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.

Evidence suggests that students are a 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).

3.1. Experiment Design and Variables

The factorial design of the experiment is 2 (Expression of Joy and Neutral; varied between subjects) by 2 (Females and Males). Participants were randomly assigned to one of the two experiments (positive expression or neutral expression).

The dependent variables are the one that are being tested and measured throughout the experiment. Dependent variables can include performance measures, subjective measures and physical response. In this case, 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 state, course, and studying semester were included in the design to explore the relations with independent and outcome variables.

Covariates were also used to verify the hypothesis in order to remove variability or noise. The ANCOVA design falls in the class of a "noise reduction" experimental design. The covariates included were: the receiver's involvement with the product, the credibility of the printer advertising, the involvement with a preliminary manipulation (watching a movie) and how they feel about buying something for others (related to the main manipulation involving the advertisement).

The three hypotheses were simultaneously explored in just one experiment. Furthermore, the verification of the three hypotheses involves measuring reactions to both a product and facial expression, both of which must be displayed together in a photo. To make the situation reflect actual marketing situations more closely, the photo was incorporated into a piece of advertising.

This study is interested in emotional contagion; therefore it was necessary that the receivers pay attention to the emotion of the sender (i.e., the person in the advertisement photo) (W. Doherty, et al., 1995). To this end, during the manipulation phase the photo was exposed for 8 seconds, before a slide change to the next image.

3.1. Definition of the Products of the Study

Qualitative research was done to define the best type of product to use in this experiment. Eleven in-depth interviews were carried out with female and male undergraduate students from FGV-EAESP Business School São Paulo. The goal of the study was to explore which products the students purchase by catalogue or e-commerce (online). These are channels that usually use photos with people and products together. Finding a product that the target public can and does buy on these channels can make the experiment more realistic. In addition, the interviews examined what main attributes the participants take into account in making a purchasing decision.

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. Of the 11 participants, one spontaneously decided to participate in the research and the other ten had been approached randomly in the fields of the FGV. The age of the participants was between 19 and 21 years.

It was explained to the interviewers that the goal of the study was to explore what students have been buying through different channels. The questions used in this study are presented in APPENDIX A in Portuguese and English. The interviews were conducted in Portuguese. The English translations were done respecting the rules of translating.

3.1.1. Result of the In-Depth Interviews

First: Verifying what products female and male students acquire through catalogue or online shopping.

Through catalogues, the female students normally buy products such as makeup or perfume. *“I buy always a basic product, a blush, or a basic lipstick”*. *“In general, cosmetics, because Avon, Natura do not have stores in shopping malls”*. Male students usually don't buy in this channel. *“I prefer to buy online, it is easy to search, and I don't need to go to some place to get it”*. *“I have never bought from catalogues”*. On the other hand, students in general usually buy books, CDs, DVD, tickets for shows and electronics online. Some of them also buy household appliances. *“Usually I buy books, sometimes I buy CDs or DVDs”*. *“I like to search computers, electronics, or cell phones”*. *“I already bought a video game and a MP3 player online”*. *“I don't buy a lot online, but I already bought CDs, DVDs, a blender, a perfume”*.

Second: Verifying how purchase choices are made by males and by females.

Both genders report that when they buy a product online or by catalogue they look for a specific brand, a specific site that they trust (online), and pay attention to the product price and the delivery price. Women prefer to buy products that are not very expensive, where the purchase risk is low. *“...because it is not of a high value, I usually buy makeup...”* *“The price makes a difference, because buying by catalogue, it is to buy something that you do not see, that you cannot try on, you do not know of the origin of the product”*. *“I don't buy something expensive that I don't know”*. Men usually prefer buying products that they already know. Before searching the Internet they already know which site they will look for, which product they want, and which brand they prefer. If they don't know the website address they Google it. *“When I need to buy something, I can buy it on the internet. I like to buy tickets for soccer games, cinema, and sometimes food such Habbibs or McDonalds”*. On the other hands, the female students like to search more, or just browse different websites with products. *“When I want makeup I can search online, I can talk to my manicurist and look for it in a catalogue, or I can just go shopping with my friends. I like to buy with my friends, and I don't really trust purchasing online”*. Men look for a specific item knowing what they want before they get to the website, but women

browse more, preferring to choose the product at purchase time. *“I buy online because it is easy, fast, there is no line, and I don’t need to wait to buy it”* (male). *“... I use (the picture of the model) to look at the color of the lipstick. Even, sometimes when a mouth of a woman (model) takes my attention, I try to figure out what color she is using. Which color is this? The photos can help you to see the best color, for example, in the case of the lipstick, one thing is to see the color of the lipstick in the page, another is you see in the mouth of a person”* (female – referring a catalogue channel).

Third: Verifying what products the students do not buy by from catalogues or online

Because just one product would be used in the experiment, the product chosen needed to be to both genders. Therefore, it was also important to learn what products male or female students would never buy. Knowing that the male students interviewed do not buy products from catalogues, the product was decided based on online purchasing habits. Males answered that they don’t buy things that should be tried on, for example clothes, socks, or caps. *“I don’t buy anything that I need to try on, I just buy things that I already know how it works, or fits in me”*. They also said that they don’t buy perfumes, soaps or deodorant, because it is much easier to go to the drugstore or to the supermarket to get those. Some of them also answered that their parents buy these supplies, and they don’t need to worry about getting them for themselves. *“It is easy to get it at drugstores, it is faster and I don’t need to pay for the delivery”*. Females, on the other hand, like to purchase makeup, perfumes, and body creams even when they don’t know how the product will fit in their faces or how it smells.

The Table 5 summarizes results of the interviews.

Table 5 – Result of the In-Depth Interviews

	Female	Male
Products acquired through catalogue:	Makeup (Blush, Lipstick, Eyes Pencil, Cosmetics (Body Cream), Perfume.	Perfume
Frequency:	Usually in Hair Dressers	Rare – not in a specify situation
Products acquired through online shopping:	Books, CDs, DVD, Mp3, Cellphone.	Books, CDs, DVD, tickets for shows, cellphone, Mp3, accessories to computers, computer, video game, delivery food, electronics and household appliance
Frequency:	Book – Usually; Others – Sometimes.	Books, Soccer or Shows Tickets – Usually; DVD, Electronics, Mp3, other – Sometimes.
Purchase Choices:	Browse more, preferring to choose the product at purchase time; Website that they trust; Dependent the delivery price; Not expensive products	Browse less, know the product that there are going to buy; Website that they trust; Dependent the delivery price;
Product Not acquired by catalogue or online.	Expensive products in compare other in the same categories, which they do not know yet. For example: a new premium blush, or body cream.	Products they need to try on, or that he is not shopper. For example: soap or medicines – someone of their family is responsible to buy it.

Note: Sample Size 11 participants

This experiment was originally designed to use products that can be applied on faces, such as jewelry, scarves, makeup, eyeglasses or other products that emphasize the face in the advertisement and thus improve the chance of emotional contagion. However, 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 an MP3 player was chosen, because there are fewer varieties compared to books, tickets for shows, CDs or DVDs.

3.2. Developing the stimulus

For the development of stimulus the author of this research developed one ad. It used a facial expression, a product and some basic product information. As described in the theoretical overview previously, female should be better senders of emotional material than men. Consequently, to enforce the condition to different kind of people to “catch” the emotional facial expression it was used as stimulus a woman. The female photos were

chosen from a set of photos developed by Paul Ekman, photos that had already been tested by Ekman 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 feeling positive emotions (happiness/joy) and in the other picture she is feeling more neutral (not happy or sad).

Research suggests that observers can discriminate between authentic and inauthentic facial expressions through subtle facial cues (Ekman, Friesen, & O'Sullivan, 1988). There are a number of ways in which false smiles differ from the felt smiles they pretend to be. False smiles can be marked by differences in the muscles involved, and in their laterality, location, and the timing of the actions (Ekman & Friesen, 1982). In a miserable smile the person does not experience any positive emotion and does not attempt to appear as if positive emotion is felt. Experimental research has shown that reactions to an inauthentic display are less positive than to an authentic, or Duchenne, smile (Ekman, 1992; Ekman & Friesen, 1982; Ekman, et al., 1988; Frank, Ekman, & Friesen, 1993). Therefore, the photo chosen for positive conditioning was one where there is an authentic Duchenne smile.

A primitive emotional contagion perspective would argue that observing an authentic smile is more likely to lead to unconsciously mimicking the expression and feeling more positively due to facial feedback mechanisms (Pugh, 2001; Tsai & Huang, 2002). Hatfield, Cacioppo and Rapson (1994) offer explanation for why authentic smiles may contribute to satisfaction with the encounter that emphasizes affective factors over cognitive factors. About cognitive and affective: affective definitions emphasize feelings of excitement/depression or of pleasure/displeasure, and cognitive definitions emphasize appraisal and/or labeling processes. The affective category contains definitions that emphasize the aspect of feelings of arousal level and pleasure/displeasure (Kleinglnna & Kleinglnna, 1981). Accordingly, having an authentic emotion in the picture enabled unconscious mimicking by students during the experiment.

As described in the theoretical overview previously, female should be better senders of emotional material than men. Consequently, to enforce the condition to different kind of people to “catch” the emotional facial expression it was used as stimulus a woman.

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. Figure 4 shows the stimulus.



Figure 4 – Advertising Emotional Contagion Stimulus
Font: Ad created by the author with Paul Ekman Model image

3.3. Procedure and Cover Story

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. Talking inside the class was not permitted. In the

paper it was explained that all the procedures would appear on the computer screen. After the basics explanations described in the paper, they should just follow the screen's directions. They were asked to pay attention on the question, and told that there were no rights or wrong answers. A code was written down on the paper. After typing this code they could begin the research portion. This code was created just to make sure that they read all the procedures before they started answering questions.

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 expected completion time was 15 minutes. 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. They were instructed not to try to memorize anything from the film, just to watch it. It took around two minutes and five seconds. In the pretest the movie was three minutes and five seconds, but it was cut down because people were feeling bored watching it. After the subjects watched the movie, they were presented with some questions about it. After that, the second stimulus was presented.

Covariate questions were used to understand if participants who already know John Nash's story were unhappier or happier than those who didn't know. These mood-assessing questions are necessary in order to make a comparison with the state of mind after the stimulus and tell if there was a change.

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. Again, covariate questions were used before the stimulus to understand how much the participants knew or like the MP3 player, whether they had ever seen advertising in the Finnish language previously, and how much they tend to believe newspaper ads (advertising in black and white) (Olney, Holbrook, & Batra, 1991).

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. People will catch others' emotions if they pay close attention to them (W. Doherty, et al., 1995; Hatfield, et al., 1994). Therefore, 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.

3.4. Dependent Variables

The scale participants used to evaluate the product was adapted from Berens and his colleagues (2005) as described in the theoretical background. For these measures, multiple-item scales consisting of seven-point Likert or semantic differential scales were used, following Berens et al. (2005). All scales were equal interval scales with semantic anchors for each interval. The scale measures people's attitudes toward the products on four subscales: perceptions of product quality, perceived value of the product offering (appeal and reliability), and purchase intentions (Berens, et al., 2005; Petroschius & Monroe, 1987). An additional question about price was also included. The Table 6 shows the categories used to analyze the evaluation product, the label created for each question that will be used in the Analyzes Chapter in this thesis and the questions.

Table 6 – Evaluating Product

Categories	Label	Measurement
Quality	Attitude 1	•How favorable is your judgment of this product?
	Attitude 2	•What do you think about the quality of this product?
	Attitude 3	•What do you think about the quality of this product in comparison with similar products?
	Attitude 4	•How high do you think the returns of this product are for the customer?
Appeal	Appeal 1	•Do you find this product sympathetic?
	Appeal 2	•Do you find this product attractive?
	Appeal 3	•Does this product give you a pleasant feeling?
Reliability	Reliability 1	•Do you find this product reliable?
	Reliability 2	•Does this product give you a safe feeling?

Purchase intention	Intention 1	•If you were planning to buy a product of this type, would you choose this product?
	Intention 2	•Would you purchase this product?
	Intention 3	•If a friend were looking for a product of this type, would you advise him or her to purchase this product?
Price	Price	•How much would you pay?

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. That means: the author of this thesis (a Native Brazilian) translated from English to Portuguese, then an English Professor from Brazil translated back to English, and to conclude the transition a Native English speaker from Indiana State from in the United States compared both questionnaires. Both versions of the scale are presented in APPENDIX B.

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. Before the second stimulus, the participants were asked to input a command that would upload the advertising to the screen. However, this command was not just to change the slide (with the picture) but also to start the recording of the participant's face. Because the program was a trial version, the camera worked for just a few seconds. These videos were used to analyze the presence of mimicry (one step of the emotional contagion) on participants' faces. All the subjects' faces were taped during the stimulus. 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. Two males were used to score the movies. According to the theory women have more of an ability to identify emotions; therefore if the males could identify positive emotion, the mimicry should be more apparent and strong. Each one of the individuals gave only one answer to each participant. For instance the participant A103 mimicry the positive facial expression (A103 = yes), the participant M110 didn't suffered mimicry (M110 = no). All the participants had a code name. The code name A103 identifies the person among the data (Class A, 1 section, 03 computer numbers). Therefore, at the end of the videotape scoring, we had three answers for each participant. The majority of the answers were used to define the final answer.

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). The entire experiment is present in APPENDIX S.

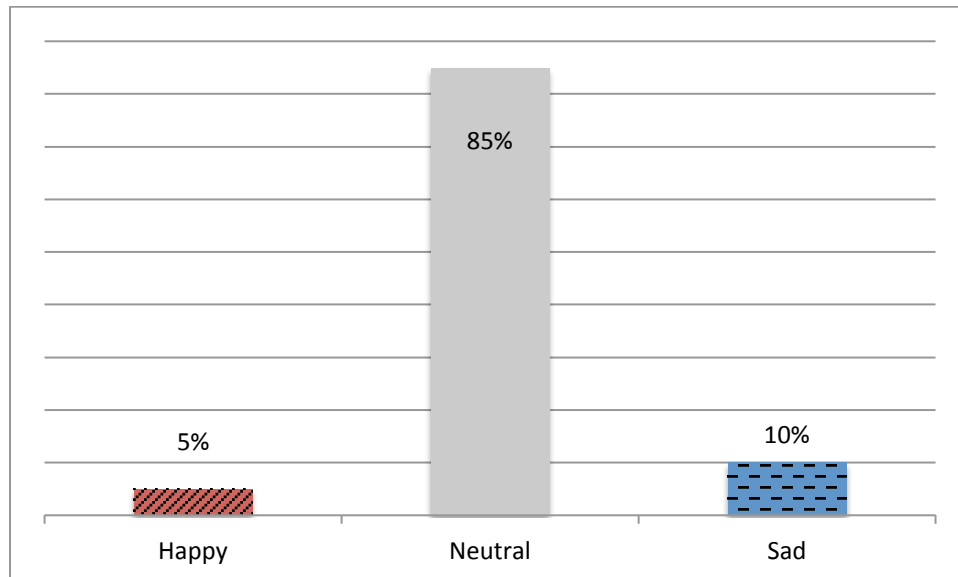
3.5. Pre Test

A pretest was conducted with a sample of students of Fundação Getulio Vargas during June 2010. The purpose of the pretest was to investigate the clarity of the questionnaire and the instructions and to test the experimental procedure itself.

Twenty participants were observed while participating in the experiment in the lab to determine if difficulties arose at any particular point. Following completion the experiment, subjects were asked/interviewed in groups to obtain their comments concerning clarify of instructions and questions, as well as their opinions about the topic being investigated. No major problems were revealed in this pilot study, and consequently a few minor changes were done.

Testing of the experimental procedure itself means whether the participants could identify the stimulus as the design as planned. The first stimulus (the movie) should be identified from the participant as neutral while the second stimulus (the ads) should be identified as neutral with the non-smiling ad and as happy with the smiling ad.

To check whether participants understand the movies as neutral, they were asked to identify if the Movie was happy, neutral or sad. The answer is presented in the Graphic 2, supporting the idea that the movie is neutral (17/20).



Graphic 2 – Pre Test Movie

To check whether the ads transmitted the emotions (positive emotion or neutral) to guarantee the stimulus in the experiment the participants were asked about the emotion of model. The answer is presented in the Table 7, supporting that the ad could be used in the experiment.

Table 7 – Pre Test Ads

	Very Happy	Happy	Neutral	Sad	Very Sad
Neutral	0.0%	0.0%	66.7%	33.3%	0.0%
Smiling	11.1%	88.9%	0.0%	0.0%	0.0%

4. ANALYSES RESULTS

In this chapter the experimental results are presented. Some preliminary analyses (manipulation check) were made and discussed. Then study hypotheses are investigated by means of various statistical analyses.

From the 171 participants, data of only 154 were used. Some participants did not follow the laboratory experiment rules correctly as indicated by the following behavior: answering telephones in class during the research, talking to other subjects or skipping questions. 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 data of two students who suspected or knew the research topic was disregarded.

The data collection occurred during 8 days in August 2010. The number of participants differed per day: the fewest (9) participated on the first day and the maximum participants present were 36 one week later. 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). The Table 8 summarizes the data collected.

Table 8 – Demographic Characteristics

Characteristics		Percent (f)
Age	17 – 18	10.2 %
	19 - 20	48.9 %
	21 – 22	36.5 %
	23 - 24	4.4 %
Gender	Female	44.2 %
	Male	55.8 %
Ethnicity	White	90.3 %
	Pardo	4.4 %
	Yellow	5.3 %
Course	Private Administration	96.5 %
	Public Administration	2.2 %
	Others	1.3 %

The distribution of the 154 participants is as follows: 48.1% of neutral condition (74) and 52.0% of smiling condition (80). The Table 9 shows the crosstab distribution (gender and condition).

Table 9 – Cross tabulation: Condition vs. Gender

		Gender		Total
		Female	Male	
Condition	Neutral	31	43	74
	Smiling	35	45	80
Total		66	88	154

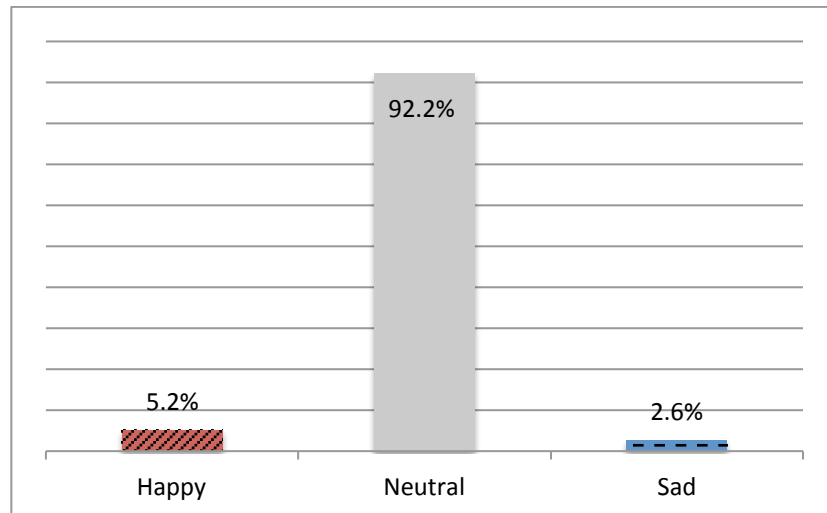
Although there are more males than females, there is no statistic difference in the number of participants in each cell. The chi square (χ^2) statistic used to investigate whether distributions of categorical variables differ from one another shows that there was no difference $\chi^2_{(1)}=.054$; $p=.816$.

4.1. Manipulation Checks

The experimental manipulation has to “work” for an experimental study to be analyzed as described before. Therefore, 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.

4.1.1. First Stimulus – Movie

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. The Graphic 3 shows 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.



Graphic 3 – Frequency Movie Opinion

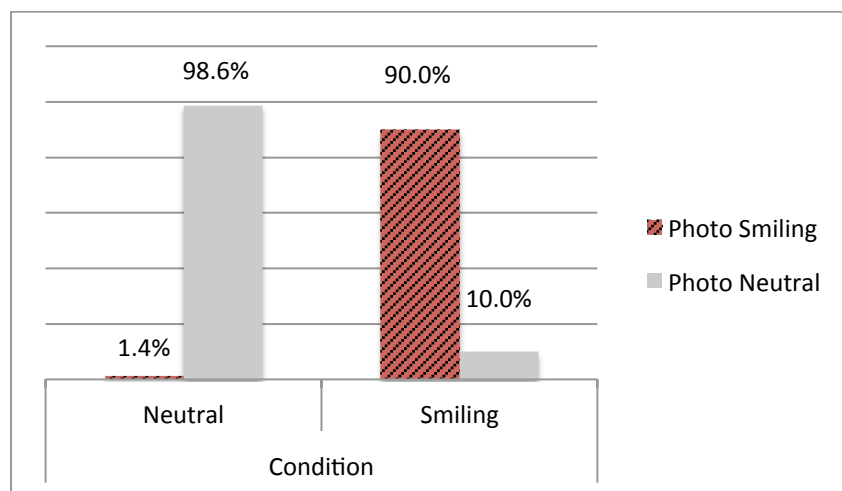
Because John Nash's story might be known and therefore could influence subjects' emotion during the experiment, participants were asked whether they knew the John Nash story. This question was used to identify whether previous knowledge was interfering in the analysis of the movie. 30.5% of the subjects 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 $F(1.153)=0.019$, $p=.890$ (see APPENDIX C). Therefore, there is no significant difference between those who had knowledge and those who didn't have knowledge.

4.1.2. Second Stimulus – Ads

The second manipulation check is about the print manipulation and it was checked with two questions. Firstly, it is important that the participants correctly perceive the stimulus as non-smiling or smiling depending on their conditions. For example, 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. 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

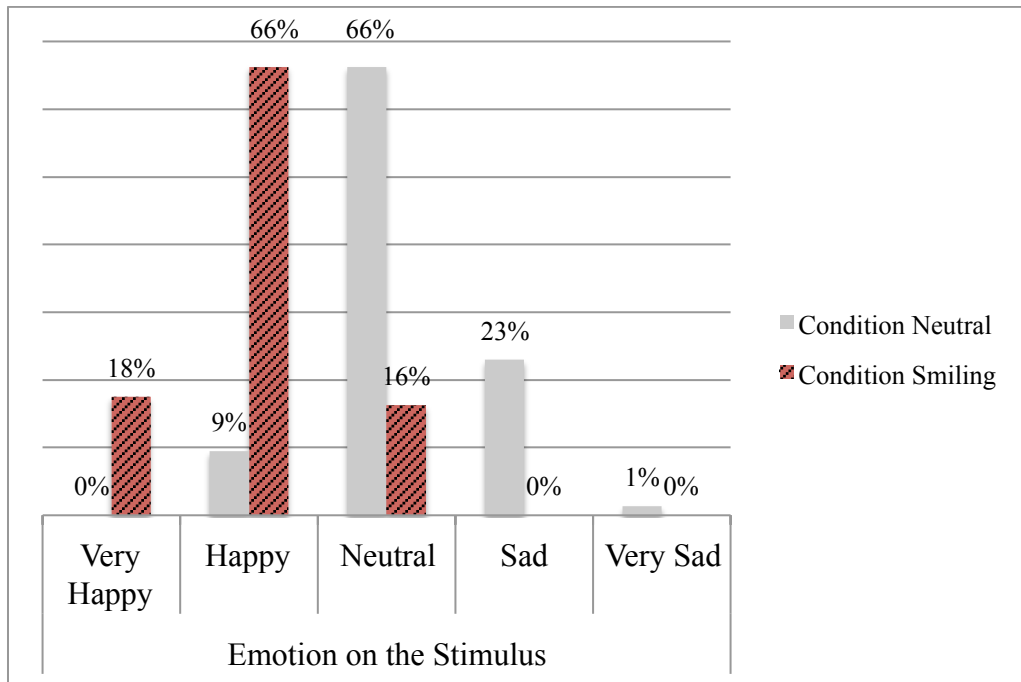
that the experimental participants are also able to perceive the facial expressions as an expressions of emotion.

For the first 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. This result is presented in the Graphic 4. The Pearson Chi-Square $\chi^2_{(1)} = 121.165$, $p \leq .001$ shows that the two groups are able to appropriately recognize the stimulus.



Graphic 4 – Manipulation Check Photo

For the second question, the participants answered about the emotion that the woman in the ad was feeling. Graphic 5 shows the frequency in the conditions. 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 $\chi^2_{(4)} = 88.070$, $p \leq .001$ shows that the two groups are able to appropriately recognize the stimulus differently. The APPENDIX D shows the Pearson Chi-Square analyses and the frequency.



Graphic 5 – Manipulation Check Ad (Emotions)

Potential reasons that explain why some participants scored the ad as sad in the neutral condition are: the ad was in black and white (no colors could express sad situations), subjects were preoccupied with the product and paid less attention to the picture and more attention in the description of the product; the question was about the emotion that the model was feeling, and as “neutral” is not an emotion, participants might have tried to find the “right” answer choosing one of the emotional answers (happy or sad).

In conclusion, the manipulation check to test whether respondents correctly perceived the movie as neutral indicated that 92.2% participants classify the movie correctly as neutral. And the majority answered that the smiling ad shows happiness while the non-smiling ad expressed neutral emotion (no emotion) with $p \leq .001$.

4.2. Hypothesis

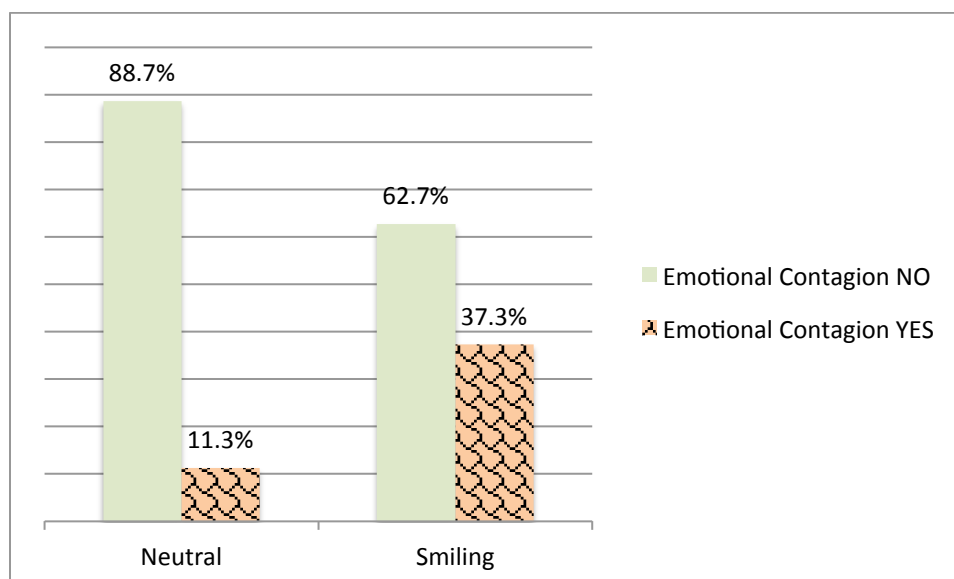
The results of the experiment were mostly obtained using ANOVA or the Chi Square tests. Sometimes other robust tests were done because the ANOVA assumption was not follow. The variable types determined the tests used.

4.2.1. First 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. Many of the records were lost due to the following reasons: the camera fell before the research started (students' backpacks and purses were placed on the desks pushing the cameras), the students were outside of the recording frame or the computer didn't save the film (software problems). 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 in section 3.4 (Dependent Variables) and present at APPENDIX B. A Cronbach's Alpha coefficient was used to analyze the internal consistency of the mimicry rater-analysts. The Cronbach's Alpha coefficient $\alpha=.774$ 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. The frequency of emotion contagion for each individual that scored the participant is presented in APPENDIX E.

Graphic 6 – Emotional Contagion vs. Conditions



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. The Graphic 6 presents these results.

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 $\chi^2_{(1, n=129)} = 11.691, p \leq .001$). When cell counts in a contingency table (also referred to as cross tabulation or cross tab), are small, as in this case, it is more appropriate to perform inference using exact distributions, having more conservative p-values (Agresti, 2002). A two-sided Fisher's exact test further confirms that the two conditions are significantly different ($p \leq .001$). APPENDIX F – Reports of Emotional Contagion – Chi Square Test presents the results of the Chi-square test, the frequency and other statistics models obtained using SPSS.

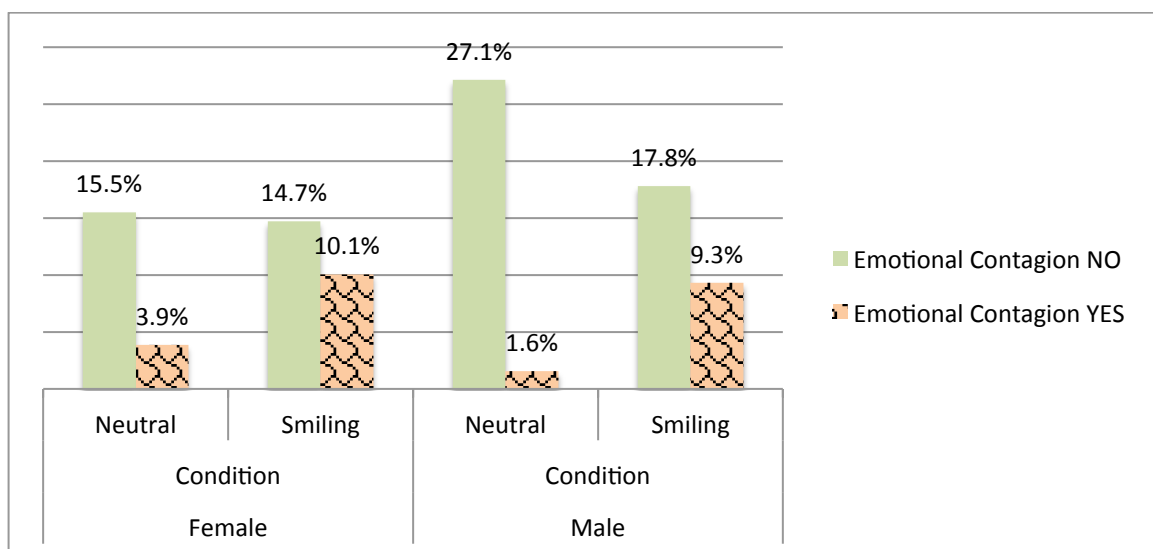
Using a T test, it was possible to verify whether there is a difference between emotional contagion in each condition. In the case of neutral condition, the difference between Yes and No (people catch the mimicry or not) is significant ($t_{(61, n=62)} = 2.786, p \leq .007$). The same situation occurred in the smiling condition ($t_{(66, n=67)} = 6.268, p \leq .000$). 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 ($t_{NO (96, n=97)} = 87.659, p \leq .000$ and $t_{YES (31, n=32)} = 64.395, \leq .000$). 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.

4.2.2. Second Hypothesis

The second hypothesis is about whether emotional contagion induced by a photo is more frequent in women than in men; being in agreement of studies of different perception in face-to-face situations and in movies.

The mimicry rate in this sample is 33.0%. Since 32 of the participants mimicked the ad and 97 did not (counting 129 participants across both conditions), the observed odds are $32/97 = 0.33$. Graphic 7 – Emotional Contagion per Condition and Gender presents in percentages the emotional contagion in each condition and gender. It is possible to verify in this graphic that in the smiling condition the emotional contagion occurred more frequently than in the neutral condition, confirming again the hypothesis 1.

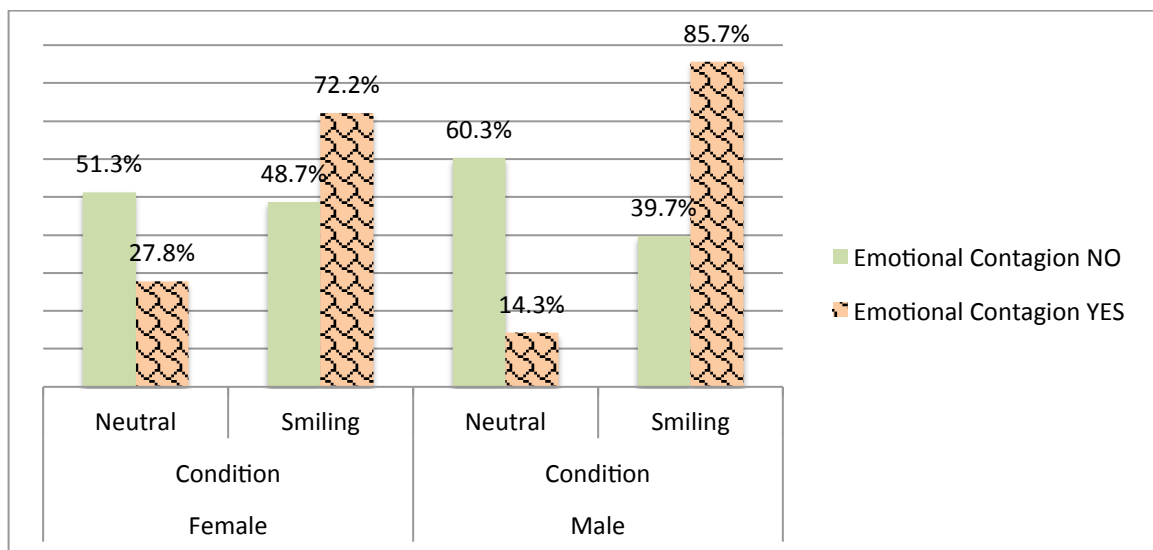


Graphic 7 – Emotional Contagion per Condition and Gender

Using Chi-Square tests between the neutral condition and the smiling condition only in females ($\chi^2_{(1, N=57)} = 2.763$, $p = .096$; Fisher's two-sided, exact test, $p = .084$) and only in males ($\chi^2_{(1, N=72)} = 9.577$, $p = .002$; Fisher's two-sided, exact test, $p = .002$), it is possible to see that the emotional contagion comparing the condition is marginally significant in females and significant in males. In other words, this means that males exhibit more emotional contagion when they see the smiling ad versus the neutral ad. For females this difference also occurred, however it is not significant at a cutoff of $\alpha=0.05$. The Fisher's

exact tests confirm these analyses. In APPENDIX G – Chi Square Test – Gender vs. Conditions the results from SPSS are presented.

The Graphic 8 shows the same results with a new vision. The graphic shows that 85.7% of the males who mimicry was in the smiling condition while only 72.2% of the female mimicry were in the condition. However, 27.8% of the female in the neutral condition mimicry while only 14.3% of the men did it.



Graphic 8 – Emotional Contagion per Condition

Analyzing only the Chi Square between Gender and Emotional Contagion ($\chi^2_{(1, N=129)} = 2.511, p = .113$; Fisher's two-sided, exact test, $p = .151$) (APPENDIX I) it is possible to verify that there is no difference between genders. The frequency is according to the theory that women (14% of the total of people) suffer more emotional contagion than man (10.9% of the total of people). In this case the condition has not been added to the analyses, in other word, women just appear to receive the emotional contagion in a general way. This difference it is not significant at a cutoff of $\alpha=0.10$.

However, it is not possible just with those graphics or Chi-Square to verify whether male suffer more frequently emotional contagion than female. To further analyze whether emotional contagion occurred more in males than in females, a logistic regression (sometimes called the logistic model) was used.

The logistic regression was used to predict the probability of occurrence of an event by fitting data to a logistic curve. The predicted dependent variable is a function of the probability that a particular subject will be in one of the categories (Agresti, 2002). This model is often used for categorical outcomes, usually dichotomous. It is a generalized linear model used for binary regression.

The gender variable showed no statistically significance difference between males or females ($p = .166$). Although, the graphics seems to present more emotional contagion in males, this was not supported statistically. Some explanations for this occurrence are that the stimulus present was a female model, influencing more in males than in females; the female sample was smaller than the male sample, which was also small. It is also important to remember that there were all four kinds of participants in this sample: charismatic, empathetic, expansive and bland (Verbeke, 1997). In this sample and to this stimulus there was no difference between groups.

The condition variable in this model has $p_value < .01$, confirming again that the stimulus worked in the experiment. The regression also shows the Exp. (B), which means the changes in the odds ratio are associated with a 1 unit change in the predictor variable (Abbott & Eckman-Lawn, 2009). In other words, when the smiling ad is presented to a person there was a 4.5x stronger chance that this participant suffers emotional contagion compared to the neutral ad. The Table 10 – Logistic Regression shows the results from the logistic regression without the interaction.

Table 10 – Logistic Regression

		B	S.E.	Wald	df	Sig.	Exp (B)
Step 1 ^a	Conditions	1.521	.477	10.158	1	.001	4.575
	Gender	-.597	.432	1.916	1	.166	.550
	Constant	-7.224	2.348	9.469	1	.002	.001

a. Variable(s) entered on step 1: Conditions, Gender.

However, the theory presents that woman is more susceptible to get the emotions from the positive emotional stimulus, this did not occur when the stimulus is a picture of an unknown woman in black and white. There is an overall difference between the conditions but not in genders. Therefore, using the logistic regression concludes that the gender main

effect was not significant, and further because the interaction is not significant, the genders sounds to respond in similar ways to the conditions. The Hypothesis 2 was not supported.

4.2.3. Third Hypothesis

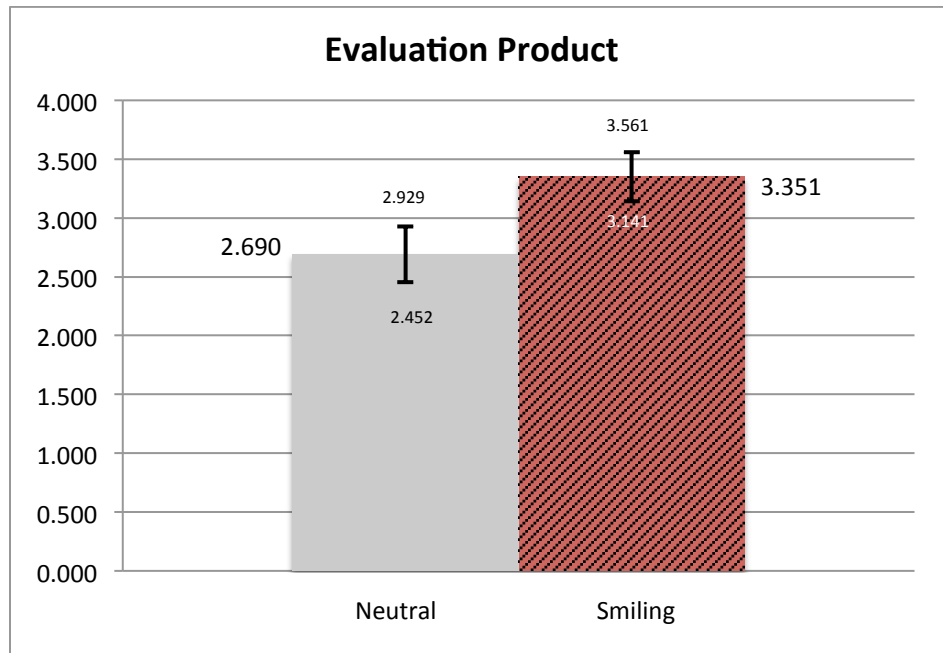
The third hypothesis is related to whether the positive emotions acquired from the happy facial expression in the photo used for the experiment interferes with the subject's evaluation of the product also displayed in the photo. This analyses presents, firstly the dependent variable as a global score scale (Evaluation Product), then in categories and finally in individual questions. The price is not added to the global score or in any categories. So, it will be a separate study at the end of this hypothesis

For this analysis in all the evaluation questions were used with 74 participants in the neutral condition and 80 participants for the smiling condition. For these measures, multiple-item scales consisting of seven-point Likert (1 Nothing and 7 A lot) were used.

Evaluation Product

The Evaluation Product scale consisted of 12 items (distributed in four categories) and 154 participants answered it. The analysis focused on the study of the homogeneity of items using Cronbach's alpha to estimate internal consistency. A Cronbach's alpha is an appropriate method of analysis of Likert scales, since it is possible to verify the degree of homogeneity between the responses of various items of Cronbach's alpha scale. The Cronbach's Alpha coefficient $\alpha=.932$ had adequate values and can be considered to analyze the consistence of this scale.

The means (Graphic 9) confirms that in the smiling condition the evaluation product was scored higher in comparison to the neutral condition.



Graphic 9 – Evaluation Product vs. Conditions

To analyze if there was a significant difference between the two conditions, it was run an ANOVA was run, considering two classes of assumptions: validity assumptions and distribution assumptions. In APPENDIX J, there are some residual analyses, for example the residual normality of sample distribution (Residual Mean=.00, Std. Deviation=0.98, n=154).

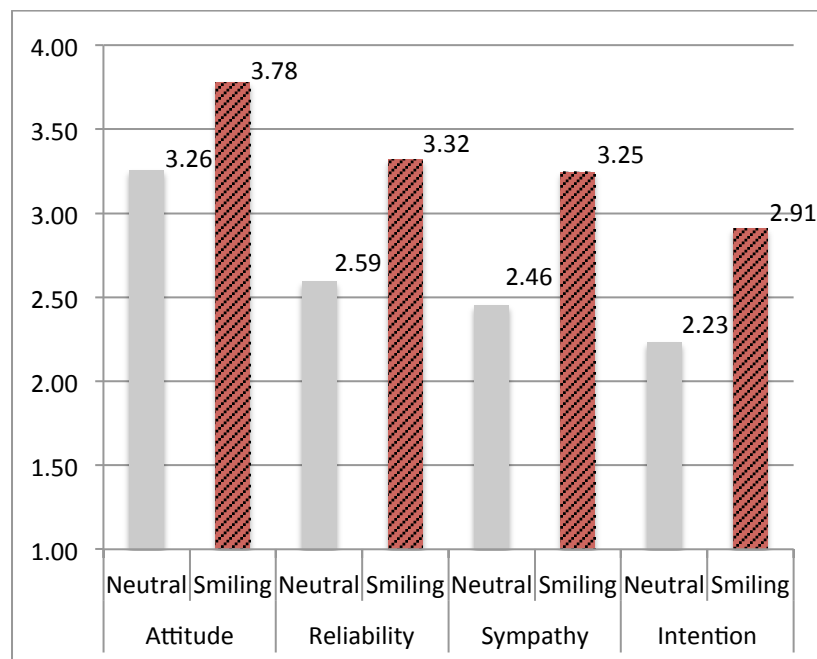
The results $F(1,153)=17.276$, $p \leq .001$ confirms that there was a significant difference between the two conditions, supporting the hypothesis that when the participants saw the ad from the positive emotion. The participants evaluated the product displayed in the photo as better in smiling than in the neutral condition, which is consistent with prior research on the prominence effect. The Welch and Brown-Forsythe test $F_{\text{Welch}}=17.154$; $p \leq .001$ also confirmed the result from the ANOVA.

Dimensions of Evaluation Product

Product evaluation was composed of four dimensions, the Cronbach's Alpha coefficient for each was: Attitude ($\alpha=0.809$; 4 items and n=154); Reliability ($\alpha =0.816$; 2 items and n=154); Intention ($\alpha =0.847$; 3 items and n=154) and Appeal/Sympathy ($\alpha =0.862$; 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.

The means in Graphic 10 show that in all the categories the participants evaluated the product better in the smiling conditions versus the neutral condition. This result seems to demonstrate that there is a significant difference between the product evaluations in each category.



Graphic 10 – Means in each category

Considering the ANOVA assumption as valid; it is possible to verify that differences were significant for each product evaluation dimension $F_{Attitude(1.153)}=10.983$; $p \leq .001$; $F_{Reliability(1.153)}=18.978$; $p \leq .001$; $F_{Appeal(1.153)}=15.295$; $p \leq .001$ and $F_{Intention(1.153)}=10.787$; $p \leq .001$. All the cases confirmed the predicted results; the smiling face expression had a positive interference in products evaluation.

However, the category Attitude is the only one which all the ANOVA assumptions are completely valid. In all the others categories there are a residual biases (APPENDIX K) that in theory can nullify the effects of the ANOVA. Thereby, the ANOVA is a strong method to analyze this means differences; it was used a non-parametrical statistic model

(Welch and Brown-Forsythe), which is more precise in this case and is useful when the homogeneity is violated (Abbott & Eckman-Lawn, 2009).

The non-parametrical statistic model Welch and Brown-Forsythe is presented in the Table 11 confirming 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 three was supported.

Table 11 – Robust Tests of Equality of Means

		Statistic ^a	df1	df2	Sig.
Mean Attitude	Welch	10.885	1	146.584	.001
	Brown-Forsythe	10.885	1	146.584	.001
Mean Reliability	Welch	18.584	1	135.993	.000
	Brown-Forsythe	18.584	1	135.993	.000
Mean Appeal	Welch	15.214	1	148.853	.000
	Brown-Forsythe	15.214	1	148.853	.000
Mean Intention	Welch	10.898	1	151.567	.001
	Brown-Forsythe	10.898	1	151.567	.001

a. Asymptotically F distributed.

The Welch t Test for Independent Samples is a modification of the t Test for Independent Samples so that it does not assume equal population variances. The Brown-Forsyth test statistic is the F statistic resulting from an ordinary one-way analysis of variance on the absolute deviations from the median.

Evaluation Product Question by Question

For the evaluation product question by question, firstly it is necessary to analyze the means in each condition (neutral and smiling) for each question. The Table 12 presents that the means are superior in the smiling condition in all the questions. The difference score between the neutral condition versus the positive condition ranged from 0.35 to almost 1 point (0.97). These can be considered a high change, since the scale is from 1 to 7. The Appeal 1 and 3 were the question that had the most difference, while the attitude 4 and the appeal 2 had the smaller variation.

Table 12 – Descriptive Evaluation Product Data Question by Question

Evaluation	Condition	N	Mean	Std. Dev.	Std. Error	95% CI	
						Lower Bound	Upper Bound
Attitude 1	Neutral	74	2.76	1.469	0.171	2.42	3.10
	Smiling	80	3.51	1.273	0.142	3.23	3.80
Attitude 2	Neutral	74	3.45	1.136	0.132	3.18	3.71
	Smiling	80	3.90	1.026	0.115	3.67	4.13
Attitude 3	Neutral	74	2.93	1.296	0.151	2.63	3.23
	Smiling	80	3.46	1.201	0.134	3.20	3.73
Attitude 4	Neutral	74	3.89	1.299	0.151	3.59	4.19
	Smiling	80	4.24	1.172	0.131	3.98	4.50
Reliability 1	Neutral	74	2.76	1.353	0.157	2.44	3.07
	Smiling	80	3.45	0.992	0.111	3.23	3.67
Reliability 2	Neutral	74	2.43	1.183	0.138	2.16	2.71
	Smiling	80	3.19	0.982	0.110	2.97	3.41
Intention 1	Neutral	74	2.32	1.304	0.152	2.02	2.63
	Smiling	80	3.00	1.575	0.176	2.65	3.35
Intention 2	Neutral	74	2.36	1.567	0.182	2.00	2.73
	Smiling	80	3.19	1.662	0.186	2.82	3.56
Intention 3	Neutral	74	2.01	1.244	0.145	1.73	2.30
	Smiling	80	2.54	1.368	0.153	2.23	2.84
Appeal 1	Neutral	74	2.39	1.422	0.165	2.06	2.72
	Smiling	80	3.35	1.442	0.161	3.03	3.67
Appeal 2	Neutral	74	2.41	1.587	0.184	2.04	2.77
	Smiling	80	2.85	1.360	0.152	2.55	3.15
Appeal 3	Neutral	74	2.57	1.405	0.163	2.24	2.89
	Smiling	80	3.54	1.340	0.150	3.24	3.84

Therefore, the means is consistent with the third hypothesis and the previous analysis. To investigate whether those differences are significant, ANOVA was used. This analysis shows that all the questions had a significant mean difference (all $p_value < .05$); except for the two cases where the ranges were smaller ($F_{Attitude4}(1.153)=3.013$; $p=.085$ and $F_{Appeal2}(1.153)=3.500$; $p=.063$). Although, these two cases were not significant with $p < .05$ they appear to behave as expected and in large samples can become significant. The ANOVA is demonstrated in the APPENDIX L.

Again, however ANOVA was used; the assumptions to run this model were not completely supported (APPENDIX M), and probably in bigger samples this situation won't occur. Therefore, the Robust Test was again used, showing $p < .05$ for almost all the questions had a significant difference between condition. This difference was not significant just for two cases: Attitude 4 and Appeal 2, confirming the ANOVA results.

The Table 13 presents all the Welch Statistic and Brown – Forsythe Statistic as the degree of freedom and the significance.

Table 13 – Robust Tests of Equality of Means

		Statistic ^a	df1	df2	Sig.
Attitude 1	Welch	11.555	1	144.968	.001
	Brown-Forsythe	11.555	1	144.968	.001
Attitude 2	Welch	6.733	1	147.246	.010
	Brown-Forsythe	6.733	1	147.246	.010
Attitude 3	Welch	6.899	1	148.449	.010
	Brown-Forsythe	6.899	1	148.449	.010
Attitude 4	Welch	2.989	1	147.206	.086
	Brown-Forsythe	2.989	1	147.206	.086
Reliability 1	Welch	12.973	1	133.245	.000
	Brown-Forsythe	12.973	1	133.245	.000
Reliability 2	Welch	18.411	1	142.299	.000
	Brown-Forsythe	18.411	1	142.299	.000
Intention 1	Welch	8.453	1	150.213	.004
	Brown-Forsythe	8.453	1	150.213	.004
Intention 2	Welch	9.998	1	151.943	.002
	Brown-Forsythe	9.998	1	151.943	.002
Intention 3	Welch	6.196	1	151.958	.014
	Brown-Forsythe	6.196	1	151.958	.014

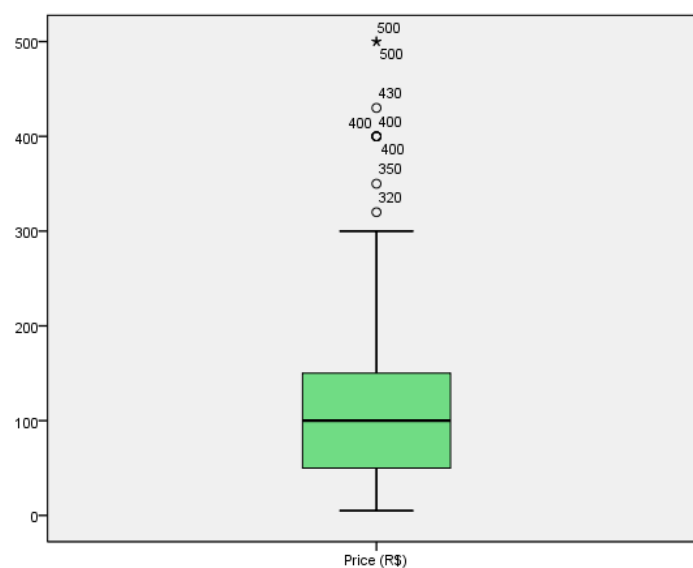
Appeal 1	Welch	17.219	1	151.364	.000
	Brown-Forsythe	17.219	1	151.364	.000
Appeal 2	Welch	3.458	1	144.344	.065
	Brown-Forsythe	3.458	1	144.344	.065
Appeal 3	Welch	19.146	1	149.633	.000
	Brown-Forsythe	19.146	1	149.633	.000

a. Asymptotically F distributed.

It is interesting to verify that for reliability this difference is significant ($p < .001$). Therefore ads with a smiling face expression have a good interference in the evaluation of products mainly in questions of reliability.

EVALUATING PRICE

During the experiment the participants answered questions from the evaluation product scales and a question about how much they would pay to acquire the MP3. The questions were randomized; so although in this analysis the price is the last item, it is not true that participants always answer it at the end. Because it was an open question, participants had a different view of how much they would pay for the product. The range of prices was in Real: from a minimum of R\$ 5.00 to a maximum of R\$ 500.00. This range produced some outliers (Graphic 11), which were not considered in the next analyses.



Graphic 11 – Outlier from Price

Considering 145 collecting data responses, the mean is consistent with the prediction, where smiling condition would pay more than neutral condition; the Neutral condition (Mean = R\$ 86.71; Std. Deviation = 61.164) was small than in the Smiling Condition (Mean = R\$ 114.99; Std. Deviation = 78.667). Because the ANOVA assumption was not guaranteed (see APPENDIX N), Welch and Brown – Forsythe Statistic Analyses was used again.

There was a main effect of price difference on choice of smiling condition (Welch Statistic and Brown-Forsythe = 5.895; $p = .016$), again consistent with the prominence effect.

Therefore the price also supports the hypothesis three. Then, concludes the analyses from this hypothesis. In general all the questions proposed to understand whether the smiling facial expression comparing to neutral facial expression could interfere positively in the evaluation product seem to confirm it.

4.3. Covariate

To conclude the Analyses Results, covariates were used to verify whether they affected the dependent variable (emotional contagion and evaluation of the product) and the stimulus (the evaluation of the movie (first stimulus) and the evaluating ad (second stimulus)).

The variables analyzed in all the regressions were: condition (neutral or smiling), known John Nash story (1 – known the movie to 2 – unknown), course (public or private business administration), marital state (single – almost married/live together), ethnicity (white, black, pardo, yellow, others), age (17 – 24 years old), gender (female and male), semester (1 – first to 10 tenth), and the day the experiments were run. Because there is a high and significant ($p < .001$) correlation between the days and the semester (each day one class did the experiment); the days were not considered in the regressions. In the case of marital state and ethnicity (categorical variable) were created dummies.

The first analysis was to identify whether there are any covariates affecting the relationship between the stimulus and independent variables of primary interest in a regression equation.

Covariates in movies opinion

The movie had the goal to neutralize the participant's emotions. To verify if there were any variables changing the participants opinion of movie (their emotions), a linear regression with all the possible variables was used. The results do not appear to have any variable changing the participant's emotions. In all the variables the Beta was very low and the $p_value > .05$. The regression model is present in APPENDIX O.

Covariates in ad's opinion

In the ad's opinion model (which is emotion the model in the ad transmits to the participants) four other covariates were included: involvement with the product (1 very involved to 5 nothing involved), credibility of journal ads (1 – no credibility to 5 a lot of credibility), if they already bought a MP3 (yes or no), if they used the product before (yes or no).

The regression model, in the APPENDIX P, presents that the condition (smiling or neutral) is the only significant variable ($p \leq .001$), consistent to the pretest and the manipulation check. In this model, the smiling condition (1) can influence 0.73 times more in the positive emotion evaluation compared to the neutral condition. All the other variables were not significant in the model ($p_value > .05$).

The second analysis was to identify, if there are any covariate affecting the relationship between the dependent variable and the independent variables of primary interest in a regression equation to the stimulus.

Covariates in emotional contagion

In this case Logistic Regression was run, because the emotional contagion is a dummy variable. Again all the variables related to the ad were added. The Table 14 shows the results. The condition variable is the only variable that interferes significantly in the equation ($p = .002$) which again is consistent with the pretest and the manipulation check. The smiling ad increases in 4.97 times of chance of emotional contagion occurring versus

in the neutral ad. The genders again does look likely to have any significant difference in the regression ($p=.134$), confirming that the hypothesis two is not supported. Note the different days of the running experiment (considered here as semester) had no interference in the model. And, all the others variables did not interfere in the equation of emotional contagion.

Table 14 – Variables in the Equation (Covariate in Emotional Contagion)

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Conditions	1.604	.509	9.918	1	.002***	4.974
	Course	.655	.815	.645	1	.422	1.924
	Single	19.901	40193.08	.000	1	1.000	4.394E8
	White	1.424	1.183	1.449	1	.229	4.152
	Pardo	-17.965	22855.75	.000	1	.999	.000
	Age	.162	.279	.336	1	.562	1.175
	Gender	-.693	.463	2.241	1	.134	.500
	Semester	.080	.176	.209	1	.648	1.084
	Bought a MP3	.715	.708	1.021	1	.312	2.045
	Has used MP3	-20.105	40192.86	.000	1	1.000	.000
	Credibility	-.164	.303	.292	1	.589	.849
	Involvement	-.025	.208	.014	1	.906	.976
	Constant	-13.225	56841.50	.000	1	1.000	.000

a. Variable(s) entered on step 1: Conditions, Course, Single, White, Pardo, Age, Gender, Semester, Bought a MP3, Has used MP3, Credibility, Involvement

Covariate in Product Evaluation

The same analysis was done to verify covariates in the equation of evaluation of the product. In this case, four variables appear to change the model. The first variable is the condition, confirming the stimulus and the procedure; the second variable that has been interfering in the model is whether the participant has already used a MP3, followed by whether the participant has already bought a MP3 and if they believe in an ad from a newspaper.

In the model, the evaluation product score increases 0.655 when evaluated from a participant who saw the smiling condition. Those who already used an MP3 had 2.420 times more chance to evaluate the product better than those who never used one. This

answer is logical, given that people usually like the product and believes that this is a good present. Having the experience of buying a MP3, also interfered positively in the evaluation product; those who already bought a MP3 evaluate 0.656 times the product better than who never bought one. And, when the participants believe in the credibility of an ad in journal they had scored in 0.198 more compared to those who do not believe in it. The Table 15 presents the model.

Table 15 – Variables in the Equation (Covariate in Evaluation Product)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-4.445	2.255		-1.971	.051
Condition	.655	.152	.316	4.321	.000
Know the movie?	.155	.171	.069	.907	.366
Course	-.021	.285	-.005	-.072	.942
Living Together	-1.116	.959	-.087	-1.164	.247
Pardo	.560	.453	.096	1.237	.218
Yellow	.072	.344	.015	.208	.835
Age	.078	.091	.097	.854	.395
Gender	-.185	.154	-.088	-1.202	.231
Semester	-.137	.059	-.269	-2.304	.061
Bought a MP3	.656	.260	.199	2.521	.013
Has used MP3	2.420	.976	.188	2.481	.014
Credibility	.198	.099	.159	2.001	.047
Involvement	-.058	.069	-.064	-.842	.401

a. Dependent Variable: Final Score

Covariates have a numerical effect on its response. So, putting a covariate in the ANOVA model means to consider their effects by the possible effect of the numerical variable. Therefore, running the ANOVA with these three covariates, it is possible to confirm the significance ($p \leq .001$) previously demonstrated in the Hypothesis 3. This analysis is presented in the APPENDIX Q.

To determine more accurately the data obtained in the analysis of question, mainly in two cases that were not statistically significant; covariates were observed that could be changing the effect. Thus, for the questions of Attitude 4 and Appeal 2, linear regressions with covariates were run. The results before the covariates were: ($F_{\text{Attitude4}}(1.153)=3.013$;

$p=.085$ and $F_{\text{Appeal2}}(1.153)=3.500$; $p=.063$). With the covariate both models are significant ($p \leq .001$). In the Attitude 4 the variable condition is still not significant ($p=.075$), but in the Appeal the conditions become significant ($p=.025$) (APPENDIX R). Therefore, analyzing with the covariate, the only dependent variable, which did not have an effect from the stimulus (smiling or not) were the Attitude 4. All the other questions confirmed the hypotheses.

5. CONCLUSIONS AND FINAL CONSIDERATION

This chapter is divided in basically three sub topics: the conclusion, theoretical and managerial implications, and work's limitations with proposals for future studies.

5.1. Conclusion

The first and most important result of this study was the evidence that emotional contagion can occur 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.

Similar to other studies, participants mimicked when they were watching movies ((Ekman, 1993; Ekman, et al., 1990; Ekman & Friesen, 1982; Soussignan, 2002); or in face-to-face situations (Howard & Gengler, 2001; Pugh, 2001; Tsai & Huang, 2002) the picture/photo can also produce mimicking behavior. This mimicking occurred among the first to the sixth seconds when the stimulus was presented (the records duration were among tenth – twelfth seconds). The unique facial expression appeared and disappeared very fast, and according to Hatfield (1994) within a span of 125 – 200 millisecond.

However, the mimic was very fast; sometimes the motor mimicry can occur at levels so subtle as to produce no observable facial expressions (Cacioppo & Tassinary, 1990) and, it was not separated people that do not easily “catch” the emotional contagion (Verbeke, 1997), in this experiment the observable mimic occurred more easily in the smiling condition than in the neutral.

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.

The findings demonstrated that in photos there is no difference between who (women or men) usually gets more easily emotional contagion. However, it appears that the men in this case caught the emotion more easily. For men, there was a significant difference between the neutral and the smiling condition, whereas in women it is not significant with $p < .05$. There are several possible explanations for this finding. First in the stimulus (ad) a female model was used with a unisex product, maybe the female model can more easily get a man's attention, and the product looks more propitious for a man rather than for a women. Further, in in-depth interviews the men appear to enjoy electronics products more than women. Secondly, the sample size of males was larger than for women. There were more men than women because the sample was randomized and there are more males than females at Fundação Getulio Vargas. Also, it more data from females was lost, because some of them put their purse in front of the computer, blocking the camera.

The second hypothesis is not supported; in photos both genders can suffer emotional contagion. These analyses can be developed with big samples, increasing the statistical analysis.

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.

The scale used from Berens et al. (2005) to evaluate a product, in this case the MP3, was presented in a general scale of product evaluation, and their dimensions (Attitude, Appeal, Reliability and Intention of Purchase) and in individual questions. As a result of the

participants' responses to the evaluation questions the product in the smiling condition had a better analysis in a general scale, in the categories and virtually all the questions.

In other words, 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 third hypothesis was supported by the data.

Analyzing the issues separately, the issue of Attitude 4 (How high do you think the returns of this product are for the customer?) is the only one which did not present a significant difference between the conditions. One explanation as to why this question was not significant is that this question sounds more rational than emotional. Participants had to think about the product benefits and not just in the image of the product or what they feel; perhaps the cognitive had a stronger influence in this question in comparison to the others on the scale. Although the difference between the smiling and the neutral condition answers were not significant with $p < .05$, the means is presented in the "high" direction, people who saw the smiling face seem more likely to have a better product evaluation.

This research also brought two covariates that interfere in the evaluation product: whether people already bought the product and whether people already used a MP3. Related to the product, these two questions show that the old purchase experience or the knowledge product influences in the final evaluation product. Those covariates are in according to some researches in experience learning. According to Hoch and Deighton (2009), in the design of communication and promotional programs, and in testing the effectiveness of new product concepts or advertising executions, learning must be accounted as a process that marketing has the power to leverage in building brand attitudes and consumer loyalty. Understanding what the customer learns in old experience with their products and experience purchase can also improve ads. In this research, people who already bought or

used a MP3 evaluated the product better; therefore it seems that they like the product and their evaluation.

Overall, the present study has demonstrated that emotional contagion can occur with photos, without gender distinction and positive face expression in ads can positively influence in the evaluation products.

5.1. Theoretical and Managerial Implications

The results of this study confirmed that emotional contagion can occur from photos, there is no difference between gender and the positive facial expression from photo is positively associated to a positive product evaluation, carrying theoretical contributions to research in emotional contagion, emotion and consumer behavior field.

The same way as in situations where participants watch movies, emotional contagion can occur in pictures; situations that there is no real interaction between people (face-to-face). An interesting result is if we think that the emotional contagion is considered to occur in social interactions (Hatfield, et al., 1994). This research also presents some evidence that there is no difference in emotional contagion from photos between genders. It was a different result from previous studies with movies or face-to-face interaction when women are more susceptible than men, which can be explored and added to theory.

Still 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 three, 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.

5.2. Work's Limitations and Future Researches

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. Would the emotional contagion's receiver mimicry the posture from a photo or just the facial expression?

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 here were a MP3, 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. Although evidence suggests that students are a good subjects to study emotional contagion (R. W. Doherty, L. Orimoto, T. M. Singelis, E. Hatfield, & J. 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). Although, the theory presents that there is no difference for identification

among the cultures or races, very few ethnic minorities are represented in this study, almost all of them were white people; and all of them are Brazilian. Future research would do well to use a more ethnically diverse population.

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 thesis, it is proved that mimicry can occur 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 (Eckman, et al., 2009).

In this thesis 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 precisely 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.

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.

This thesis did not separated the different personalities, as presented from Verbeke (1997) that people can be divided into four groups: charismatic, empathetic, expansive and bland. New studies could explore each quadrant verifying for example if empathetic and charismatics (both with high level of being infected by the emotions of other) would evaluate the products equally.

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

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APPENDIX A – Depth Interview

English Translation

1. Have you ever purchase products from catalogs?
 2. Which products have you purchased from catalogs?
 3. Which product would you buy from catalogs?
 4. What are the advantages or disadvantages to buy from a catalog?
 5. Can you explain how you decide your purchase, in choosing a product from a catalog?
 6. Does the price of the product in the catalogues influence your decision?
 7. Have you ever purchased anything over the phone, offered on TV channels?
 8. Which products have you bought from the television?
 9. Which product would you buy from television?
 10. What are the advantages and disadvantages of this kind of purchase?
 11. Can you explain how people choose products by this kind of channel?
 12. Have you ever purchased on line?
 13. What products have you bought over the Internet?
 14. What other products would you buy on line?
-

Em Português

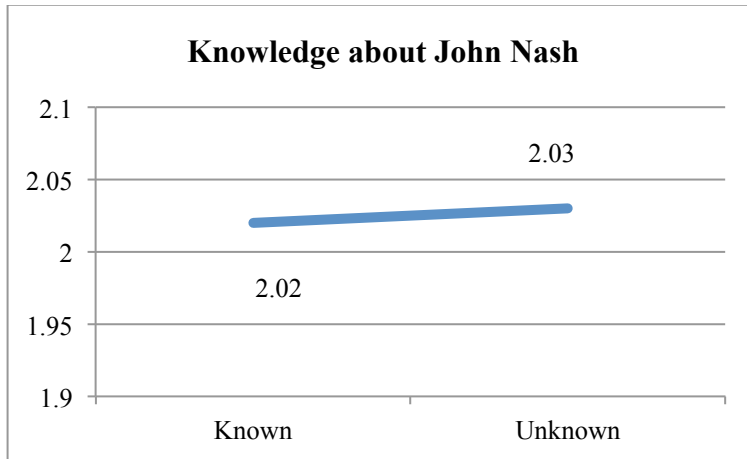
1. Você compra com frequência produtos de catálogos? Você já comprou alguma vez?
 2. Quais produtos você já comprou de catálogos?
 3. Quais produtos você compraria por catálogo?
 4. Quais são as vantagens e desvantagens da compra por catálogos?
 5. Você poderia explicar como você decide sua comprar quando escolhe produtos por catálogo?
 6. O preço do produto exposto no catálogo influencia sua decisão de compra?
 7. Você já comprou algo pelo telefone, oferecido em canais de televisão?
 8. Quais produtos você comprou pela televisão?
 9. Quais produtos você compraria pela televisão?
 10. Quais são as vantagens e desvantagens deste tipo de compra?
 11. Você poderia explicar como as pessoas escolhem os produtos por meio deste tipo de canal?
 12. Você já fez compras pela internet?
 13. Quais produtos você comprou pela internet?
 14. Quais outros produtos você compraria pela internet?
-

APPENDIX B – Product Purchase

Dimension	Questions	In English
Quality	Attitude 1	How favorable is your judgment of this product?
	Attitude 2	What do you think about the quality of this product?
	Attitude 3	What do you think about the quality of this product in comparison with similar products?
	Attitude 4	How high do you think the returns of this product are for the customer?
Appeal	Appeal 1	Do you find this product sympathetic?
	Appeal 2	Do you find this product attractive?
	Appeal 3	Does this product give you a pleasant feeling?
Reliability	Reliability 1	Do you find this product reliable?
	Reliability 2	Does this product give you a safe feeling?
Purchase intention	Intention 1	If you were planning to buy a product of this type, would you choose this product?
	Intention 2	Would you purchase this product?
	Intention 3	If a friend were looking for a product of this type, would you advise him or her to purchase this product?

Dimensões	Questões	Em Português
Atitude	Atitude 1	Quão favorável você está sobre esse produto?
	Atitude 2	Como você avalia a qualidade desse produto?
	Atitude 3	Em comparação com produtos similares como você avalia a qualidade deste produto?
	Atitude 4	Quantos benefícios que você pensa que este produto oferece ao consumidor?
Aparência	Simpatia 1	Quão simpático este produto lhe parece?
	Simpatia 2	Quão atraente esse produto lhe parece?
	Simpatia 3	Quão agradável esse produto lhe parece?
Confiabilidade	Confiabilidade 1	Quão confiável você considera este produto?
	Confiabilidade 2	Qual o nível de sensação de segurança esse produto lhe passa?
Intenção de Compra	Intenção 1	Se você estivesse planejando comprar um produto deste tipo, qual a probabilidade de você escolher este produto?
	Intenção 2	Se um amigo estivesse procurando um produto deste tipo, qual a probabilidade de você recomendar-lo comprar este produto?
	Intenção 3	Qual a probabilidade de você comprar esse produto?

APPENDIX C – Movie Opinion and Knowledge about John Nash



Between-Subjects Factors

		Value Label	N
Know the movie?	1	Known	47
	2	Unknown	107

Tests of Between-Subjects Effects

 Dependent Variable: Movie Opinion

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power ^b
Corrected Model	.001 ^a	1	.001	.019	.890	.019	.052
Intercept	535.456	1	535.456	6842.537	.000	6842.537	1.000
CovFilme	.001	1	.001	.019	.890	.019	.052
Error	11.895	152	.078				
Total	644.000	154					
Corrected Total	11.896	153					

a. R Squared = .000 (Adjusted R Squared = -.006)

b. Computed using alpha = .05

APPENDIX D – Manipulation Check Print

FIRST QUESTION**Frequency Condition * Photo Crosstabulation**

		Photo		Total
		Smiling	Neutral	
Condition	Neutral	1	73	74
	Smiling	72	8	80
Total		73	81	154

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	121,165 ^a	1	,000		
Continuity Correction ^b	117,636	1	,000		
Likelihood Ratio	150.466	1	,000		
Fisher's Exact Test				,000	,000
Linear-by-Linear Association	120.379	1	,000		
N of Valid Cases	154				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 35,08.

b. Computed only for a 2x2 table

SECOND QUESTION**Frequency: Condition * Photo Cross tabulation**

		Photo Felling					Total
		Very Happy	Happy	Neutral	Sad	Very Sad	
Condition	Neutral	0	7	49	17	1	74
	Smiling	14	53	13	0	0	80
Total		14	60	62	17	1	154

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	88.070 ^a	4	.000
Likelihood Ratio	106.350	4	.000
Linear-by-Linear Association	76.501	1	.000
N of Valid Cases	154		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .48.

APPENDIX E – Reports Frequency of Emotional Contagion for Each Annalist

Score 1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 (YES)	47	36.4	36.4	36.4
	0 (NO)	82	63.6	63.6	100.0
Total		129	100.0	100.0	

Score 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 (YES)	30	23.3	23.3	23.3
	0 (NO)	99	76.7	76.7	100.0
Total		129	100.0	100.0	

Score 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 (YES)	22	17.1	17.1	17.1
	2 (NO)	107	82.9	82.9	100.0
Total		129	100.0	100.0	

APPENDIX F – Reports of Emotional Contagion – Chi Square Test

Frequency: Condition * Emotional Contagion				
		Emotional Contagion		Total
		no	yes	
Condition	Neutral	55	7	62
	Smiling	42	25	67
Total		97	32	129

Chi-Square Tests					
	Value	df	Asymp. Sig. (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	11.691 ^a	1	.001		
Continuity Correction ^b	10.338	1	.001		
Likelihood Ratio	12.295	1	.000		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	11.600	1	.001		
N of Valid Cases	129				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.38.

b. Computed only for a 2x2 table

APPENDIX G – Chi Square Test – Gender vs. Conditions

		Chi-Square Tests				
Gender		Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Female	Pearson Chi-Square	2.763 ^a	1	.096		
	Continuity Correction ^b	1.891	1	.169		
	Likelihood Ratio	2.847	1	.092		
	Fisher's Exact Test				.151	.084
	Linear-by-Linear Association	2.715	1	.099		
	N of Valid Cases	57				
Male	Pearson Chi-Square	9.577 ^c	1	.002		
	Continuity Correction ^b	7.822	1	.005		
	Likelihood Ratio	10.370	1	.001		
	Fisher's Exact Test				.002	.002
	Linear-by-Linear Association	9.444	1	.002		
	N of Valid Cases	72				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.89.

b. Computed only for a 2x2 table

c. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.81.

APPENDIX H – Chi Square Test – Gender vs. Conditions

Emotional Contagion * Gender Cross tabulation				
		Gender		Total
		Female	Male	
Emotional Contagion	no	39	58	97
	yes	18	14	32
Total		57	72	129

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.511 ^a	1	.113		
Continuity Correction ^b	1.903	1	.168		
Likelihood Ratio	2.499	1	.114		
Fisher's Exact Test				.151	.084
Linear-by-Linear Association	2.492	1	.114		
N of Valid Cases	129				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.14.

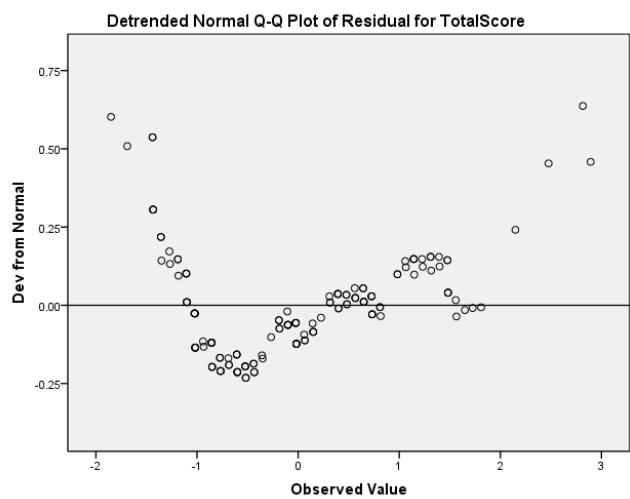
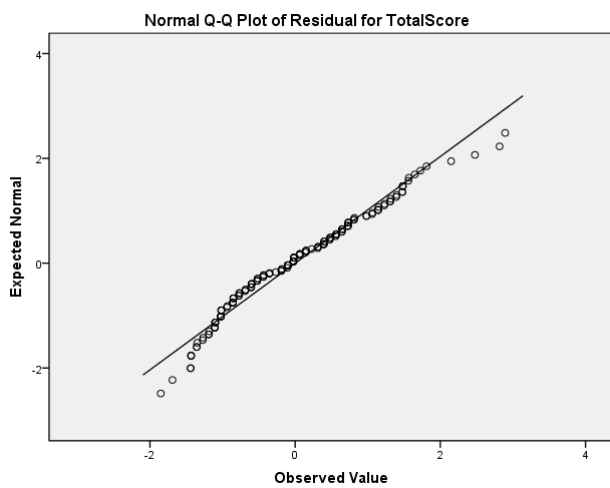
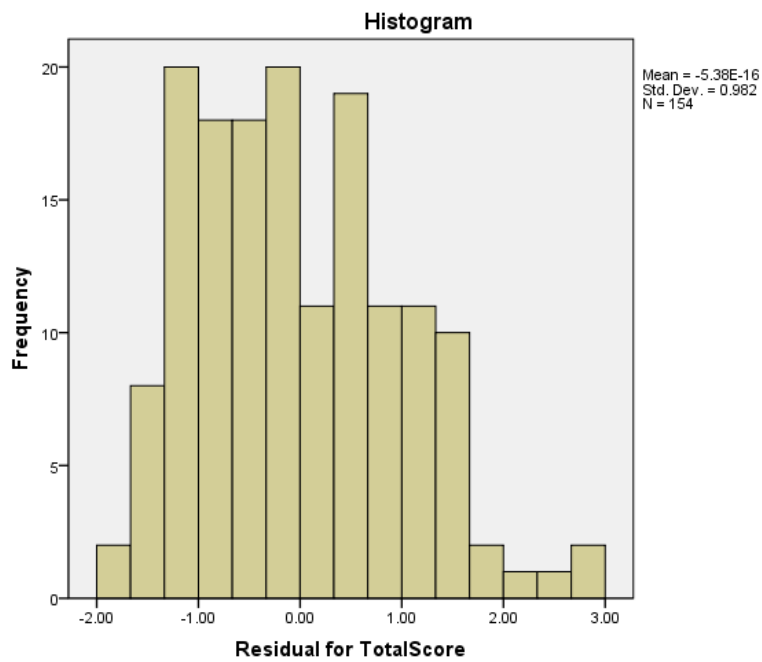
b. Computed only for a 2x2 tables

APPENDIX I – Assumption for ANOVA – Evaluation Product

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for TotalScore	.091	154	.004	.968	154	.001

a. Lilliefors Significance Correction



APPENDIX J – ANOVA and Robust Tests – Evaluation Product

ANOVA**Global Mean Score**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16.782	1	16.782	17.276	.000
Within Groups	147.656	152	.971		
Total	164.438	153			

Robust Tests of Equality of Means

Global Mean Score

	Statistic ^a	df1	df2	Sig.
Welch	17.154	1	147.828	.000
Brown-Forsythe	17.154	1	147.828	.000

a. Asymptotically F distributed.

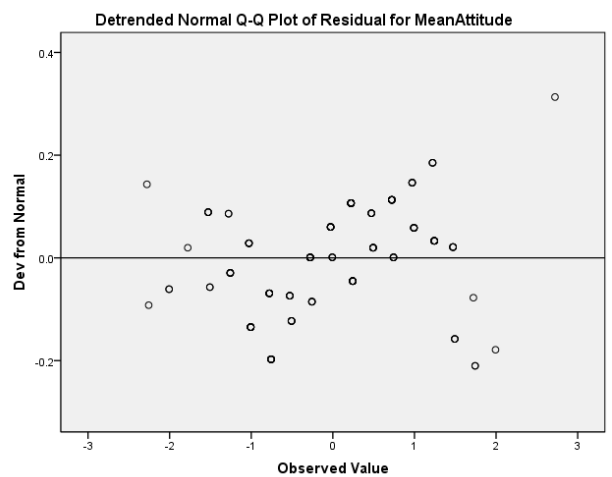
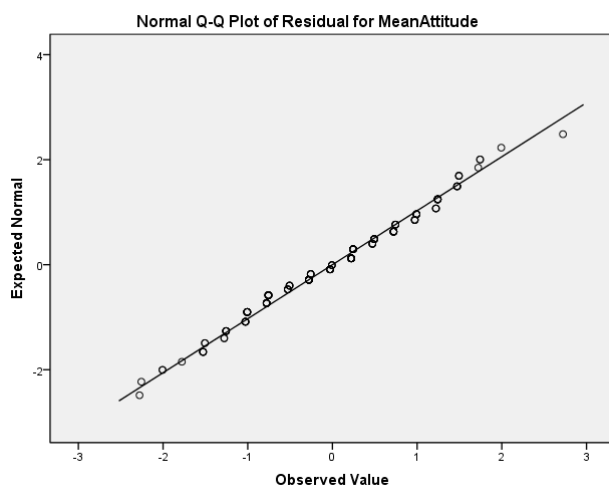
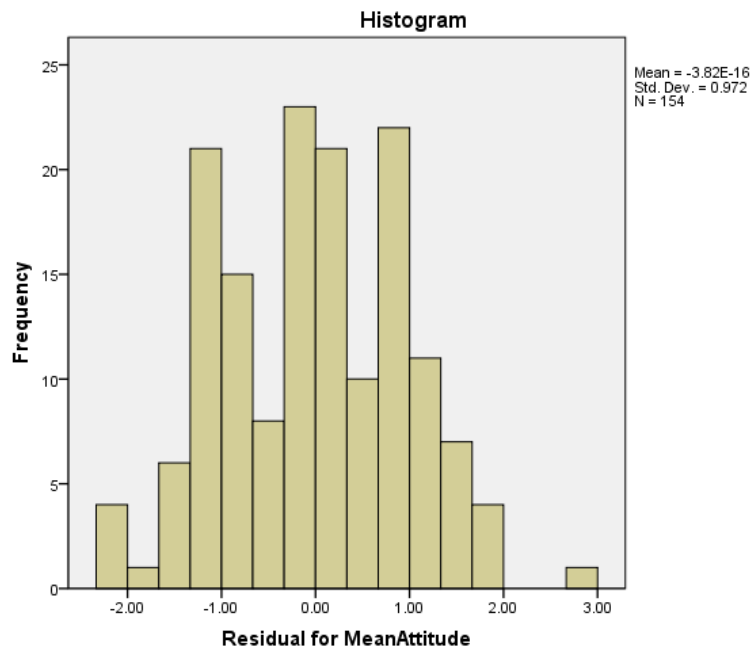
APPENDIX K – Assumption for ANOVA – Evaluation Product in Category

ATTITUDE

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for MeanAttitude	.087	154	.006	.986	154	.129

a. Lilliefors Significance Correction

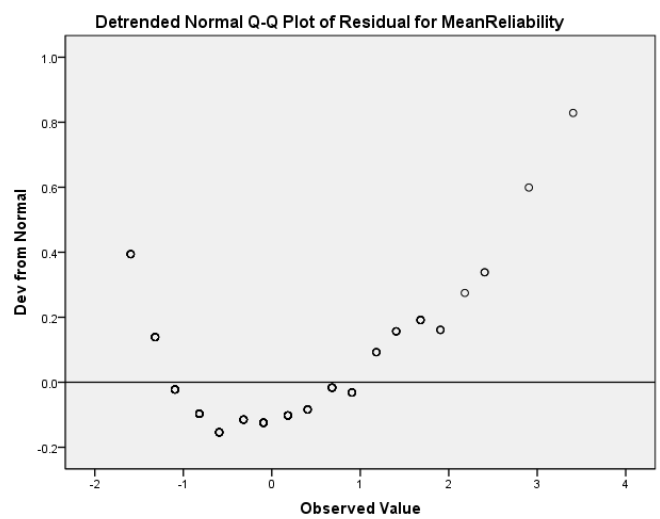
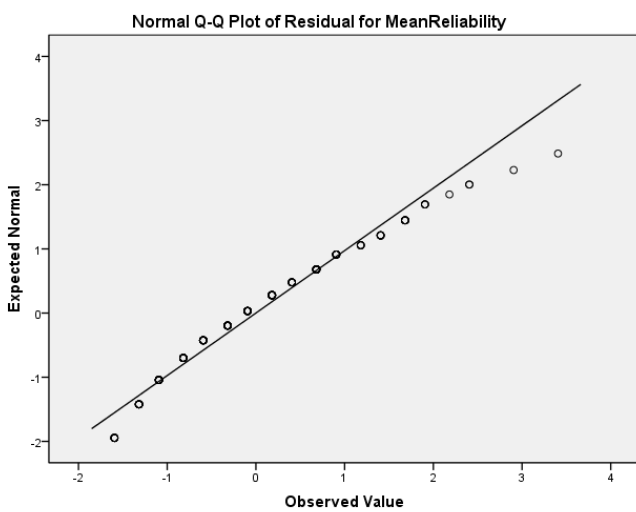
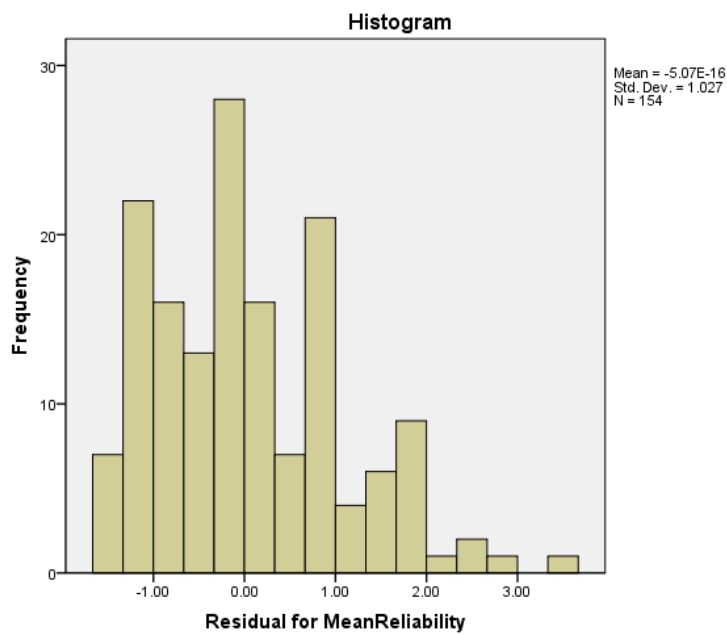


RELIABILITY

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for MeanReliability	.095	154	.002	.959	154	.000

a. Lilliefors Significance Correction

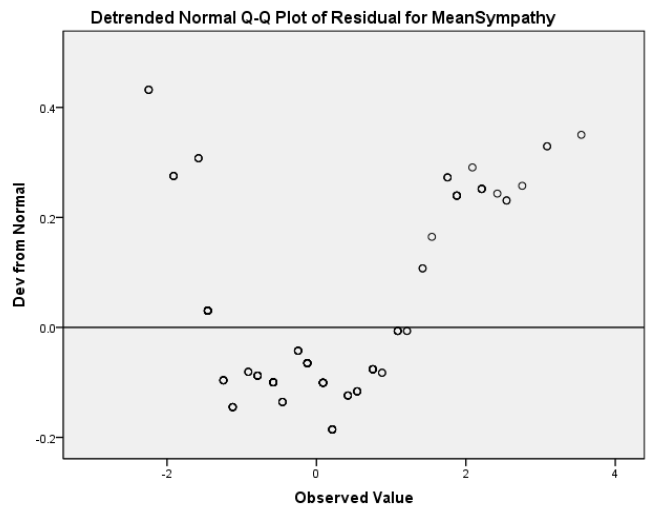
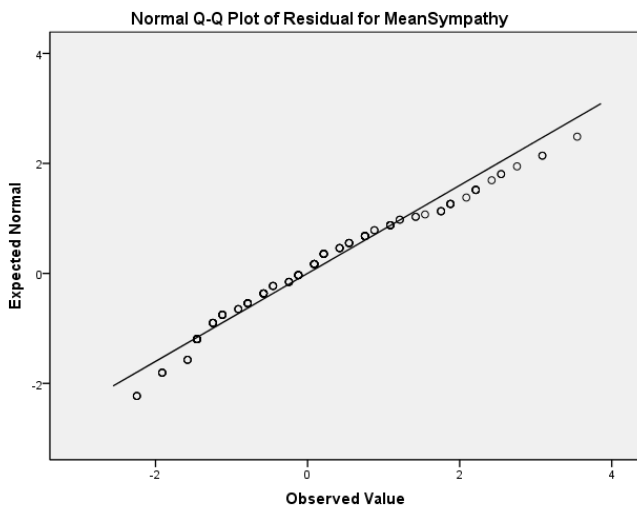
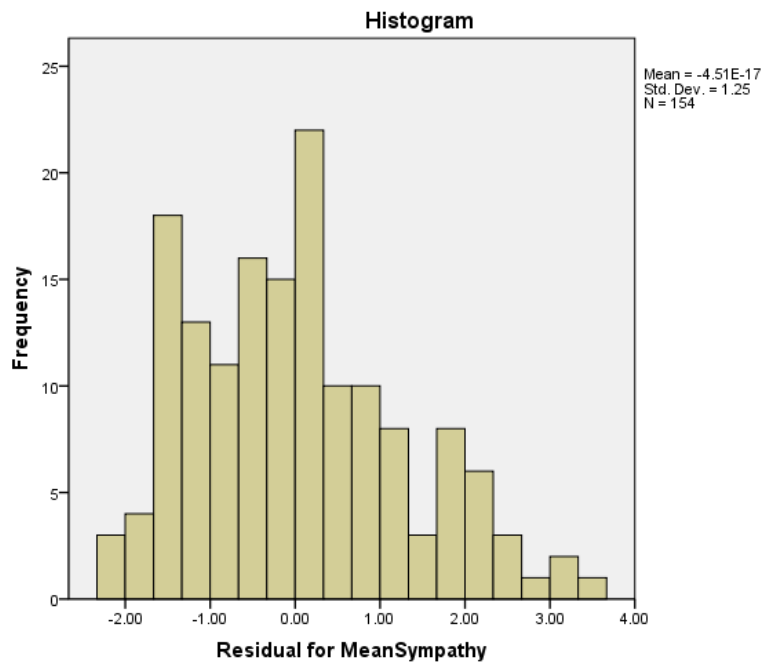


APPEAL

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Mean Appeal	.095	154	.002	.966	154	.001

a. Lilliefors Significance Correction

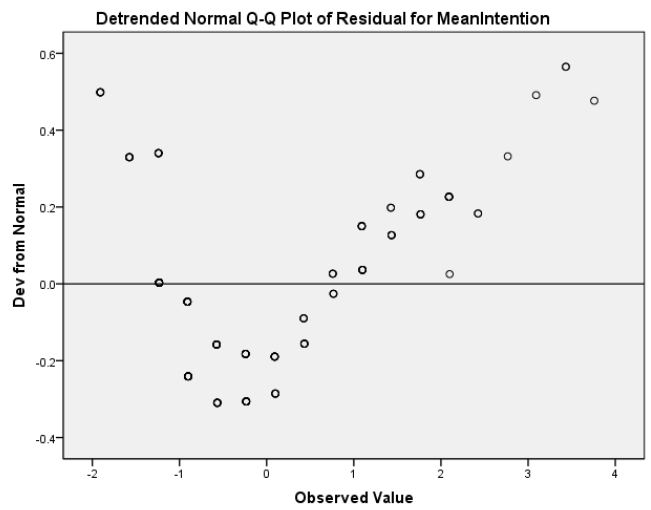
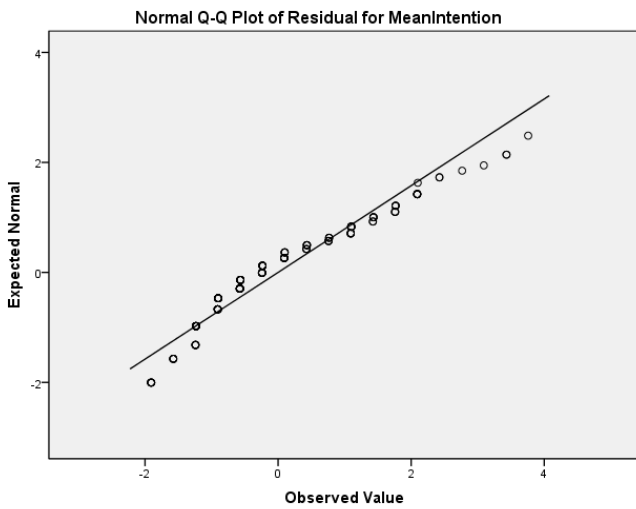
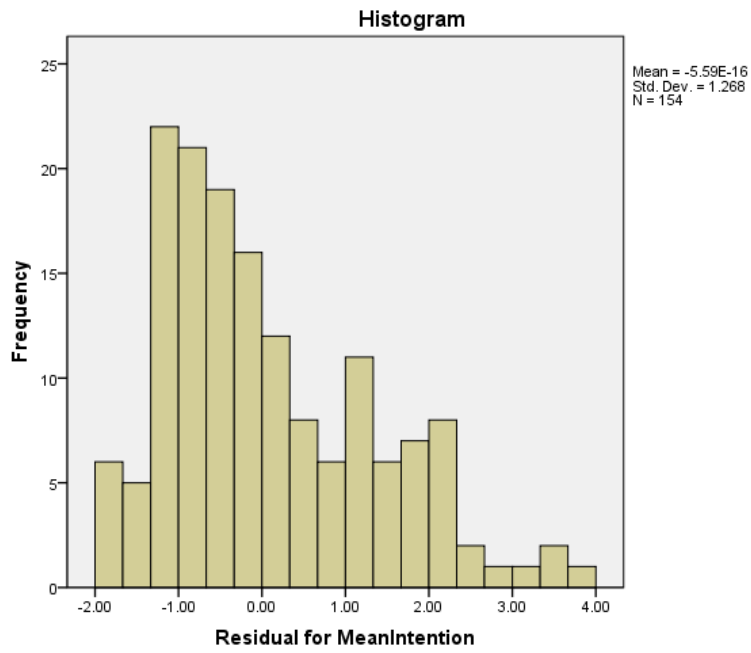


INTENTION

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Mean Intention	.151	154	.000	.932	154	.000

a. Lilliefors Significance Correction



APPENDIX L – ANOVA – Evaluation Product Question by Question

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Attitude 1	Between Groups	21.956	1	21.956	11.685	.001
	Within Groups	285.609	152	1.879		
	Total	307.565	153			
Attitude 2	Between Groups	7.925	1	7.925	6.787	.010
	Within Groups	177.484	152	1.168		
	Total	185.409	153			
Attitude 3	Between Groups	10.801	1	10.801	6.940	.009
	Within Groups	236.550	152	1.556		
	Total	247.351	153			
Attitude 4	Between Groups	4.592	1	4.592	3.013	.085
	Within Groups	231.623	152	1.524		
	Total	236.214	153			
Reliability 1	Between Groups	18.474	1	18.474	13.282	.000
	Within Groups	211.422	152	1.391		
	Total	229.896	153			
Reliability 2	Between Groups	21.917	1	21.917	18.679	.000
	Within Groups	178.350	152	1.173		
	Total	200.266	153			
Intention 1	Between Groups	17.550	1	17.550	8.331	.004
	Within Groups	320.216	152	2.107		
	Total	337.766	153			
Intention 2	Between Groups	26.015	1	26.015	9.952	.002
	Within Groups	397.336	152	2.614		
	Total	423.351	153			
Intention 3	Between Groups	10.555	1	10.555	6.150	.014
	Within Groups	260.874	152	1.716		
	Total	271.429	153			
Appeal 1	Between Groups	35.288	1	35.288	17.201	.000
	Within Groups	311.835	152	2.052		
	Total	347.123	153			
Appeal 2	Between Groups	7.599	1	7.599	3.500	.063
	Within Groups	330.038	152	2.171		
	Total	337.636	153			
Appeal 3	Between Groups	36.165	1	36.165	19.217	.000
	Within Groups	286.050	152	1.882		
	Total	322.214	153			

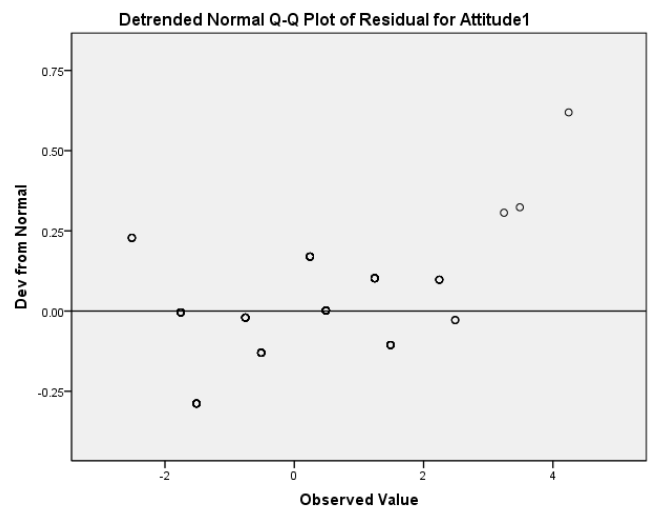
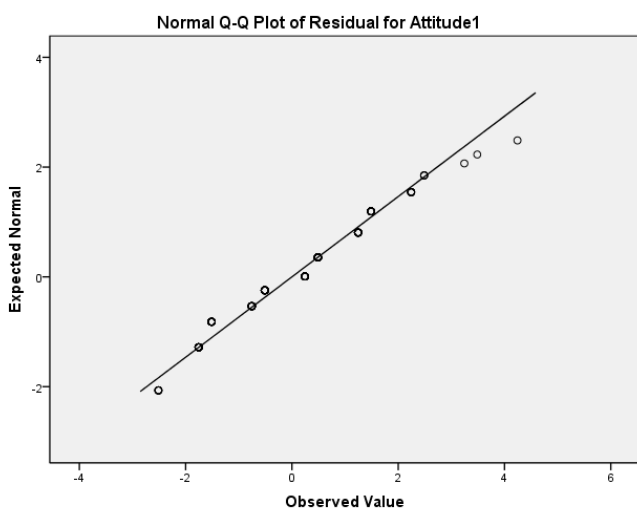
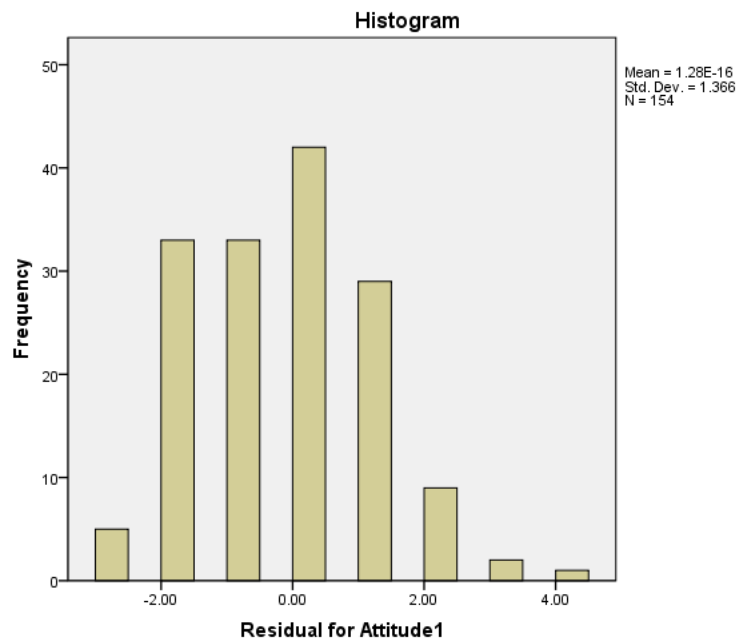
APPENDIX M – Assumption for ANOVA – Evaluation Product Question by Question

ATTITUDE 1

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Attitude1	.113	154	.000	.960	154	.000

a. Lilliefors Significance Correction

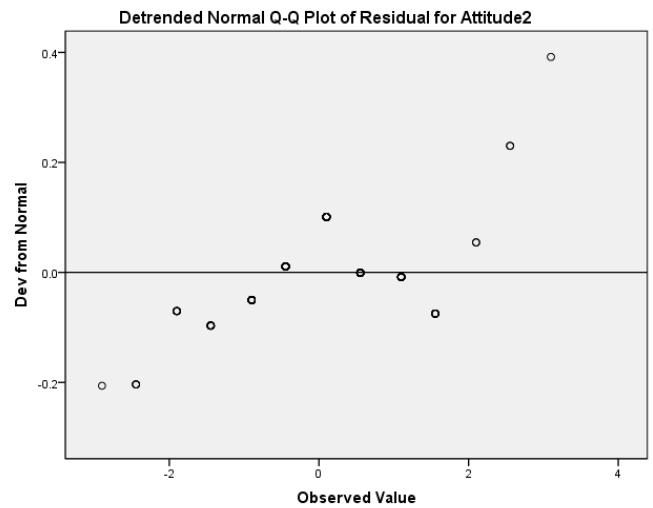
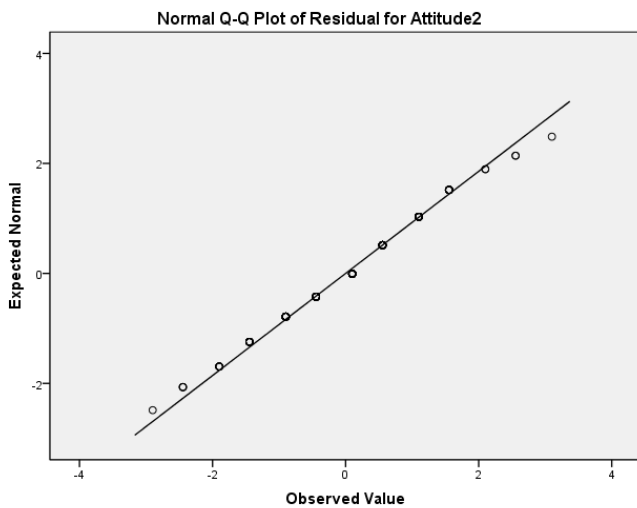
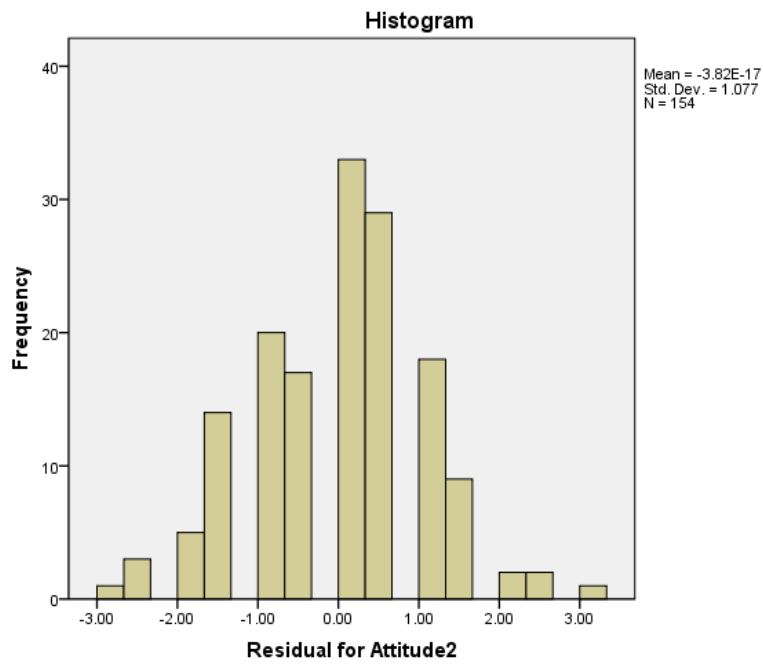


ATTITUDE 2

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Attitude2	.147	154	.000	.976	154	.009

a. Lilliefors Significance Correction

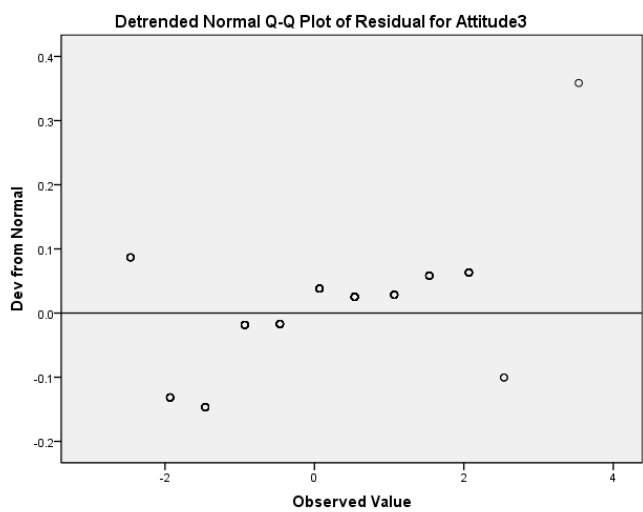
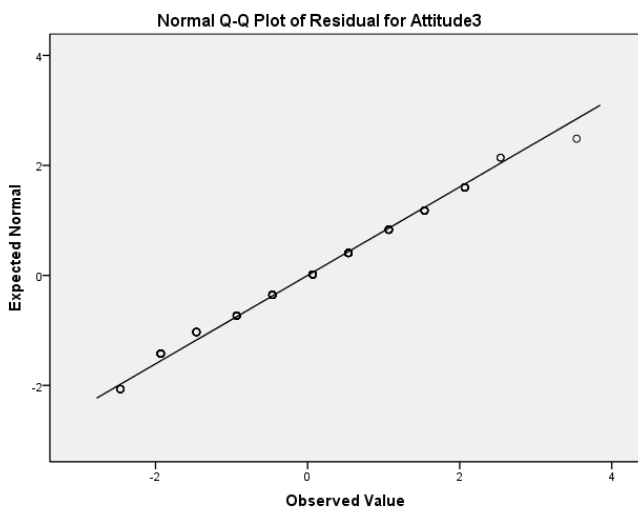
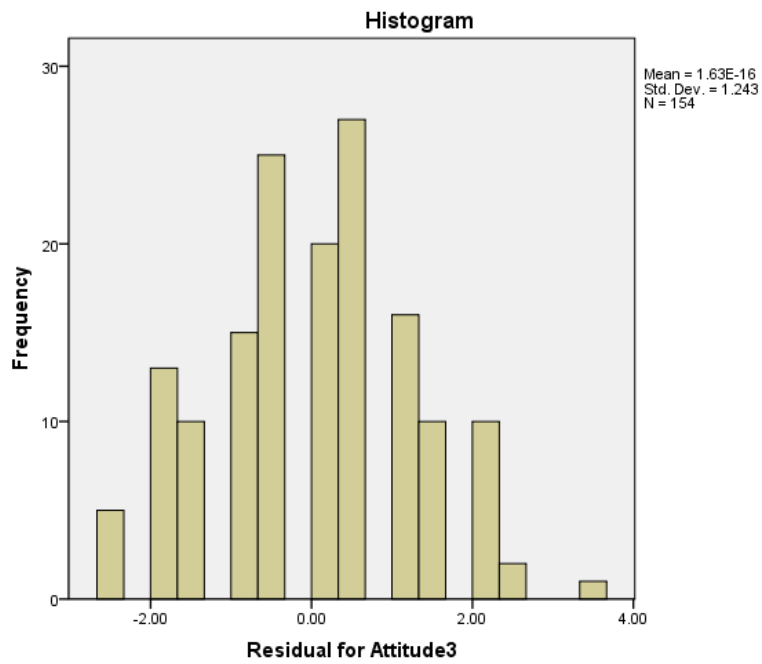


ATTITUDE 3

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Attitude3	.096	154	.001	.976	154	.008

a. Lilliefors Significance Correction

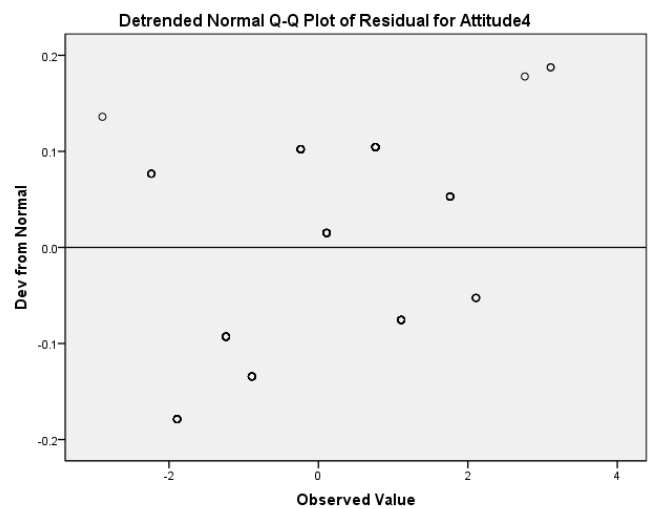
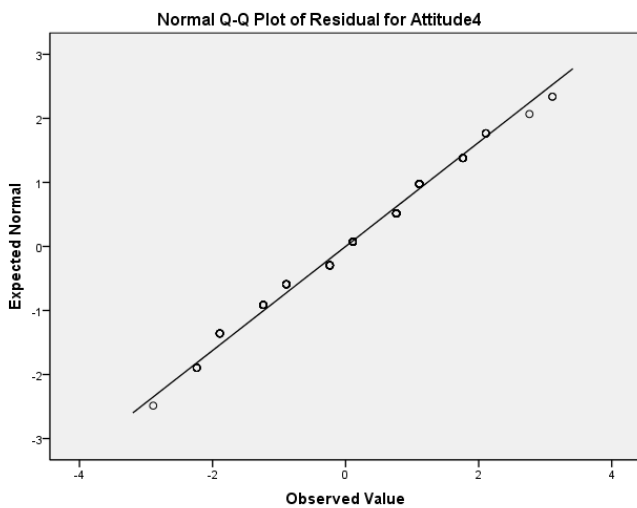
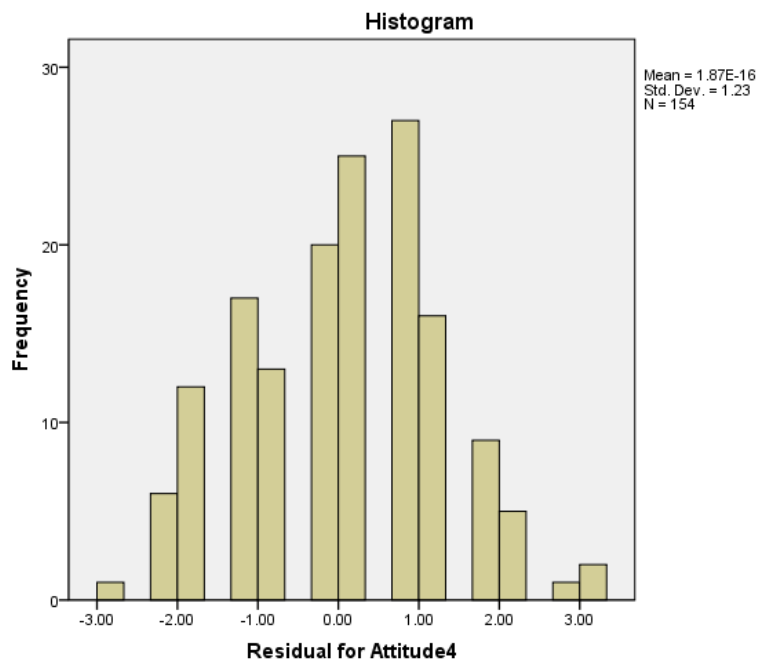


ATTITUDE 4

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Attitude 4	.122	154	.000	.973	154	.004

a. Lilliefors Significance Correction

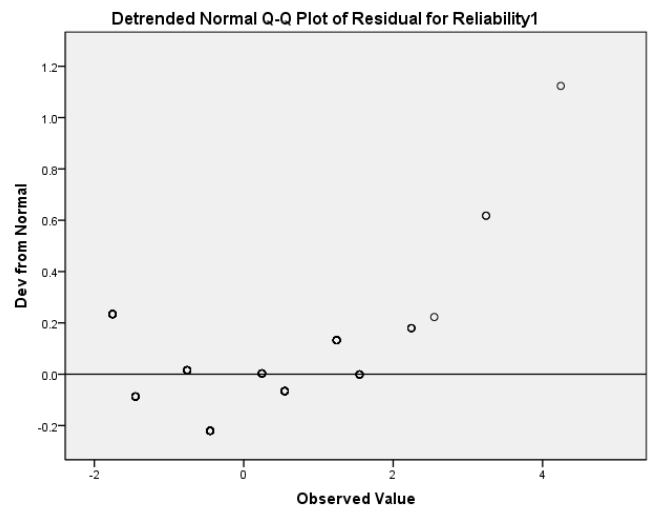
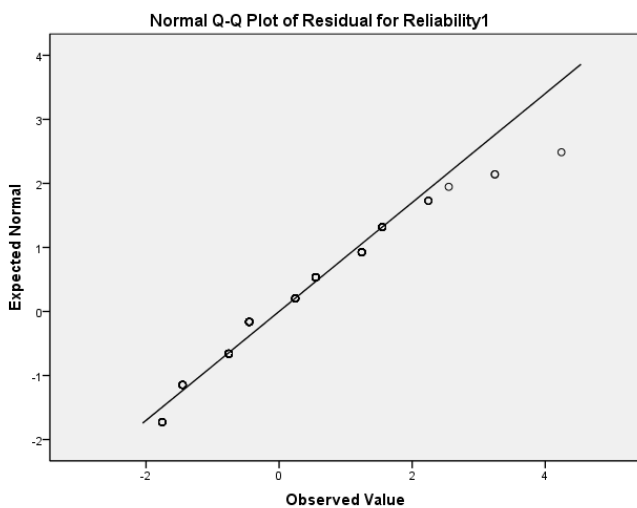
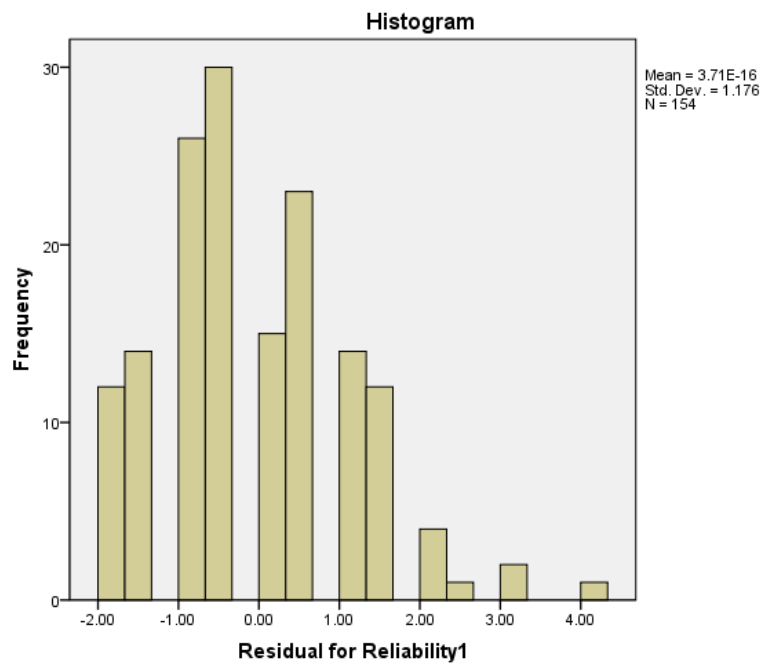


RELIABILITY 1

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Reliability 1	.182	154	.000	.942	154	.000

a. Lilliefors Significance Correction

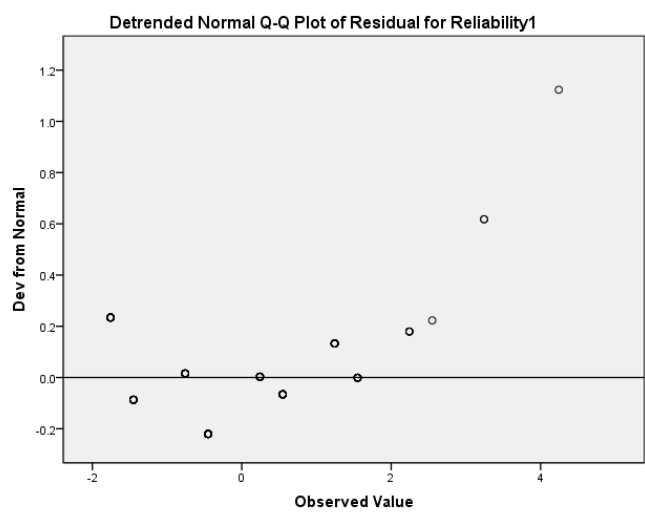
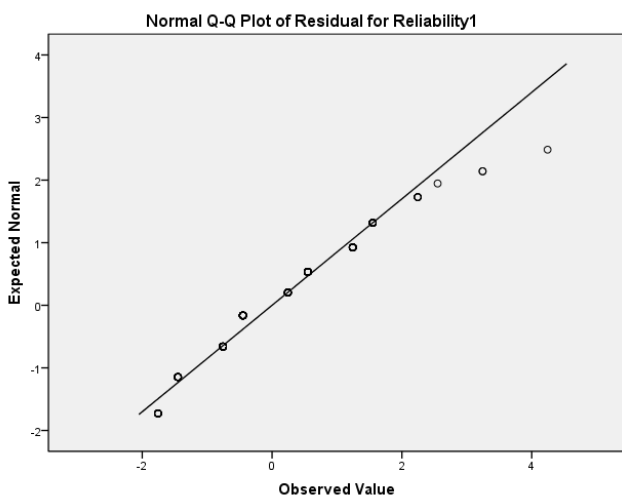
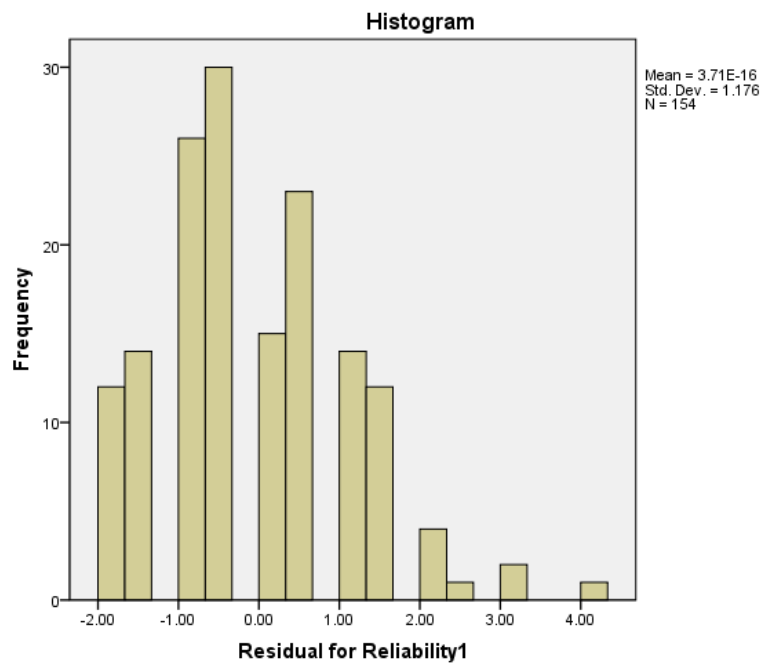


RELIABILITY 2

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Reliability 1	.182	154	.000	.942	154	.000

a. Lilliefors Significance Correction

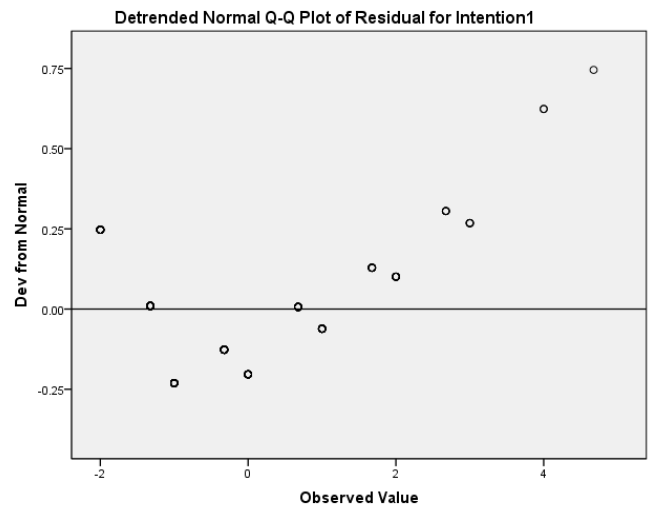
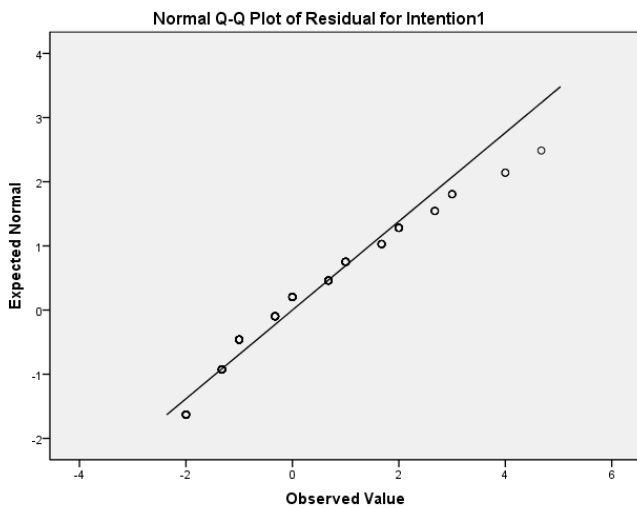
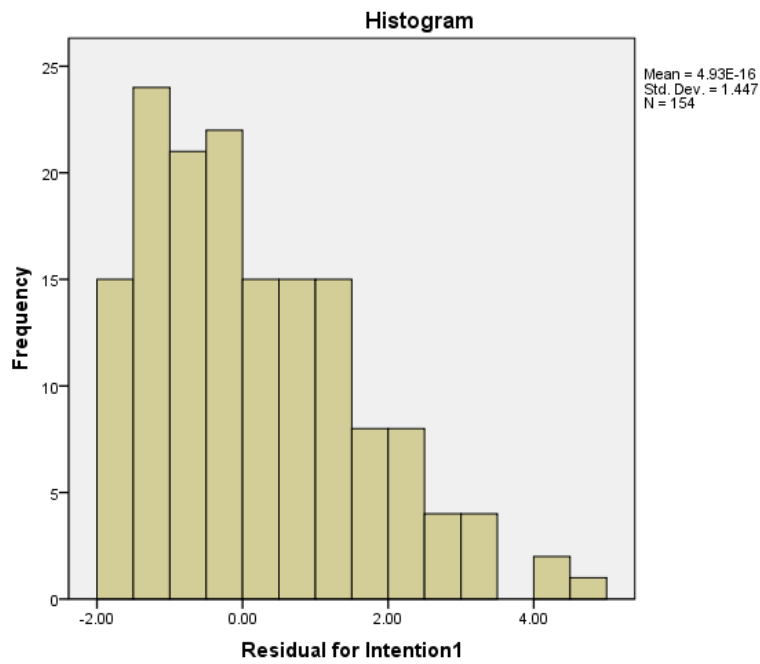


INTENTION 1

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Intention 1	.145	154	.000	.936	154	.000

a. Lilliefors Significance Correction

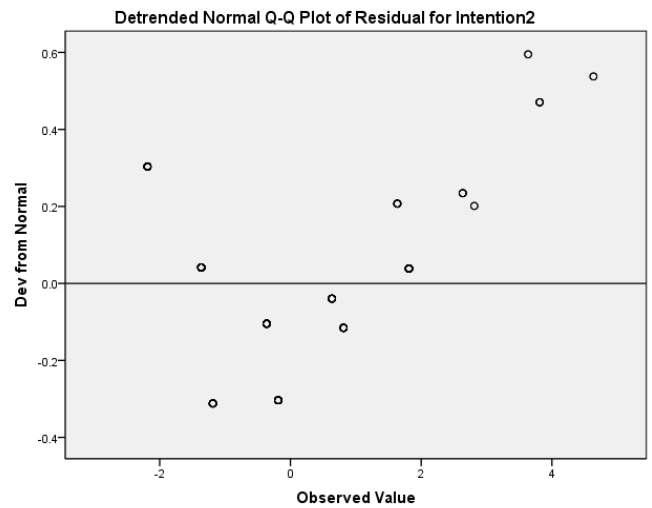
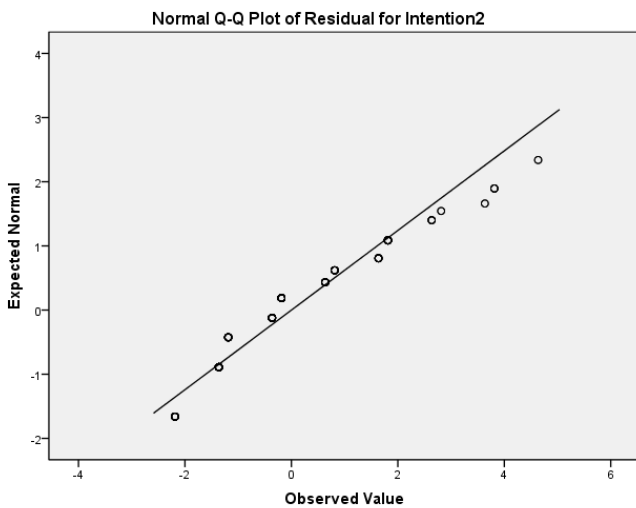
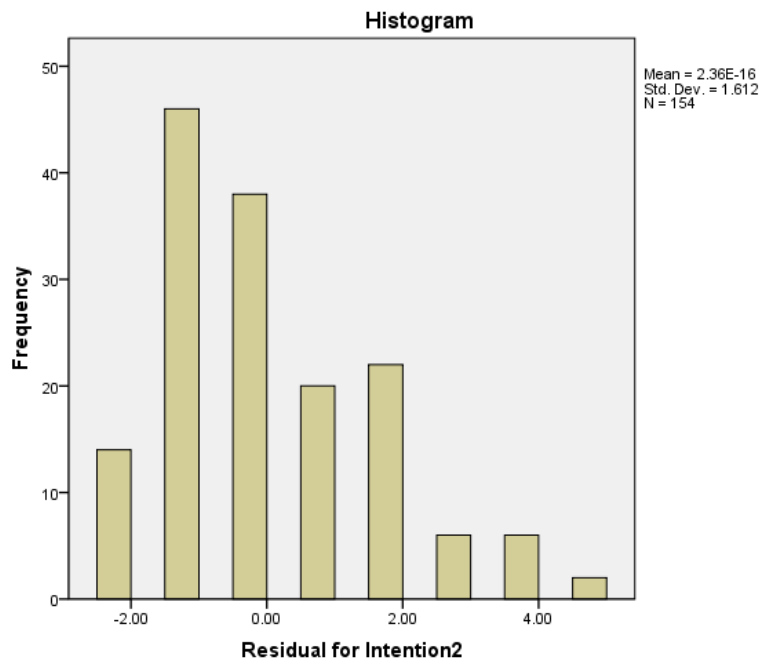


INTENTION 2

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Intention 2	.183	154	.000	.916	154	.000

a. Lilliefors Significance Correction

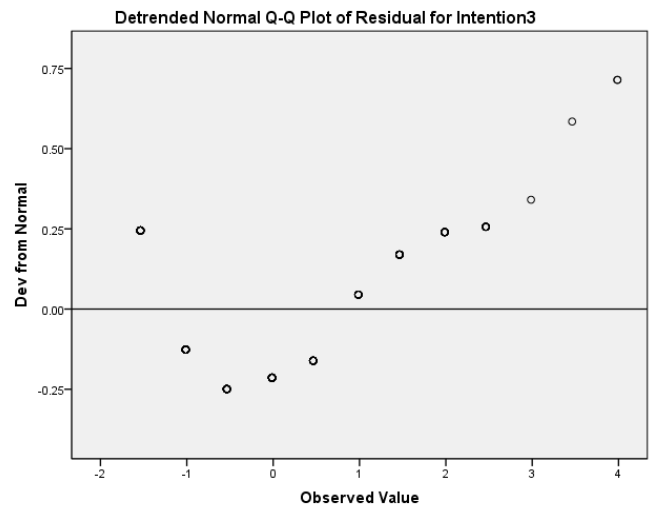
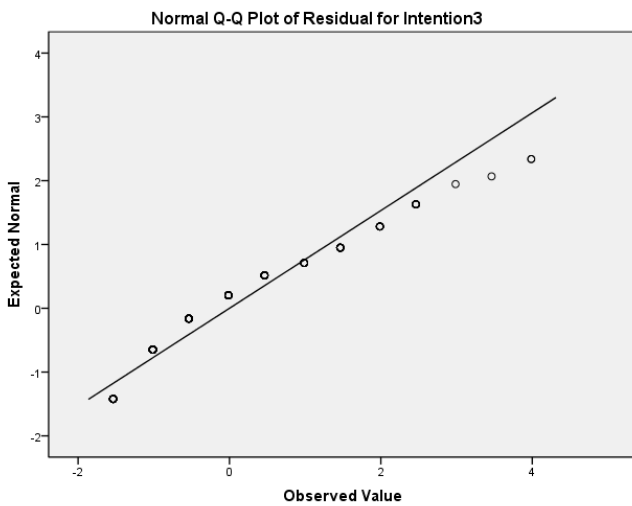
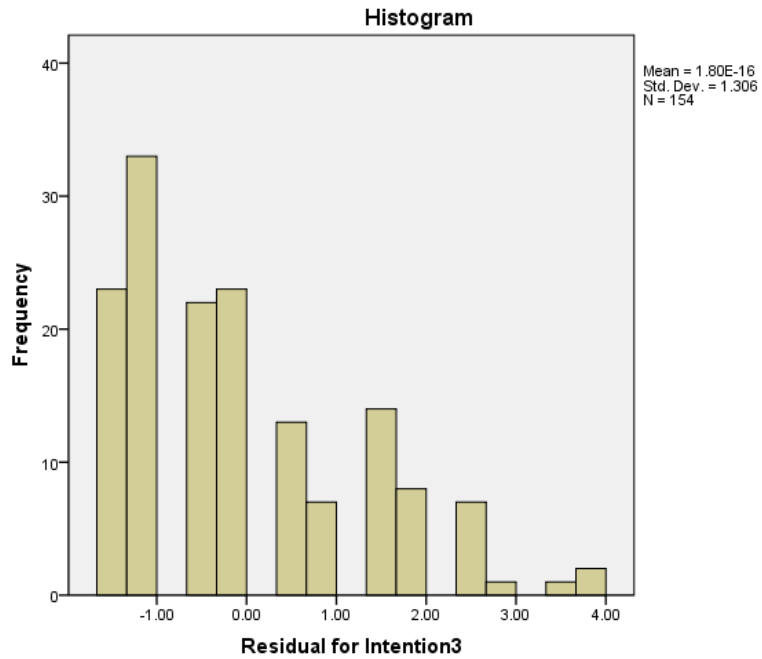


INTENTION 3

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Intention 3	.166	154	.000	.904	154	.000

a. Lilliefors Significance Correction

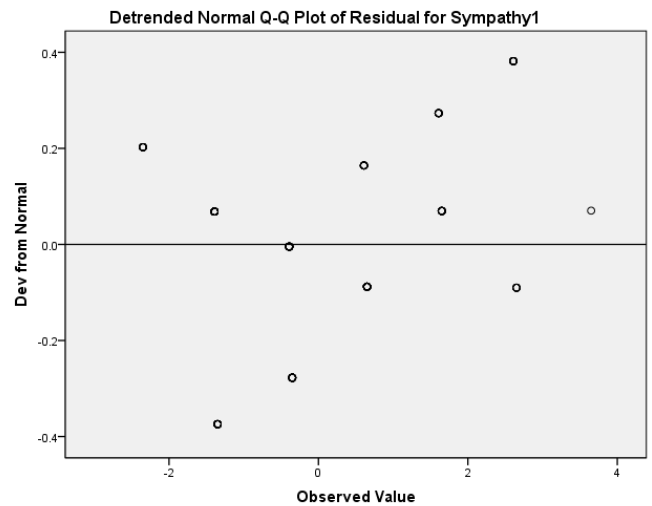
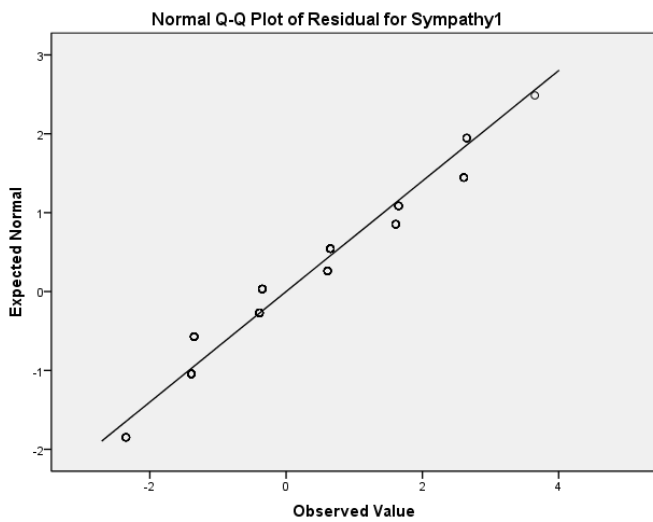
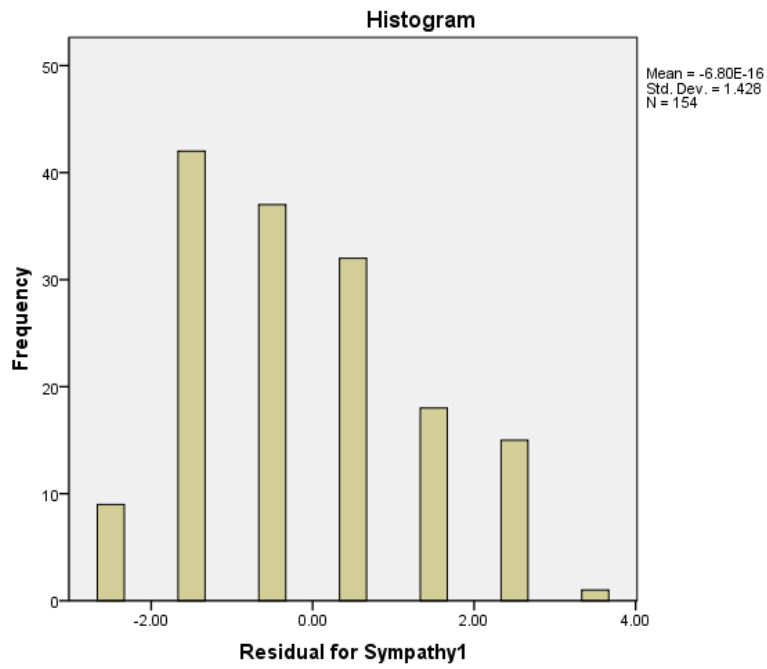


APPEAL 1

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Appeal 1	.168	154	.000	.927	154	.000

a. Lilliefors Significance Correction

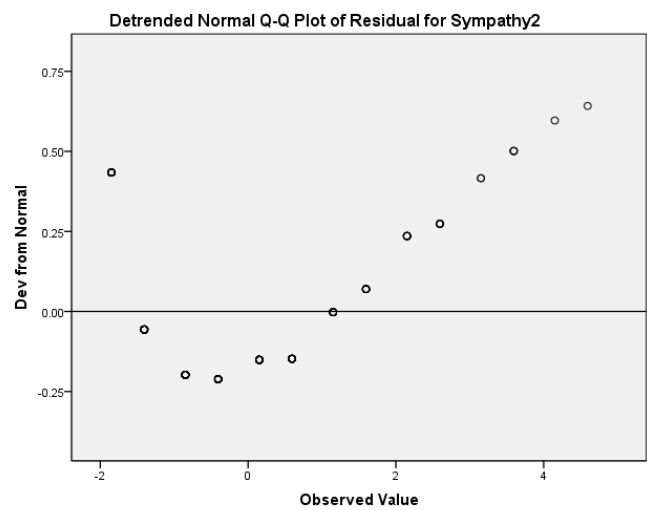
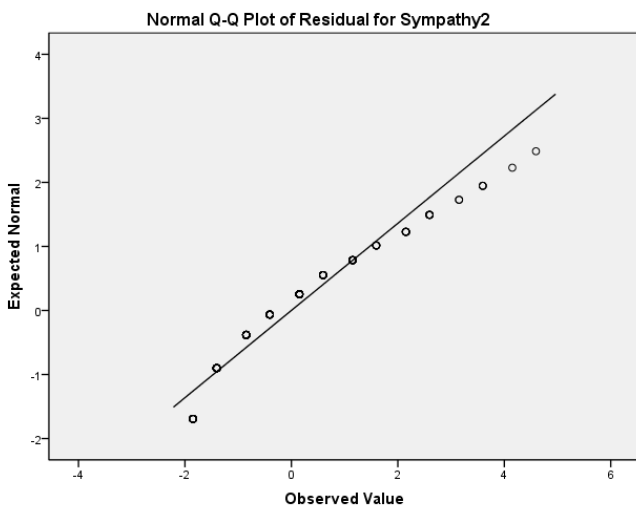
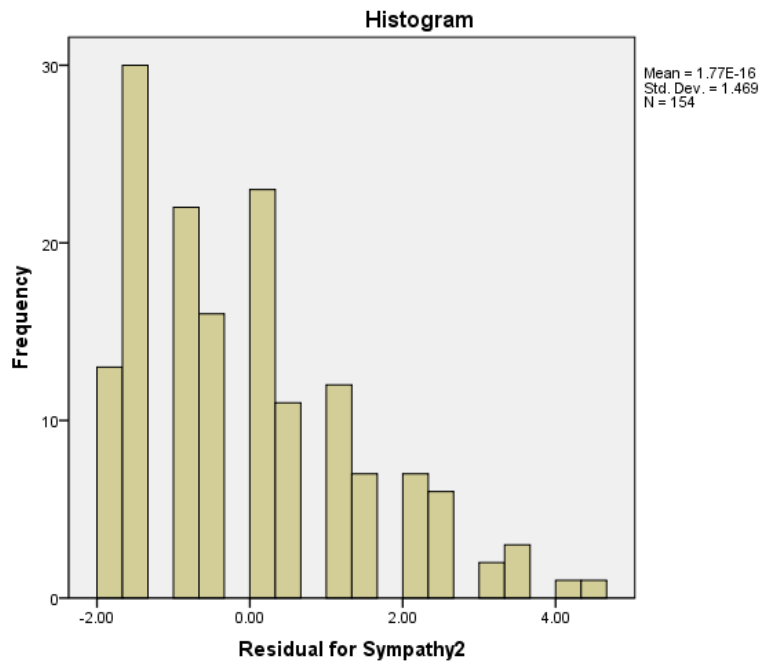


APPEAL 2

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Appeal2	.141	154	.000	.917	154	.000

a. Lilliefors Significance Correction

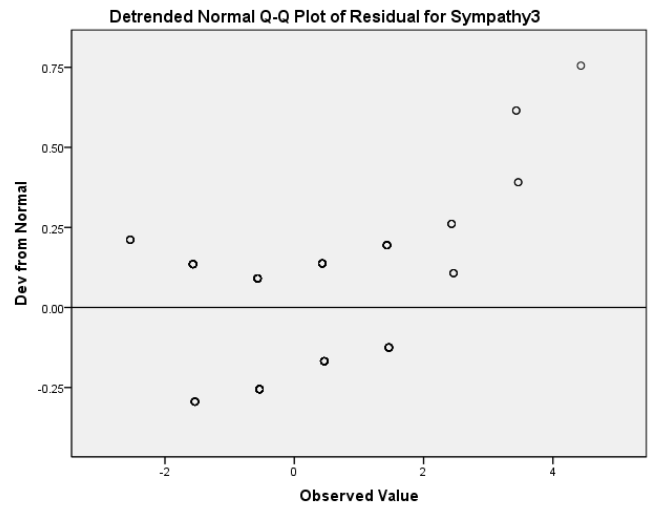
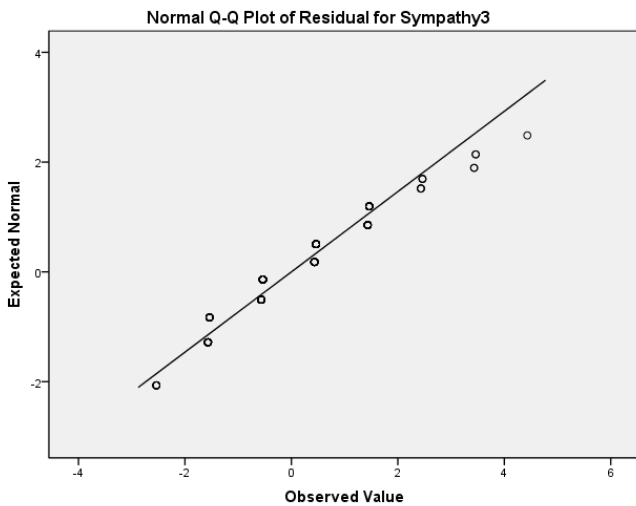
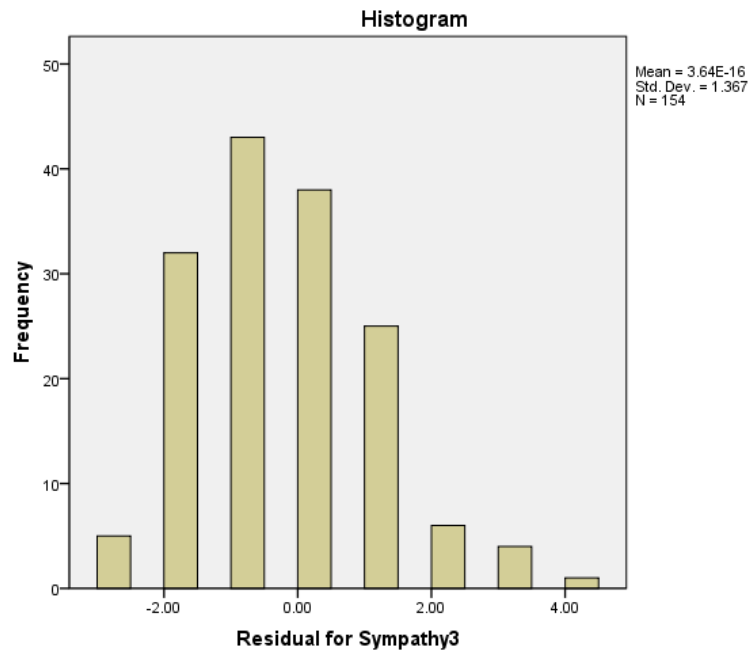


APPEAL 3

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Appeal 3	.172	154	.000	.936	154	.000

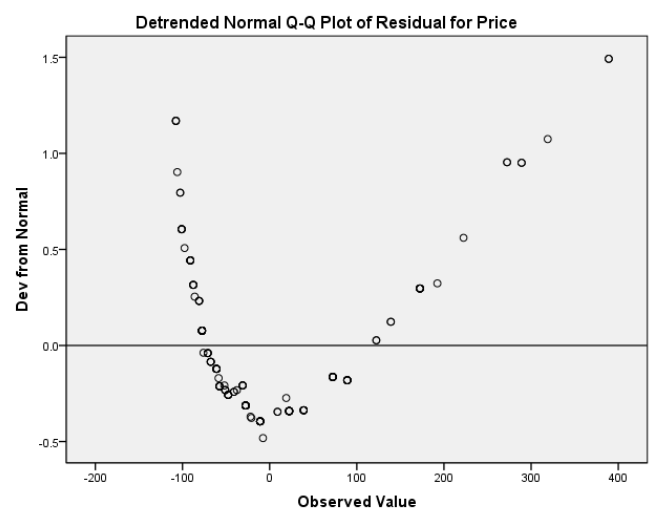
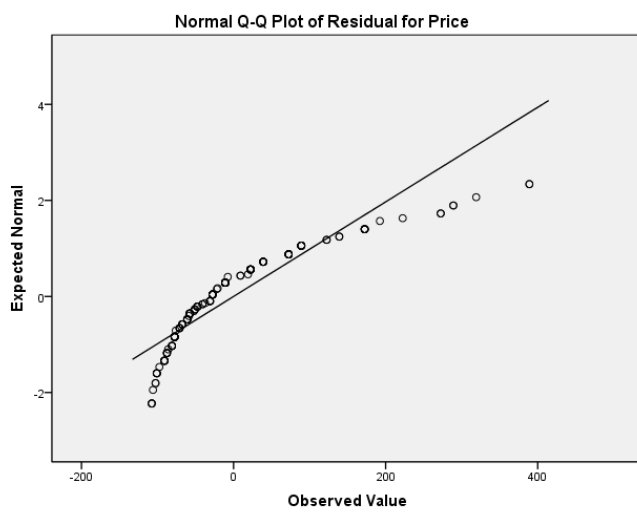
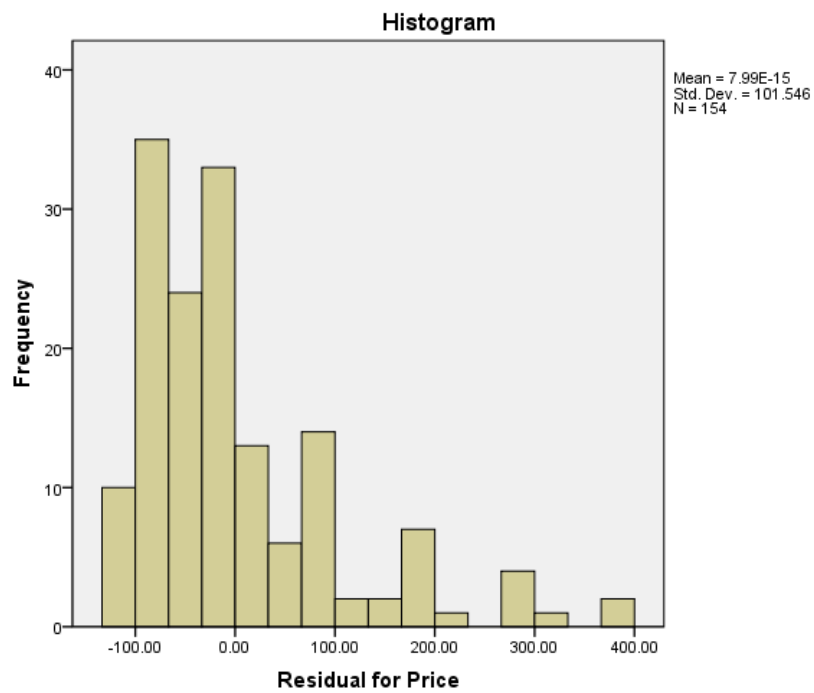
a. Lilliefors Significance Correction



APPENDIX N – Assumption for ANOVA – Evaluation Product PRICE

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Price	.199	154	.000	.823	154	.000

a. Lilliefors Significance Correction



APPENDIX O – Regression Model – Covariate to Movie’s Opinions

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	1.865	.407		4.584	.000
	Condition	-.010	.012	-.058	-.836	.404
	Know the movie?	-.001	.043	-.001	-.020	.984
	Course	.109	.075	.102	1.453	.148
	Living Together	-.041	.291	-.010	-.141	.888
	Pardo	.049	.100	.034	.494	.622
	Yellow	-.032	.085	-.026	-.377	.707
	Age	.007	.020	.032	.337	.736
	Gender	-.011	.039	-.019	-.271	.787
	Semester	-.006	.014	-.040	-.438	.662

a. Dependent Variable: Movie Opinion

b. Note: For models with dependent variable Movie Opinion, the following variables are constants or have missing correlations: Married, Divorced, Other, Black, Native Indian. They will be deleted from the analysis.

APPENDIX P – Regression Model – Covariate to Ad's Opinion

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	9.574	1.488		6.435	.000
	Condition	-1.198	.100	-.726	-11.977	.000
	Know the movie?	-.046	.113	-.026	-.412	.681
	Course	-.029	.188	-.010	-.155	.877
	Living Together	-.111	.633	-.011	-.176	.861
	Pardo	-.100	.299	-.021	-.334	.739
	Yellow	.255	.227	.069	1.123	.263
	Age	-.023	.060	-.035	-.374	.709
	Gender	.055	.101	.033	.542	.589
	Semester	.002	.039	.005	.050	.960
	Has bought MP3	-.146	.172	-.055	-.848	.398
	Has used a MP3	-.999	.644	-.098	-1.552	.123
	Credibility	.009	.065	.009	.133	.894
	Involvement	-.006	.046	-.009	-.142	.887

a. Dependent Variable: Ad's Opinion

APPENDIX Q – Regression Model – Evaluation Product with Covariate

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.337	4	9.084	10.566	.000 ^a
	Residual	128.101	149	.860		
	Total	164.438	153			

- a. Predictors: (Constant), Conditions, Credibility, Bought a MP3, Has used MP3
 b. Dependent Variable: Final Score

Coefficients^a

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	-3.959	1.285		-3.081	.002
	Condition	.695	.150	.336	4.626	.000
	Credibility	.165	.093	.132	1.769	.079
	Has used MP3	2.617	.983	.203	2.663	.009
	MP3	.682	.249	.207	2.735	.007

- a. Dependent Variable: Final Score

APPENDIX R – Regression Model – Attitude 4 and Appeal 2 with Covariate

Attitude 4**ANOVA^b**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.794	3	7.931	5.601	.001 ^a
	Residual	212.420	150	1.416		
	Total	236.214	153			

a. Predictors: (Constant), Bought a MP3, Condition, Credibility

b. Dependent Variable: Attitude 4

Coefficients^a

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	.897	.977		.918	.360
	Condition	.345	.192	.139	1.795	.075
	Credibility	.255	.117	.171	2.182	.031
	MP3	.814	.309	.206	2.635	.009

a. Dependent Variable: Attitude 4

Appeal 4**ANOVA^b**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35.415	3	11.805	5.859	.001 ^a
	Residual	302.221	150	2.015		
	Total	337.636	153			

a. Predictors: (Constant), Has used a MP3, Involvement, Condition

b. Dependent Variable: Appeal 2

Coefficients^a

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	-2.766	1.856		-1.490	.138
	Condition	.521	.230	.176	2.267	.025
	Involvement	-.270	.100	-.209	-2.703	.008
	Has used a MP3	3.611	1.429	.196	2.526	.013

a. Dependent Variable: Appeal 2

APPENDIX S – Experiment Screen

Seja bem-vindo ao Consumer Lab da FGV.
Você está participando de um estudo sobre aprendizado com filmes.

O estudo tem duração aproximada de 15 minutos.

Em breve SERÁ ENTREGUE a você uma folha com instruções de como proceder.

Lembre-se, não é permitido conversar com colegas dentro da sala.

Please enter password to continue...

Continue ▶

Na próxima tela você irá assistir a um filme do Jonh Nash.

Ao final, será realizado algumas questões sobre o filme e sua experiência em assisti-lo.

Preste atenção no filme. Procure ser sincero em suas respostas.
Lembramos que as respostas são CONFIDENCIAIS.
Não há respostas certas ou erradas.

Para passar para a próxima tela aperte em continue (canto direito)

Continue ▶

Na sua opinião esse filme é:

- 1 TRISTE
- 2 NEUTRO - Nem Triste Nem Alegre
- 3 ALEGRE

O que você achou sobre o filme?

1.

Press ENTER after each response...

Você acha que filmes como esse deveriam ser usados em sala de aula para auxiliar professores no ensino? Justifique sua resposta.

1.

Press ENTER after each response...

Qual o seu envolvimento com MP3? (quanto você conhece)

1 Muito envolvido

2

3

4

5 Nada envolvido

Qual sua credibilidade em relação a anúncios de produtos em jornais?

- 1 Nenhuma credibilidade
- 2
- 3
- 4
- 5 Muita credibilidade

Agora

IMAGINE QUE SUA AMIGA ESTÁ FAZENDO ANIVERSÁRIO.

VOCÊ GOSTARIA DE DAR UM PRESENTE PARA ELA.

Ao prosseguir você verá um anúncio de um produto filandês. Observe com atenção ao anúncio. Após alguns segundos, novas instruções aparecerão na tela.

Continue ►

IMPORTANTE

ANTES DE PROSEGUIR PARA O ANUNCIO APERTE NO TECLADO A TECLA F8

Essa tecla é importante para que o programa carregue a foto do anúncio.

Em seguida aperte CONTINUE

Continue ▶



Tradução do Texto para Português

É aniversário da sua amiga?
Mande um presente para ela.

Que tal um Mp3?

Com rádio FM e AM
Bateria interna de íon de lítio recarregável
com duração de 24 horas
Capacidade de 8 GB
Armazena de 2000 a 4000 músicas
Peso de 36,4 gramas
Frete Grátis



Continue ►

Em uma escala de 1 - 7.

Sendo POUCO = 1
MUITO = 7

Quão confiável você considera este produto?

- 1 Nada confiável
- 2
- 3
- 4
- 5
- 6
- 7 Muito confiável

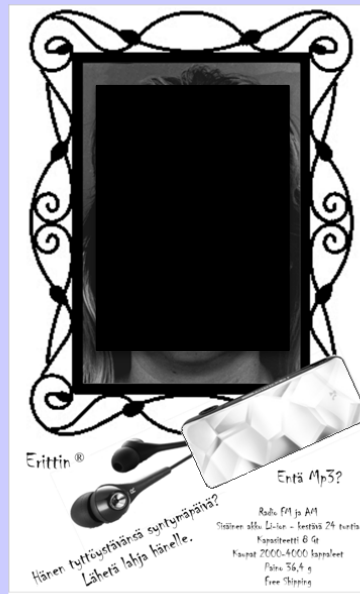


Em uma escala de 1 - 7.

Sendo POUCA PROBABILIDADE = 1
MUITA PROBABILIDADE = 7

Se você estivesse planejando comprar um produto deste tipo, qual a probabilidade de você escolher este produto?

- 1 Nenhuma probabilidade
- 2
- 3
- 4
- 5
- 6
- 7 Muita probabilidade



Em uma escala de 1 - 7.

Sendo POUCO = 1
MUITO = 7

Quão atraente esse produto lhe parece?

- 1 Nada atraente
- 2
- 3
- 4
- 5
- 6
- 7 Muito atraente



Em uma escala de 1 - 7.

Sendo POUCO = 1
MUITO = 7

Quão simpático este produto lhe parece?

- 1 Nada simpático
- 2
- 3
- 4
- 5
- 6
- 7 Muito simpático



Em uma escala de 1 - 7.

Sendo POUCO = 1
MUITO = 7

Quão agradável esse produto lhe parece?

- 1 Nada agradável
- 2
- 3
- 4
- 5
- 6
- 7 Muito agradável



Em uma escala de 1 - 7.

Sendo POUCA PROBABILIDADE = 1
MUITA PROBABILIDADE = 7

Se um amigo estivesse procurando um produto deste tipo, qual a probabilidade de você recomendá-lo comprar este produto?

- 1 Nenhuma probabilidade
- 2
- 3
- 4
- 5
- 6
- 7 Muita probabilidade



Em uma escala de 1 - 7.

Sendo POUCOS = 1
MUITOS = 7

Quantos benefícios que você pensa que este produto oferece ao consumidor?

- 1 Nenhum benefício
- 2
- 3
- 4
- 5
- 6
- 7 Muitos benefícios



Em uma escala de 1 - 7.

Sendo POUCA PROBABILIDADE = 1
MUITA PROBABILIDADE = 7

Qual a probabilidade de você
comprar esse produto?

- | | |
|---|-----------------------|
| 1 | Nenhuma probabilidade |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | Muita probabilidade |



Em uma escala de 1 - 7.

Sendo BAIXA = 1
ALTA = 7

Como você avalia a qualidade
desse produto?

- | | |
|---|----------------------|
| 1 | Baixíssima qualidade |
| 2 | |
| 3 | |
| 4 | Indiferente |
| 5 | |
| 6 | |
| 7 | Altíssima qualidade |



Em uma escala de 1 - 7.

Sendo POUCO = 1
MUITO = 7

Quão favorável você está sobre esse produto?

- | | |
|---|-----------------|
| 1 | Nada favorável |
| 2 | |
| 3 | |
| 4 | Indiferente |
| 5 | |
| 6 | |
| 7 | Muito favorável |



Em uma escala de 1 - 7.

Sendo POUCO = 1
MUITO = 7

Qual o nível de sensação de segurança esse produto lhe passa?

- | | |
|---|--------------|
| 1 | Nada seguro |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | Muito seguro |



Quanto você pagaria por esse produto?

1.

Press ENTER after each response...



Em uma escala de 1 - 7.

Sendo BAIXO = 1
ALTO = 7

Em comparação com produtos similares como
você avalia a qualidade deste produto?

- | | |
|---|----------------------|
| 1 | Baixíssima qualidade |
| 2 | |
| 3 | |
| 4 | Indiferente |
| 5 | |
| 6 | |
| 7 | Altíssima qualidade |



Qual a expressão facial da pessoa do porta retrato?

- 1 Sorrindo
- 2 Neutro (Não esta sorrindo)

Você já COMPROU um MP3?

- S Sim
- N Não

Você já USOU um MP3?

S Sim

N Não

Quantos anos você tem?

Utilize apenas os números.

Press ENTER when you have typed your answer

Qual o curso que você está realizando?

- 1 Administração de Empresas
- 2 Administração Pública
- 3 Outros

Você é do curso de graduação?
Em qual semestre você se encontra?

- 1 1 Semestre
- 2 2 Semestre
- 3 3 Semestre
- 4 4 Semestre
- 5 5 Semestre
- 6 6 Semestre
- 7 7 Semestre
- 8 8 Semestre
- 9 9 Semestre
- 10 10 Semestre
- 11 Outros

Qual a sua etnia/cor da pele?

- 1 Cor Branca
- 2 Cor Preta
- 3 Cor Parda
- 4 Cor Amarela
- 5 Raça/Etnia Indígena

Qual o seu sexo?

- 1 Feminino
- 2 Masculino

Qual o seu estado civil?

- 1 Solteiro (ou namorando)
- 2 Casado
- 3 Amasiado (mora junto)
- 4 Divorciado
- 5 Outro

Escreva abaixo o que foi pesquisado nas telas anteriores?

gfdjj

Continue ▶

Prezado participante, durante a sua participação nesse estudo sua imagem pode ter sido gravada por até 10 SEGUNDOS. Essas imagens servirão apenas para analisar se você participou de forma adequada no estudo. NENHUMA IMAGEM SERÁ DIVULGADA OU PUBLICADA. Sendo assim, gostaria de saber se posso analisar o seu vídeo APENAS para a verificar se os procedimentos foram seguidos corretamente. Esse procedimento é importante para a validação dessa pesquisa.

1

SIM

2

NÃO

FIM

Pesquisa Realizada com Sucesso.

Obrigado.