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Do Emotions Have an Effect on Brand Versus Non Branded Cold Green Tea Drinks?

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Abstract

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Introduction
The objectives were to assess consumers' emotional valence in response to drinking canned green tea, and assess effects of brand identification. Corollary objectives were to determine triangulated relationships across qualitative and quantitative approaches.

Methods
61 panelists evaluated identical tea samples: 27 were informed of the brand, 34 received tea without branding. Responses of panelists were assessed by self-report with the EsSense25 emotional profile tool, instrumental FaceReader, and qualitative open-ended interviews.

Results
For FaceReader (0-1 scale), top mean scores were: Happy (0.98), Surprised (.59) and Disgusted (.50). When controlling for age and gender, branded has a significant positive association with FaceReader Happy (p=.032). The top 3 (Likert 1-5) mean descriptive scores for EsSense25 emotional valences were: Good (3.56), Satisfied (3.47) and Pleasant (3.42). Strongest significant correlations among EsSense25 and FaceReader were negative associations between FaceReader's measurement of Happy with the EsSense25 measurements of Aggressive (p=.004), Wild (p=.022), and Worried (p=.030). Five thematic elements uncovered from interviews potentially elucidated quantitative findings; 70% of branded participants recalled *Memories* (n=19) versus 38% of unbranded participants recalled memories (n=13). The interviews also revealed 64.7% of branded participants associated the product with its *Flavor* (n=22) versus 67% of branded participants (n=19). Responses from 22% of the branded group addressed canned green tea associations with *Cost* or pricing (n=6); the unbranded group were excluded from *Cost* questioning because these participants were blinded from knowing the actual product and had no arbitrary statements about costs recorded from interviews with this group. In *Can Imagery*, 37% of only the branded group (n=10) commented on the can; non-branded participants were blinded to the green tea product and references about other drinks (not used in the study) were excluded from the imagery theme. One of the interesting qualitative findings was 0% or (n=0) branded group participants mentioned the *Health benefits* of the product, while 26% of unbranded participants (n=9) mentioned the health benefits of the green tea.

Discussion and Conclusion
The results from FaceReader from both branded and unbranded group participants suggest that the visualization of green tea produced ambivalence. FaceReader was able to uncover a significant positive association when controlling for age and gender in the branded group with FaceReader "Happy". This age and gender group suggests that there is an emotional connection with the flavor and memorable experience that motivates consumers' choices. The EsSense25 results showed strong positive emotional scores of Good, Satisfied and Pleasant for both groups that they were satisfied with the green tea

product as a whole. The significant inverse relationship between FaceReader "Happy" outputs and self-reported outputs of "Aggressive", "Wild", and "Worried" in EsSense25 may provide elucidation of the nuances of the emotional outputs recorded by FaceReader." The qualitative thematic elements demonstrated that nostalgia influences product appreciation; branding, at least in the present study, had no effect on taste other than being (satisfied) overall; the brand product was associated with being cheap; the can affected consumer desire for the product; and only unbranded tea was associated with health.

MONTCLAIR STATE UNIVERSITY

Do Emotions Have an Effect on Brand versus Non Branded Cold Green Tea drinks?

by

Michael Fattrosso

A Master's Thesis Submitted to the Faculty of

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DO EMOTIONS HAVE AN EFFECT ON BRAND VERSUS NON BRANDED COLD GREEN TEA DRINKS?

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1. Introduction

The food and beverage industry brand name products are constantly evolving every year. New products are consistently being put out on the market. The success or failure of products is determined by consumers and how the products are marketed and distributed. The brand names have advanced food products by influencing peoples' decisions. This is generally accomplished through the use of advertising (Hudson, 2015). In addition, tracking consumers' consumption of food brand products help companies evolve their product lines (Cooper, 1994). It has been shown that consumers respond more favorably towards new food if they have had a previous successful experience with the same brand. Fundamentally, the success and failure of branded food products has been intrinsically linked to consumers' emotions (Smith & Park, 1992).

The link between consumers' emotions and how branded food was purchased for consumption has generally been overlooked in quantitative research when examining consumption practices (Kingstone, Smilek, & Eastwood, 2008).The testing of brand products has exploded in the last 10 years. For instance, mashed potatoes are tested in general, but specific brands of mashed potatoes and how consumers respond to them are slowly being incorporated into tests. This link has been generally defined on paper as a number without a deeper insight describing the emotional mechanism behind consumers' purchase of branded food products. The results of one study that explored food in branding and emotions using interviews indicated the brand names of flavored milk induced positive emotions in children (De Pelsmaker, Schouteten, & Gellynck, 2013). The taste of the flavored milk evoked strong ties among specific brands and emotions, thus bringing about happiness in the children towards certain flavored milks. The

children responded in an excited manner to seeing the brand name of the milk, which was associated with memories of past experiences. The following literature review will explore the existing literature on both emotions and branding, to assess how those findings inform the food industry about consumer emotions to brand food products and what areas need more investigated.

A clear concise definition of emotion is needed in order to understand emotions and their role in food products. Reisenzein (2009) described emotions as "non-conceptual outputs" meaning that the primary objective is to analyze or figure out the human mind. Other researchers defined emotion as short-term affective responses to the appraisal of particular stimuli that has reinforcement potential meaning it triggers a quick response (Gibson, 2006a). Izard (2007) defined emotions as "natural kinds" or basic functions that drive a persons' state of mind. Ferrarini (2010) also defined an emotion as a brief, intense physiological and mental reaction focused on a referent. The term emotion is a term that needs to be further studied and has aspects that researchers still need to uncover. For the purpose of this thesis, emotions are deeper thoughts that effect personal interpretations of particular stimuli. Emotions can be driven by thirst, healthiness, and hunger among other physiological feelings, but also contain past memories and unconscious responses in peoples' lives.

Emotion schemas have elements that include neural processes, internal and external expressions, and cognition, but researchers have not agreed on how to define them (Izard, 2007). Emotional schemas are what influence peoples' choices, shape personalities, and particularly how food is analyzed and recorded. Approaches have been taken to uncover peoples' external feelings about food, but internal states about food hard

to understand. These internal feelings are internalized through the unconscious part of the brain until something presented opens up the memory. For example, when a person eats an apple an expression of pleasure or disgust could sometimes be detected on their face. However, they may have no apparent sense of the internal memories that drew them to that specific food. The use of "interaction" through cognitive processes may help uncover the true intensity of an emotion (Izard, 2007). The use of sensory profiling may be useful for this analysis.

Sensory profiling of emotions in relation to brand experience produces a rapid stimulation in the brain upon eating, seeing, or sniffing a sample of food. Sensory profiling can be described as an approach used to test intensities of sensory characteristic of food through the use of emotions (Stone, Sidel, Oliver, Woolsey, & Singleton, 1974). The intersection between emotional response and biological processes of sensory characteristics initiates a series of events based on the visualization of brand products (Piggot, 1994). Within the biological process of the brain, the first reaction triggers an initial view of the brand product that could generate a conscious and unconscious response in the brain. The conscious part of the brain is the interpretation of what is visually analyzed. James (1884) initiated this seminal theory over a century ago (and still utilized today). He considered the state of consciousness as a "feeling that is the emotion," that encompasses totally body expression. As visceral as the reaction is consciously, a similar response is experienced unconsciously. Clore (1994) simply argued that emotions involve an "experience" from the unconscious part of the brain. The involvement of a particular food brand product may not be (consciously) reciprocated from a past memory when asked to rate the product. Dijksterhuis & Smith (2005) made a

logical decision claiming that the unconscious mechanisms that drive a persons' response process are indeed connected to the conscious part of the brain. Most tests conducted consist of techniques based off of self-reports that dictate "consciousness". For example, techniques such as questionnaire profiles or hedonic rating scales have been widely used to quantify conscious attributes. These types of self-reports produce quick stimulations that are mainly dictated by the consumers sensory characteristics without recalling the unconscious memory.

Emotional feelings and brand recognition have been shown to present a correlation, although it is unclear as to how food affects those feelings (Pelsmaeker, 2013). When a person thinks of a product such as ice cream, which is known for its sweetness, it potentially triggers an emotional feeling of happiness despite the brand as stated by numerous authors (Robin, Rousmans, Dittmar, and Vernet-Maury, 2000). Referring back to James, individuals' feelings are perceived as the same reoccurring change in emotion through product experiences. This change is the emotional feeling attached to each product experience. For example, a brand name product, take out items, or home cooked meals produce memories. If James (1884) suggests emotions trigger a past memory, then those emotions can be associated with a product. This then creates the psychological reaction. Also, if what James says is true that "feeling is the emotion" then this needs to be specifically explored to uncover the connection between emotion and the food product.

Emotions are triggered by the perception of food, which has been linked to brand food products and the image they project, which play a critical role in merchandizing. Branded food items have been found to enhance consumers' pleasure of using products

(Jiang, 2014). The idea of enhancing the consumers' pleasure is ostensibly accomplished through the use of product imagery design (Simmonds & Spence, 2016). The choices consumers' make could be influenced from not only products, but also the names and images they associate with these products. The emotions consumers feel could be visualized from "concepts" that are associated with food brand products. These concepts are key links between consumer emotions and food brands that ultimately form a conceptualization from more than just reactions to products. Going forward, future research should address the influences brand names and imagery has on consumer choice (Gutjar, 2015).

Food benefits the consumer through different circumstances, contexts, and conceptualizations (Thomson, 2015). Conceptualizations can be described as something a person feels emotionally from thoughts put together. Research shows the use of a regular label shown to a participant prior to taste testing has been shown to activate areas of the brain involved in "reward" evaluation (Ng, 2011). For example, Lotz (2013) found that "fair trade" chocolate was rated as better tasting than the same exact chocolate with a conventional label. The conceptual association of emotion and brand products could potentially better evaluate consumer reactions. This initial view is not necessarily the dominate attribute that may be influencing these emotions. Many brand name products attributes influence consumers overall conceptualization. This is presented through label depictions, nutritional and educational facts, degree of consumer hunger, one's motivation, appetite, cost, accessibility of food, and cultural influences (Eertmans, 2001; Lowe, Bocarsly & Parigi, 2008). The brand name products affect contextual factors or product attributes that trigger a reaction (Lensvelt & Steenbekkers, 2014).Also, the

consumers' thoughts trigger different types of emotions, as well as past memories from brand products. Understanding the relationship between the consumers' mindset through different types of circumstances or responses could potentially open up a different way of analyzing emotions for researchers.

The connection between emotion and branding can trigger an automatic response associated with certain stereotypes in regards to food products. For example, this can be illustrated in terms of institutional settings, such as the military. There exists a stereotype that military cuisine is considered lower in food quality and taste. This then prompts a negative response in the consumer without questioning. This immediate reaction that occurs through "stereotyping" influences a positive or negative effect that acts as a chain reaction, which according to one study is termed "pre-ingestional (Cardello, Bell, & Kramer, 1996; Cardello & Sawyer, 1992). These findings indicated that food served at home was more appealing then food served in the branches of the military. A few exceptions were foods such as Jell-O and soda due to their "specific" name brand. Being exposed to different environments can also change consumers' perception or thoughts, which in turn create assumptions, but certain food products may have that effect no matter where consumers are. Food consumption through emotion and the brand product is "highly relational" and deals with the intertwining of other practices that influence peoples' food choices on a daily basis (Halkier and Jenson, 2011). The expectation of food quality/ acceptability has been determined on previous information obtained through mass communications or other sources that effects decisions made by the consumers' (Cardello, 1995). Among all the different types of sources, motivation of consumers is based on the choices of foods that they eat. In addition, motivation has also guided

consumers' interest to buy a well-known branded product and meet their demands (Thomson & Crocker, 2014).

The thought of motivation has been shown to be affected by variables most of the time, rather than peoples' physiological needs (Booth, 1994). Popular brand name products attract attention and influence decisions based on not marketing alone. The motivation to eat is influenced by consumers' expectations, arousal, expenditures, mood, and even how words are communicated (Scholliers, 2007). Thayer (1989) coined a term for mood which determined long-lasting psychological arousal states with interacting dimensions related to energy, tension, and pleasure (hedonic tone). This could appear and persist in the absence of obvious stimuli. A participants' mood therefore affects accurate measurements; for example, a subject tastes a sample in the lab, and during the evaluation, distraction by non-related situations may occur. For the researcher, the issue of outward distractions could be causing participants to base answers not on the brand name product, but rather the influence of a particular state of mind not related to testing. These questionnaires have been used as "screening tools" in order to understand emotions, but carefully choosing emotional terms is dependent on what food or beverage is being tested. The lists of emotional terms are constantly being updated, or even created, and how participants will respond when engaged in food brand name product research is tenuous.

In lab-related research, study participants have shown emotional reactions when first viewing the brand product which is called ambivalence. It can be based on cognitive (mixed beliefs) and affective (torn) feelings or both (incongruent feelings and beliefs) (Thompson, Zanna, & Griffin, 1995). In a study on chocolate cravings by Hormes &

Rozin (2011), positive and negative ambivalence was recorded. Results showed that interactions with chocolate presented a conflict between "approach" and "avoidance", which represents positive or negative emotions that stem from memories. The visualization of the chocolate or brand name has an effect on the human mind that could recover past experiences through positive or negative emotions (Hormes & Rozin, 2011). The results also showed a decrease in ambivalence levels due to consumption of "chocolate" based on peoples' cravings and intake. Avoiding maintained its consistency based on the arousal of guilty and pleasure of ambivalence. The results could be key factors for uncovering emotional awareness towards a brand product and how it could be further looked into.

Perceiving emotions has been measured through the use of facial scaling. The Noldus FaceReader (NFR) was constructed or developed in the Noldus Information Technology, Wageningen, Netherlands. Den Uyl and Van Kuilenburg (2005) described the new system which was presented at measuring facial behavior in 2005. NFR detects the facial expressions of subjects and, therefore, can help determine overall emotional feelings. The NFR consists of "seven" basic emotions that include angry, happy, disgusted, sad, scared, surprised, and neutral (Danner, 2014). Therefore, it is required for a person to look into a camera for facial coding. This system can detect personality, attractiveness, age, and gender from a persons' face. When it looks at you, it reconstructs the face of a person three-dimensionally based on 491 model points. The program works with how a person is positioned in a chair in front of the camera. Expression is important along with lighting in the room. The use of FaceReader has been shown to agree with judgments of "trained" observers in 89% of cases (Den Uyl & Van Kuilenburg, 2005).

The FaceReader could possibly have an effect on a subjects' mindset when seeing the brand product due to the requirement of concentration. For example, when the subject looks at the camera while consuming food, a "surprise" look can be detected when presented with the sample(s) of food or beverage presented (Danner, 2014). The surprise look could be generated from brand versus unbranded acknowledgement. For example, Greimel (2006) used a facial coding system to determine people's emotions and facial reactions to tests. The study showed adult's facial reactions to be related specifically to "emotions" and not facial expression depicted on the subjects' face. The emotions felt could be triggered from the unconscious part of the brain. The "sweetness" of the sample from Greimel's study presented to the subject brought out joy in a person that was detected by more than just FaceReader. In another study using NFR, J. Mojet & Koster (2015) stated that because of the use of a combination of different methods (Face Reader & Emotive Projection Test) it helped produce better results for facial and mood detections. It produced more insight on "sensory properties" and "mood shifts" that needed to be better addressed (J Mojet & Koster, 2015). The overall connection of FaceReader is the facial signals. The facial signals of a person help identify mental processes that are occurring. These emotional communications show a natural distinction between humans and machines. As of right now, the Face Reader only detects up to the hair line of a subject. It still has some kinks to be fixed and/or modified. It is true that while most food and beverage products are tested within companies, there seems to be a lack of initial awareness when it comes to subjects' choices on food and beverage (Dijksterhuis & Smith, 2005). Jiang (2014) summarized the effects of knowing a product before tasting, which can trigger a positive or negative emotional response.

Other face reading tools, like the Emotive Projective Test and the Tobii T60 Eye Tracker have been developed for understanding emotions and its connection with the food brand product. The Emotive Projective Test (EPT) and the Tobii T60 Eye Tracker work together for determining emotional reactions (Mojet, 2015). The EPT described each photograph which had to be judged on 6 positive traits and 6 negative traits based on a sample of food. Within these traits, the subject had to rate each one on a seven point scale. The 12 emotions consisted of friendly, adventurous, cheerful, open, reliable, warm, arrogant, stressed, shy, suspicious, depressed, and solitary. The EPT takes approximately ten minutes to view all the slides which are depicted as cartoon characters representing the 12 emotions previously mentioned. The Tobii Eye Tracker was used in conjunction with the EPT to capture facial expressions. These are recorded prior and after tasting. The eye tracking sensor unit was integrated into a 17 inch flat screen monitor and presented three pictures on screen. J. Mojet (2015) used the Tobi T60 tracker to first understand the amount of time each subject used when selecting from two products. It was recorded as to the length of time the subject spent staring at the product. After the initial gaze, Mojet was focused on the duration to determine which product the subject focused on the longest. Mojet tracked the number of fixations and lengths, as well as how many times the subject looked at each product. In a study conducted by Vu (2016) the use of fixation was used for the analysis of attractive images that would capture the human eye. The amount of gazing was also recorded. Vu used fabricated meal images to capture the participants' attention, similar to vivid display images of food featured in fast food restaurants. Then participants were asked questions based on the health value, price, convenience, and then familiarity of the food. Participants rated the images on a scale of

0 to 10. The eye tracking sensor is the main resource of analysis of the images. It was set up in a certain way so that participants were positioned properly for the Tobi eye tracker to be effective. The interesting part about this study was the mere fact that there was no effect on the use of questioning because it didn't relate to consumer rating behavior as it relates to "gazing" (T.M.H. Vu, 2016). The use of face reading tools and eye movement has taken the next step into the future with the development of a virtual reality simulator the "Wunderkammer" for creating scenarios for consumers.

This newer type of method is used for tracking eye movement. This technological advancement bridges the gap between lab work and ecological validity. It works by analyzing a participant's gaze, to determine if eye movements produce positive or negative reactions. This research method integrates virtual reality worlds with the questionnaire responses, which then can be evaluated through the creation of a virtual environment to dictate the participants' emotions. Specific materials are required for this type of study, and the "Wunderkammer" uses software called Vizard 4.0 for the virtual environments. It also used 3D models, textures, and audio with a program called Autodesk 3DS Max, Photoshop, and Audacity (C. McCall, 2016). Each participant was given a visor called the nVisor SX60 and Sennheiser headphones. With these two materials, participants were asked to put it on and walk into a blank room. In this room participants saw what was presented in the virtual world based off of the design from Vizard 4.0. In this study, there were four simulated rooms that depicted what a person would generally see in real life which displayed types of scenarios. The first of the four was the affect gallery which was a virtual art museum that had pictures posted all over the room. Some of the art work was seen differently and provided in a slideshow to see

the effect of arousal and valence through positive and negative emotions. The subject

used a virtual laser pointer to complete the tasks. The second room was called the

crowded room and consisted of three different humanoid agents that displayed different

emotions of sad, neutral, or angry. It consisted of three more random humanoids and

pictures around the room. The next room was called room 101. This room was designed

to bring out the fear in the subjects. The room had different scenarios ranging from

spiders, snakes, blood, gunshot noises, collapsing floors, and explosions. The last room

was the Panopticon. The room was designed for subjects to measure everything they

noticed in the room that had added effect based on their questionnaire responses. The

virtual laser pointer was also used for this room. The Wunderkammer could present

different ways for uncovering emotions and its connection to the brand name through

depictions of a created room. While this method is new to the industry it could potentially

uncover the unconscious part of the brain that eludes consumers from making decisions

on brand name products. The choices consumers make are related to emotions that have

been uncovered in order to elicit emotional responses to food brand and unbranded

products.

Decisions that consumers make can be viewed as positive or negative which

resulted in the Positive and Negative Affect Scale (PANAS) (Watson, Clark, & Tellegen,

1988). It is considered one of the most widely used affect scales in psychology and has

been used for developing other measuring scales to determine emotions (King &

Meiselman, 2010; Chrea & Grandjean, 2009). Clark and Watson (1986) came up with

two different scales that were a Positive Affect (PA) and a Negative Affect (NA). Clark

& Watson defined NA as being related to self-reported stress and poor coping to an

individual food item from past memories. This mood factor can indeed influence peoples' emotional decisions. The use of PA was associated with social activity and the result of a memorable experience. With the development of different scales, the PANAS scale has become reliable due to its "even" amount of emotions. The positive scale included terms that consisted of attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong, and active. The negative scale included terms that consisted of distressed, upset, hostile, irritable, scared, afraid, ashamed, guilty, nervous, and jittery. In recent years, this method was put to the test in a shortened form in 2007. This shorter form of PANAS was called I-PANAS-SF which was developed by Thompson, E. (2007). In the shorter form, Thompson utilized 10 emotions from the original 20 that included active, afraid, alert, nervous, attentive, hostile, determined, ashamed, inspired, and upset. Thompson stated that the shorter form had more of a closer correlation between positive and negative results (Thompson, 2007). Recently, C. Kuesten (2014) did a study on phytonutrient supplements for smelling tests. The findings with PANAS show different product effects that consist of hedonic (liking), sensory (aroma), and emotional scores that represented different dimensions when it came to tasting, smelling, and rating (C. Kuesten, 2014). These phytonutrient products could potentially be triggering past experiences from the nose as well as the eyes. Overall, it might be useful to get some information on what drives consumers' emotions (C. Kuesten, 2014).

The EsSense Profile (EP) became the quantitative method that evolved from two existing mood and emotional questionnaires (King and Meiselman, 2010). With the creation of this questionnaire, it was one of the first questionnaires recently reintroduced back into the industry for the way it was designed. Originally, the Consumption Emotion

Set (CES) was the only method that used emotions in a way that is related to the EP and that profile consisted of forty- seven emotions (Richins, 1997). The EsSense Profile was designed to maximize information about a product. The terms in the EsSense Profile were used to analyze emotions by determining how a person felt about the sample of food or beverage through the questionnaire. The terms in the EsSense Profile consisted of 39 emotions (King & Meiselman, 2010).The EP also had two different ways of scaling. EP used a rating questionnaire that allowed for measuring the emotions on a scale of 1 to 5 and the use of a hedonic scale to measure for overall acceptability on a scale of 1 to 9. The rating scale for emotion intensity ranged from 1=not at all to 5=extremely. With these emotions in place, the EP was able to use a hedonic scale which was originally developed by Pyram and Pilgrim (1957). A checklist questionnaire was also used for subjects to easily check all that apply (CATA) without some sort of scaling. CATA gave the subject a response without rating the product on a number scale rather the subjects circle every emotion felt based on the sample (King, Meiselman, & Carr, 2013). What has made the EsSense Profile stand out is the ability to focus on a specific product. The marketing industry has top rated brand products on the market such as Pepsi or Doritos just to name a few. These products are constantly being rated and want people's feedback in order to design new flavors and ideas. The EsSense Profile allows for popular food items to be judged based on the questionnaire alone and helps determine the emotional meaning behind its relation to the brand name that drives consumer expectations. The profile provides what was described as "incremental" information as compared to traditional consumer tests and overall acceptability (King & Meiselman, 2010). EP has helped connect marketing with product development efforts based on

consumers' choices. The understanding of emotion and its relation to branding to EP

formed the EsSense25 by Michael Nestrud (2016). The work done on the EsSense25 was

helped out by the original creators of the EsSense Profile (King & Meiselman, 2010). The

EsSense25 was developed to shorten the length of the profile. In doing so, the use of

positive to negative words were more evenly balanced thus making it easier for

individual products to be tested. The 25 words that were chosen from this profile consist

of active, adventurous, aggressive, bored, calm, disgusted, enthusiastic, free, good, good

natured, guilty, happy, interested, joyful, loving, mild, nostalgic, pleasant, satisfied,

secure, tame, understanding, warm, wild, and worried. The idea behind the EsSense25

was to reduce the time it takes to fill out the profile. If a reduction of time could be

reduced between each sample it would effectively keep the participants more engaged

and focused (Nestrud, 2016). The original EsSense Profile also presented confusion with

the amount of words used for describing the sample. The implications of this profile are

designed to look into the dimensions of emotions as well as the individual list of words.

Looking into different dimensions of emotions can be related into knowing what the

brand product is. The brand name could potentially be used to uncover true emotional

feelings besides taste. One such example is utilizing the Mixed Profile (MP) method.

MP was designed to help define wine (along with other food brand products that

could be tested) as a descriptor based on the sensory characteristics while being

conducted in a quick and efficient way. Originally, Conventional Profiling was one of the

first to do this which consisted of 26 descriptors (Varela & Ares, 2012). MP is a reduced

version which only consists of 8 descriptors from a pre-defined list for description

scoring (Coulon-Leroy, 2017). The validation of this method can be related to that of the

EsSense25 (Nestrud, 2016) due to its shortening of the profile which has allowed researchers to reduce exhaustion and error from participants. For example, a participant walks into a testing room and is asked to evaluate 10 different samples. Each one of those samples has to be categorized by one of the 26 descriptors and then numbered by how good or bad the sample was. Shortening methods and the amount of descriptors or emotions (depending on the method) has been shown to reduce the amount of time of evaluation. The reduction of the Mixed Profiling method, along with other methods could also create more rich detailed analysis due to the limit of words being used to describe food brand products. Ultimately, the researcher wants the participant to understand what the words mean before choosing the descriptors or emotions.

The use of defining emotions through short simple phrases could help participants relate to food brand products and the EmoSemio questionnaire was formed (Spinelli, 2014). This method was based off of the EsSense Profile (King & Meiselman, 2010). It consisted of 23 sentences related to emotional feelings; 16 were positive and the remaining 7 were negative. This questionnaire had some sentences that contained only one description of an emotion while others elaborated with multiple meanings. A main finding from this study presented the word "nostalgic" from the EsSense Profile, which was reconstructed in EmoSemio as a "happy memory". The sentence read by the subject was, *"I associate it with happy memories from childhood"* (Spinelli, 2014). The researcher suggested that the word nostalgia may not have been known by definition to the subject and the results might have been different. If subjects do not know the literal meaning of a word, it may cause confusion when choosing an emotion related to food samples. The EmoSemio questionnaire uses more easily understood sentences to convey

emotion(s) which allows the subject to more "accurately" analyze the food sample based on this quantitative method. The method of grouping words into coherent sentences could be analyzed via dimensions or groupings to further uncover meanings behind responses to food brand products. This also results in defining these emotions or descriptors through scales and the Affect Grid scale was formed (den Uijl, 2016).

The Affect Grid was a scale which was designed to determine the dimensions of pleasure-displeasure, as well as arousal-sleepiness (Russel, Weiss, and Mendelsohn, 1989). The reason for the Affect Grid was designed for quick analysis to prevent boredom in participants (Einother, 2015). It measures valence and arousal. The Affect Grid uses a 9 point scale to determine affect and arousal. The scale ranges from (1= strong negative valence to 9= strong positive valence). The use of a grid instrument was used in compliance with the method to see where, on the square boxes, emotions would be based from participants filling out the scale. Based on the median scores of the Affect Grid it can be determined that it was only used as a mean for other methodologies to be used on top of it for analyzing emotion based on quantitative analysis.

Other scales such as the Best-Worst scaling (BWS), also known as maximum difference scaling (Finn & Louviere, 1992) was used to evaluate subjects' responses to emotions on a list in conjunction with another research method. It can be combined with a profile of emotional words that can be used as an extension for uncovering feelings (David, 1988). This method can further reduce the rational or cognitive thought process of the subject and has been utilized in conceptual profiling. For example, a participant is presented with a sample that can be associated with a branded or unbranded food product. The objective for the subject is to choose from a list of 4 to 5 emotional words and then

decide which were the best and worst based on the food sampled. According to BWS, Thomson, (2010) used the conceptual lexicon which was developed by a small group of consumers who tested food products in a controlled setting. It consisted of a list that contained over 100 emotions. Thomson used 24 words from the list that were relevant for testing chocolate in this study. The choice of words further focuses on the reactions of subjects towards unbranded versus branded chocolate products. By aligning emotions and product conceptualizations, it may provide reinforcement of a memory from the specific brand product. BWS and its connection with the conceptual lexicon could indeed create a connection with brand name food products, rather than unbranded that could be applied through a different way of perceiving emotional responses to food. In contrast, the Geneva Emotion and Odor Scale methodology was used to assess how odors are connected to emotions and how it could be informative to the study of food branding.

The Geneva Emotion and Odor Scale (GEOS) was another quantitative method that was developed in 2009 while trying to distinguish two different models of understanding emotions (Chrea & Grandjean, 2009). GEOS was developed in order to determine the consumers' emotional feelings based on experiences of smelling every day odors. The idea originally was to study valence and the activation of different dimensions as it relates to odors. This method consisted of 73 emotions that participants experienced. A great example was asking if the emotions were experienced in past memories, which could be determined if the brand name could potentially link up with the emotions expressed. The association of past memories developed into a new questionnaire for GEOS (C. Porcherot, 2010). This researcher was trying to figure out if "feelings" being felt by consumers were suitable for different odors and fragrances. The emotions were

separated into a six series category (C. Porcherot, 2010). Porcherot found that the GEOS questionnaire was better adapted to product development and screening tests. It is also very good for differentiating feelings into a category, but not so much determining what led to these "feelings" whether the test was on food or perfume products. The use of tests for GEOS consisted of "blind" tests as compared to a subject knowing what is being consumed or odorous. Despite this, GEOS is great for quick and efficient measurements which can be expanded. Results of the new questionnaire did in fact produce verbal measurements of feelings based on the six categories. Verbal expressions based on the flavors and odors used for testing in this study can be further elaborated on to bridge the gap between emotions and brand food products. The odor detection or arousal part related to emotions has significance as to what has been previously used in research because there is an association in terms of reaction. In recent years, GEOS has been specifically developed for geographical regions in the world (Europe, America, Asia) which is known as UniGEOS. The scale was designed for specific cultural differences. The differences include categories of shared affective terms. It has been designed to use for up to 25 affective terms or a shortened version with 9 categories (Ferdenzi, 2013). This method was designed for odors and elicited affective states. The terms from this method that the consumer feels could be translated through all the senses of the human body. The use of expanding to different cultures opens up a new way of analyzing food brand products for emotional reactions in other methods.

A different approach to understanding these senses and their connection to brand name products resulted in a newer type of study that introduced the Temporal Dominance of Sensations (TDS) for evaluating sensory attributes. TDS was developed in 1999 at the

"Centre European des Sciences du Gout" in the LIRIS lab (Pineau, 2009). This method has been presented for years at several congress meetings with Pineau (2004) being involved in the presentations. TDS is a quantitative data method in which subjects evaluate a series of 10-12 sensory attributes on a computer screen while a sample of food products are presented to the consumer. The subjects pick out which attribute piques their interest as the dominate sensation (Labbe, 2009). The use of TDS also involves a descriptive multi-attribute methodology that deals with the overall interactions amongst all the given attributes (Pineau, 2009). The participant is asked which attribute is perceived as the "dominant" one and then given a score based on the sensation (Pineau, 2009). The dominant attribute is thus accounted for from the beginning and is determined based on what the sample is. After the initial attribute is picked, another attribute can be chosen from the list. The participant is then asked to eat the sample and choose the attribute that pertains to their liking (Pineau, 2009). This method also allows for more than two attribute selections. While each participant tastes the sample, the computer program records the time elapsed from the moment the start button is clicked and the attribute is chosen with an intensity score. The TDS study also conducted by Pineau (2009) used a Time intensity curve which helped enable results by how long a participant felt a certain taste. In another study conducted by D. Labbe (2009), the use of temporal dominance of sensations was analyzed. For this study, the terms used consisted of overall flavor, coldness, sourness, sweetness, and bitterness (Labbe, 2009). The use of Labbe's test was set up so the participant had 5 minutes after swallowing the product to choose again the "dominant" attribute. While this is going on, the score of intensity was rated by the duration parameter (Labbe, 2009). Age, therefore, has been proven to be a factor with

the use of Temporal Dominance of Sensation (Hutchings, 2014). These studies show that the effect of emotion and branding with age groups is a factor that should be carefully analyzed when running tests with participants.

Another type of sensation method is The Time-intensity (TI) methodology and its relation to the Temporal Dominance of Emotions (TDE) is another sensory attribute method used to measure a sensation of the chosen attribute until the feeling of satisfaction ended. The ten sensory attributes include bitter, sour, sweet, cocoa, fruity, mint, crunchy, dry, melting, and sticky. The use of Time-intensity was developed by Larson-Powers and Pangborn (1978). Time-intensity focuses on the "evolution" of the intensity of only one attribute. Powers and Pangborn measured the intensity and the duration of bitterness, sweetness, sourness, and flavor in certain solutions separately (Larson-Powers & Pangborn, 1978). To better describe this style of testing it is important to understand that this method is 'not' describing emotions, but rather describes sensory attributes towards food (G. Jager, 2014). These attributes relate to Jager's study (2014) describing chocolate using all the senses based on taste, flavor, texture, and mouthfeel. Jager's test is combined with TDE. It is a part of TDS and contains emotional attributes that are a part of the sensations. The emotional attributes consist of the following terms aggressive, bored, calm, energetic, guilty, happy, interested, loving, nostalgic, and whole. TDS allows for testing products without the use of a numeric scale.

PrEmo2, which is an updated version of PrEmo is a self-reported tool used for analyzing quantitative data. PrEmo2 interacts as a functional tool that distinguishes itself from the original in that it can decipher an emotion beyond that of a written survey. The PrEmo2 tool uses twelve animations of a cartoon character that depict emotions being

felt. The sample generates an emotion based on a 5-point scale and the subject selects an animation correlating to that emotion (den Uijl, 2016). The animations represent facial expressions combined with vocal sound for each individual character. The twelve expressions the participant is able to choose from consists of the terms desire, satisfaction, pride, hope, joy, fascination, disgust, dissatisfaction, shame, fear, sadness, and boredom (den Uijl, 2016). The tool is non-verbal, designed for the subject to make a quick analysis without speaking. Depiction of pictures may help the subject uncover their true emotional feelings. Ultimately, it may be better to find out why the subject feels those emotions based on the perception of a branded food product.

The main aspect of what attracts researchers is the use of methods evolved around quantitative findings. These results could be analyzed through the use of open-ended questions that engage the consumer in different types of informed decisions with more specific responses. The interviews of the participants contain a lot of information that could compliment quantitative responses or even help carry a study that is lacking in rich detailed information. The open-ended questions allow the participant to freely respond instead of being subjected to a close-ended format (Geer, 1988). The open-ended format offers much more flexibility and spontaneous insights from consumers that may or may not be noticed with quantitative testing (Varela and Ares, 2012). This also allows for follow-up questions which generate even more responses that could be helpful to researchers when reviewing a food product. For example, "Based on your results, could you tell me why you felt this way about the sample?" Then the researcher could follow-up with, "Does this product bring up a memory or experience?" Throughout these types of questions, words can be generalized to quantify feelings about the product which are

based on experiences formulated by the consumer (Piqueras-Fiszman, 2014). In addition, these responses in the consumers' own words help to generate new ideas for future quantitative methods. One of the main dilemmas of open ended questions could be the consumer's willingness to give good rich information. In some cases, the respondents might feel pressure to answer the questions which could trigger a response that is severely delayed. In addition, some consumers have never consumed the product and others who might not understand why they like it. Some respondents may try to skip over questions in order to speed up the process. For example, nostalgia represents a memory, but its meaning may be misunderstood by the consumer. The terms used to define emotional response are often not understood by the consumer. The way words are relayed through quantitative and especially qualitative methods could help uncover the decisions consumers make through the emotions being felt from analyzing food brand products.

Emotional schemas may be more completely understood if qualitative interviews are employed. Sensory Profiling could be better accepted over time if used in conjunction with a face reading tool. Emotional feelings, in relation to brand recognition, have been researched by many, but the findings have not demonstrated conclusively how they are related to one another. More research should continuously be conducted on visual presentations of branded products. The thoughts generated from perceiving brand products may form concepts in consumers' minds that ultimately could uncover hidden emotional reactions. In a testing environment, certain factors can skew questionnaires and face reading expressions, because consumers are susceptible to an automatic response when exposed to the brand name product, due to stereotyping. The use of these tools factored into conceptualizations may be prominent in consumers' responses to brand

name products. Forming these concepts potentially motivates us and becomes the driving force of what rewards or repels consumers. Occasionally, consumers may have already developed a strong emotional opinion to the product being tested. This reaction is triggered by a previous experience, which causes consumers to make a decision before testing begins. When the quantitative experiment is completed, an initial reaction will be explored via use of open-ended questioning to uncover consumers decisions'. This paper will present two methods to describe both the FaceReader and the EsSense25. As a result, the researcher conducts interviews that ask open-ended questions, and those responses will be recorded and transcribed into NVivo in order to uncover potential memories and themes that may arise. Thematic elements may be repeated throughout multiple interviews that indicate associated memories with the brand product.

Hypothesis:

Early memories effect current food related emotions. Peoples' surrounding environments determine emotions from past memories that alter facial expressions, feelings, and states of consciousness and unconsciousness.

Objectives:

The overall objective of this study is to obtain a better understanding of participants' emotional reactions towards food using the quantitative methods: Noldus FaceReader program, EsSense25, and qualitative method: open-ended interviews. The secondary objective is to determine if memories evolve from the emotional responses and interviews based on branded versus unbranded tea beverages.

2. Materials and Methods

2.1 Participants

A triangulated approach was used in this research, with the intent of uncovering definitive findings: A hedonic emotion survey, face-scanning software (FaceReader) and a qualitative questionnaire. Two groups were compared: a control group (non-branded) and an experimental group (branded with the label of the green tea, which was *Arizona*) that were selected by chance to participate. Selection tests were identical for both groups. Participants in this study were all drawn in from one main source, the students and faculty at Montclair State University ranging from ages 18 to 50. A principal goal of the study was to obtain a large enough sample and compare the differences of emotions among an identical labeled and unlabeled green tea product.

Table 1 shows the participants categorized group of branded versus unbranded. Sixty-one people enrolled in the current study: 40 female adults (mean age 23.8 (years)), 21 male adults (mean age 23.5 (years)). Among the participants: (n=27) were informed and (n=34) were uninformed of the brand name product. The only exclusion was food or nutrition majors, 18 years of age or with allergies. The research was approved by the Institutional Review Board of Montclair State University, and informed consent was obtained from all participants in both groups.

Table 1 Branded/Unbranded Green Tea Drinkers

Group	Men	Women
Branded	11	16
Unbranded	10	24
Total	21	40

2.2 Experiment

This was a single-blind study using the product, *Arizona Green Tea*. The branded group received the sample of *Arizona Green Tea* to drink and the can was placed down in front of them. The unbranded group received the sample of *Arizona Green Tea* to drink and the can was not presented to them. This product was chosen due to its popularity and taste that is recognized by most people. The main tasting was done right in the Montclair State University (MSU) Nutrition and Food Science laboratory. One main test was done for both groups.

2.3 General Procedure

The tests started with the participants' filling out a demographic survey. After completing the survey, FaceReader experiments were conducted. FaceReader measured several features of the face while the participant was in the cubicle. The subjects received one of two different versions within their brand group. The branded subject received the known sample of green tea. The brand product was showed right before consumption. Facial expressions were monitored during and after the sample was consumed for approximately 10 seconds. The unbranded group did not see the brand product or have any hint during consumption of sample.

2.4 Noldus FaceReader

The Noldus FaceReader version 6.0 was used to characterize the facial behavior of the participants before and after consuming the sample of green tea. The FaceReader

program was   installed onto a desktop computer in the laboratory. It was used to analyze

facial expressions of tasting the sample of tea using "seven" emotions that include

"angry", "happy", "disgusted", "sad", "scared", "surprised", and "neutral". Using the

FaceReader evaluation technology, four emotional reactions chosen were two positive:

"happy", "surprised" (although this term could also be interpreted as a negative

response), and two negative: "sad", and "disgusted". These are more terms of interest to

the study of food which could show a correlation between EsSense25 and FaceReader.

During the presentation the following facial characteristics were measured:

1. Fixation on consuming the product

2. Fixation after consumption

3. The length of time before, during, and after (seconds)

2.5 EsSense25

This was immediately followed by the application of the EsSense25 survey, in

which the participants would fill out a list of 25 emotions based on how they felt about

the sample .*Arizona Green Tea* was chosen to represent this study, due to its brand name

popularity. The 25 words included active, adventurous, aggressive, bored, calm,

disgusted, enthusiastic, free, good, good natured, guilty, happy, interested, joyful, loving,

mild, nostalgic, pleasant, satisfied, secure, tame, understanding, warm, wild, and worried.

Participants would go down the list of emotions and rate the emotions based off a 5-point

scale ranging from 1=not at all (I am not experiencing this emotion) to 5=extremely (I

very often experience this emotion). For the *Arizona Green Tea*, participants were

instructed to rate each emotion based on seeing the product of *Arizona Green Tea* or rate the tea blindly with no brand name in eye sight.

Results from EsSense25 and FaceReader were correlated to potentially uncover a better understanding of emotions through two different methods. Each of the 25 emotions from EsSense25 were matched up with 4 emotions from FaceReader that included (Happy, Sad, Surprised, and Disgusted). The nuances that eluded from the responses were analyzed using SPSS version 24. Also, open-ended questions were tied-in to see why the responses from the first two methods indicated certain emotions being felt and to see if open-ended questions provide some insight that no other method could do (Piqueras-Fiszman, 2015).

2.6 Open-Ended Questions

In the final phase of the triangulated study, the two groups were separately asked about the validity of their answers with the utilization of open-ended questions, in order to see if there was a correlation between branding vs non-branding when analyzing emotional feelings towards the Arizona Green tea sample. Participants were then recorded using a digital voice recorder Olympus WS-700 with sit down interviews. Participants were asked questions that were related to results of the EsSense25 in terms of emotions that stood out in order to determine if the participants understood the meanings behind the emotional list and how it could pertain to the a potential memory experience. They were also asked questions pertaining to the Face Reader, to further understand participants' facial expressions and if it was affected by more than just the flavor of the product. When questioned on memory, participants had the opportunity to reflect on past

experiences that generated specific recollections related to the product. The questions used follow-up questions when a memory was talked about. The thematic elements evolved based on a word association protocol. For example, family, school, or summer themes may have developed from memory association. In general, if words were associated with the particular topics, then they were included. If there was not a clear direct corresponding response that emulated other participants' thoughts, then they were rejected.

Questions presented:

1. Based on your FaceReader & EsSense25 Profile results showed that you were feeling more or less of this type of emotion (example: happy and disgusted). How would you describe these emotions as it relates to the product and flavor?

2. Based on your EsSense25 Profile responses (it showed or did not show a correlation) with your Face Reader results. Can you further elaborate on the results?

3. Have you ever consumed this product (Arizona) or any Green Tea (unbranded participants) that potentially led you to this decision?

4. If yes, is there any specific memory that comes to mind going all the way back to childhood with (Arizona Green tea (branded) and/or Green tea (unbranded)?

5. Have you purchased Arizona Green Tea on a yearly basis? (branded)

6. If I told you what you really drank, would that have changed your responses and facial expressions? (unbranded participants)
   If yes why?

7. What is it about Arizona Green Tea that appeals to you more, the brand name, taste, cost, or image of the can, or all the above? Why do you feel that way? (Based on response)

The interviews were transferred to the program NVivo version 6. NVivo is a qualitative questioning tool that transcribes data from interviews. The use of NVivo uncovers patterns of related words that are used throughout the depiction of emotions.

3. Results

3.1 Results of Noldus FaceReader

Figure 1 shows the results for FaceReader (0-1) scale and the top mean scores of consumers' reactions when presented with or without seeing the brand: Happy (0.98), Surprised (0.59), and Disgusted (0.50).
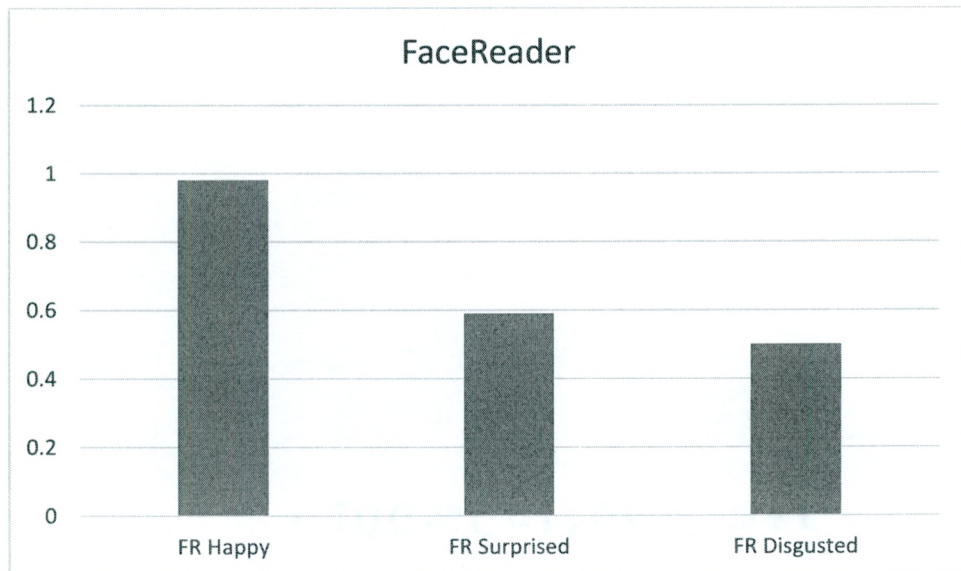

Figure 1 shows the Bar Graph top mean scores from both groups

3.2 Results of FaceReader when controlling for age and gender

Based on the demographic responses, it was assessed that significant positive associations were made with the FaceReader emotion "Happy" when controlling for age and gender. The branded group had a significant positive association with FaceReader "Happy" (p=.032).

3.3 Results of EsSense25

Results of the EsSense25 are summarized in **(Fig. 2).** The Top 3 (Likert 1-5) mean descriptive scores based on branded and unbranded for EsSense25 emotional valences consisted of: Good (3.56), Satisfied (3.47), and Pleasant (3.42).

3.4 Results of both FaceReader & EsSense25

The strongest significant correlations among FaceReader and EsSense25 were negative associations between FaceReader's measurement of "Happy" with the EsSense25 measurements of Aggressive (p=.004), Wild (p=.022), and Worried (p=.030) **(Fig.3).**

EsSense25 mean descriptive scores

Figure 2 shows a Bar Graph representing the mean descriptive scores for emotional valence.

Aggressive

Wild

Worried

Figure 3 shows the scatterplots strongest significant correlations among EsSense25 and FaceReader which were negative associations between FaceReader's measurement of Happy with the EsSense25 measurements of Aggressive (p=.004), Wild (p=.022), and Worried (p=.030).
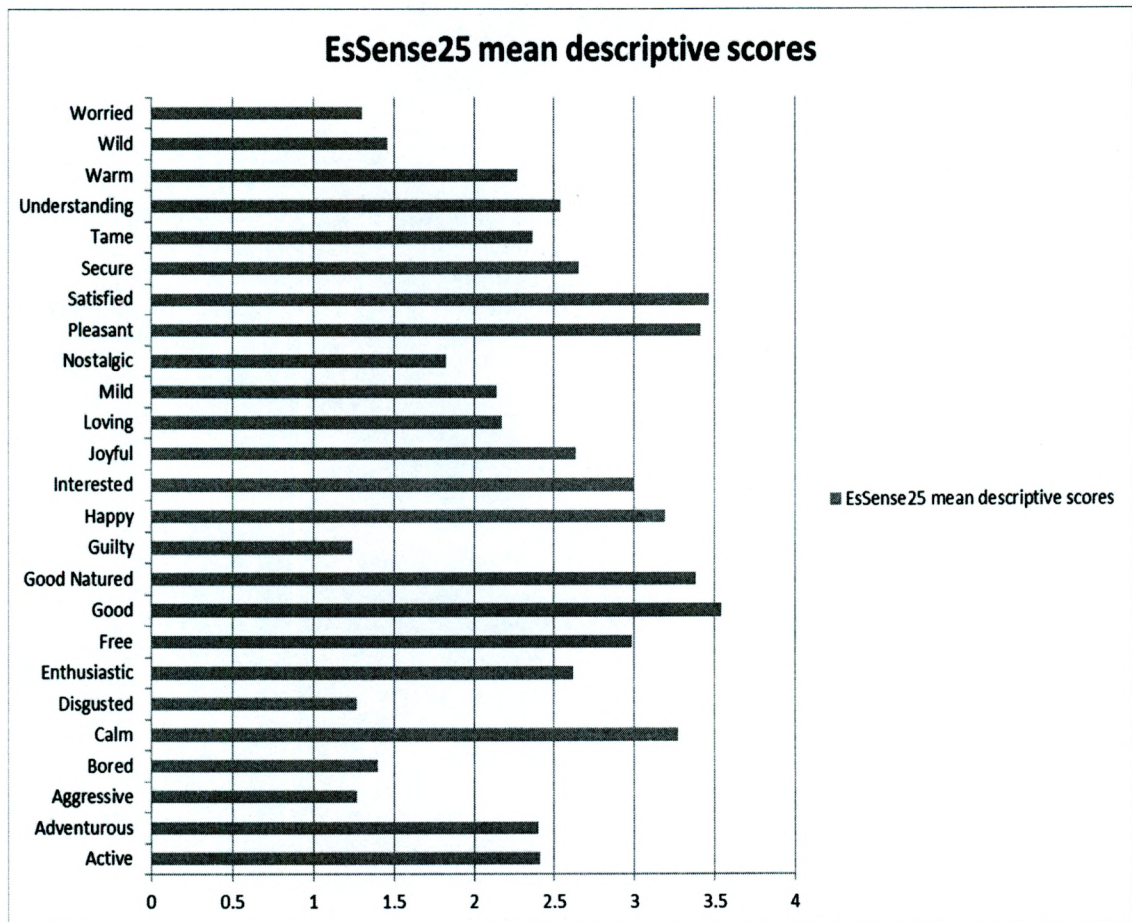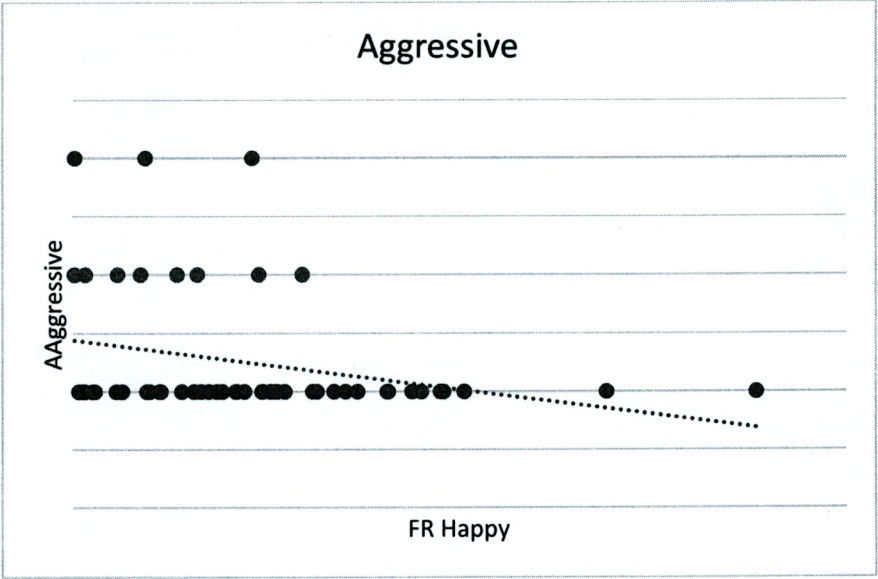
3.3 Results of Open-Ended Interviews

Table 2 shows the thematic elements that were purged through participants' multiple responses, which revealed associations toward *Memory, Flavor, Cost,* and *Can Imagery* exclusively for the branded group. The non-branded participants were blinded to the identity of the green tea can and revealed associations to *Health Benefits* of the green tea. As such, questions about cost and imagery were redacted for this group. Therefore, no thematic elements could have been generated.

Memories:

The memory theme was based on the inclusion of statements such as family, childhood memories, and school lunches. However, participants' statements were excluded from the memory theme if they did not allude to past experiences. Multiple responses revealed from the green tea associations with the actual product to memories for 70% (n=19 out of 27) of the branded group; Unbranded group 38% (n=13 out of 34). The following quote examples are as follows of the *Memories* theme.

> *My grandfather he used to bring random stuff over the house. I tried Arizona one time and after that I was really hooked on it. I felt content, interested, and loving because it was with my grandfather.* Branded (Male, 22 years old)

> *Um, I remember the first time I tried green tea was with my Mother and brother. It brought up that memory and made me feel warm and happy.* Unbranded (Female, 21 years old)

Flavor:

The *Flavor* theme was based on the inclusion of general statements that addressed the participants' perception of taste. However, participants' statements were excluded from the flavor theme if taste attributes or flavor sensations were not mentioned. Responses associated with flavor-included, were deduced from 67% (n=18 out of 27) of the branded group and 64.7% of the unbranded group (n=22 out of 34). The following are examples of participants' responses included in this theme:

> *I like the satisfying taste of it. I would consider myself calm. I really don't have an experience. It just tastes good.* Branded (Male, 21 years old)

> *The tea itself is good. It kind of reminds me of that Arizona Green Tea and I like that.* Unbranded (Female, 20 years old)

Cost:

The *Cost* theme was based on general statements that pertained to purchasing, pricing, and expense for "branded participants". However, "unbranded" participants were excluded from cost questioning because these participants were not shown the actual product and no arbitrary statements about cost were recorded from interviews with this group. Responses from 22% of the branded group addressed canned green tea associations with cost or pricing (n=6 out 27). The following examples of responses addressed the *Cost* theme.

> *I would drink Arizona a lot in the military just because they were cheap and only a dollar. I don't know how much they are now, but I'm guessing still a dollar.* Branded (Male, 28 years old)

> *A few years ago a lot of my coworkers were actually getting it and it is usually 2 for 2 dollars. It was cheap and so I ended up doing it based on their influence.* Branded (Female, 25 years old)

Can Imagery:

The *Can Imagery* theme was based on participants' mention on the can design. However, references about other drinks (not used in the study) were excluded from the imagery theme. In addition, non-branded participants were blinded to the green tea product. As such, there were no recorded responses to imagery. Therefore, 37% of only the branded group (n=10 out of 27) commented on the can. The following examples addressed the *Can Imagery* theme.

> *I like the design of the bottle, I like honey. If I never had it, it would make me interested in it because of the bottle.* Branded (Female, 20 years old)

> *The product image looks interesting, but I'm not familiar on the brand and I wouldn't choose it based on the brand. If I would choose, I would base it on the appearance.* Branded (Female, 25 years old)

Health Benefits:

The *Health Benefits* theme was based on participants' mentioning an association with *Health Benefits* when drinking the green tea sample. However, there were no associations of feeling healthy 0% after drinking the sample in the branded group (n=0 out of 27). Responses from 26% unbranded participants (n=9 out of 34) mentioned the health benefits of the green tea and believed the product presented was beneficial for health. The following examples addressed the *Health Benefits* theme.

Well first and foremost umm I think of healthy. You know I think of botanical ingredients immediately umm I think possibly ginseng, but first and foremost I'm thinking something healthy something good for you as opposed to sweet juice or soda. Unbranded (Male, 39 years old)

It feels fresh, it reminds me of another tea. It feels natural and doesn't have a lot of sugar. It makes me feel healthy. It makes me more health conscious. I have it every morning and in the afternoon. I buy tea every week and drink mainly hot tea. Unbranded (Female 22 years old)

Table 2

Group	Thematic Elements uncovered from interviews			n=participants	
	memory	can images	flavor	cost	health benefits
BRANDED	19	10	18	6	N/A
UNBRANDED	13	N/A	22	N/A	9

4. Discussion

The utilization of a three step methodology was used to measure emotions based on quantitative and qualitative analysis in a laboratory setting. It was based on

consumers' responses drinking a well-known green tea beverage. First, the FaceReader results from both unbranded and branded detected similar responses when shown the sample of tea. Second, emotions from EsSense25 represented a more positive emotional valence score. Third, emotional responses to qualitative interviews revealed some different responses that created thematic elements for the reasoning behind the choices consumers made.

The present research directly compared the top mean scores from both the branded and unbranded participants' responses to determine participants' facial reactions, as well as how emotions were rated on a questionnaire, and how open-ended responses culminated. However, the strong evidence of positive reactions from consumers of both groups suggests that the reduction of emotional terms in FaceReader presented an easier way to directly compare the FaceReader results with the EsSense25 responses. These initial reactions were generated by the perception of food. The results from FaceReader also suggested that through both branded and unbranded group participants, the visualization of green tea produced ambivalence.

FaceReader was able to uncover a significant positive association when controlling for age and gender in the branded group with FaceReader "Happy". Due to the onset of the product in the early 1990s, most college students were introduced to the Arizona brand as adolescents; whereas, the idea of perceiving a popular brand name product such as *Arizona* triggered the "Happy" emotion, through FaceReader. This age and gender group suggests that there is an emotional connection with the flavor and memorable experience that motivates consumers' choices.

Although the EsSense25 has many more descriptive terms, the structure was designed to focus on individual emotions, as well as a dimensional structure of emotions related to product development (Nestrud, 2016). This alluded to some important key words in EsSense25 (Good/Satisfied/Pleasant) when trying to understand the neural processes that go on during taste testing. Even though the consumer is conscious during evaluation, the unconscious part of the brain discovered even deeper emotional thoughts when the participants questioned what was circled on the questionnaire in both branded and unbranded groups for evaluation of the green tea. The use of green tea may indicate that these emotions were significantly positive due to the products well-known flavor.

When controlling for facial scans, the problem with identifying emotions in relation to brand name food products is still a work in progress, which is why FaceReader needs advanced technology to recognize more facial expressions (Kostyra, 2016). The emotional responses that emanated from the EsSense25 could have been a result of past memories that eluded consumers who responded with feelings of "Aggressive", "Wild", and "Worried". The debate on emotions is further analyzed through open-ended questions, which in turn could explain such results from the EsSense25 and FaceReader.

The open-ended questions presented in this study potentially uncovered issues that could lead to a marketing strategy that could be used in branded image analysis. Piqueraz-Fiszman (2015), in a recent article, suggested that researchers need to look beyond standard quantitative measures for more explanation as to the association to the brand product. This was evident during multiple interviews in which participants were asked to record an emotional response connected to the brand name that ended up

uncovering themes associated with memories, flavor, can imagery, cost, and health benefits.

Participants had the opportunity to reflect on past experiences that generated specific recollections about real life experiences, which were related more to the branded (n=19) than the non-branded (n=13) participants. These responses can be compared to suggestions in the literature, as a result of the participants perceiving the nostalgic brand product as superior to conventional brands. This has indicated that past choices are seen as better choices overall (Kessous, 2014). The thematic element, *Memories,* in the present study, suggests that participants' feelings of nostalgia did indeed satisfy their appreciation for the product. Participants more or less did not discern between the taste among the samples in branded (n=18) and non-branded (n=22). The indifference among the groups in the present study did not conform to at least one finding in the literature (De Pelsmaker, Schouteten, & Gellynck, 2013). When analyzing the *Cost* theme, certain influences affected the overall perception of the product when exposed to it. This study found that the presentation of the brand product triggered a quick assumption about the product. This compares to the findings of other research that found the presentation of the product triggers a quick reaction that is perceived through stereotyping. This is because the participants' associate the brand product as being cheap (Lensvelt & Steenbekkers, 2014; Cardello, Bell, & Kramer, 1996). Some of the participants in the branded group (n=10) alluded to *Can Imagery*, consistent with research demonstrating that label-marketing activates areas of the brain involved in reward (Ng, 2011). It has also been shown that the idea of enhancing consumers' pleasure through the use of product imagery design has been reported by Simmonds & Spence (2016).

In consideration of the emphasis of the non-branded participants (n=9) on the

Health Benefits of the product, future research should consider incorporating the

WellSense Profile into the methodological approach which was developed by King

(2015). The WellSense Profile was initiated to measure the consumers' overall wellness

and find out what drives the wellness response to specific foods. It was the first of its

kind to be used for food products. It also became the staple for measuring the relationship

of commercial products to understanding wellness through the use of uncovering

emotions (Watson, Clark, & Tellegen, 1988; King & Meiselman, 2010). The study was

conducted to develop a quantitative method that could be used for future studies to

analyze or measure wellness responses to food. Emotions and brand names, together in

the sample study, may demonstrate the significance of brand name products and their

impact on the marketing industry. This may have potential applications in market

research. By understanding wellness, consumers' decisions on brand name products may

be determined by healthiness in addition to flavor or memory that triggers an initial

reaction.

Limitations

Three conditions were presented in the same order during the study: FaceReader,

EsSense25, and Open-Ended Interviews. Future studies should consider alternating the

order of the methods to assure that the application of one method does not influence the

others. During recruitment, the subjects were conveniently selected to come to the lab

and were given access to a secluded booth with bright lights, preventing the test subjects

to fully see the recruiter. They might have felt uncomfortable or felt like they were in an

environment of taking a test. Minor limitations included eating schedule, time restraints

with classes, being casually recruited to the lab, or how the subject's day was panning out that affected mood.

FaceReader, as a new technology, may not accurately analyze facial expressions. For example, participants in both groups registered (.59) for being "Surprised" which could have been a result of the participant not knowing what to expect during the test. The authors of the EsSense25 tool found that a reduction of emotional attributes (from 39 to 25) would efficiently reduce participant ambiguity. This was not the case in the present research. The nuances among the terms of the survey may not have been evident to the participants (Kanjanakorn & Lee, 2017). It may have been better to use simple sentence structured questionnaires such as EmoSemio (Spinelli, 2014) for uncovering true, emotional meanings or the insignificance of some of the findings of this investigation, resulting in sample size. Future researchers may consider using more participants when applying the EsSense25 survey. In addition, the open-ended interviews may not have been sufficient enough to uncover deep-seeded emotions. Some of the themes generated from the open-ended interviews were in response to direct questioning by the researcher which may have influenced the participants' responses. The questions used for the branded group should have been used for the unbranded group when analyzing cost and imagery theme responses.

Conclusion

The results from FaceReader from both branded and unbranded group participants suggest that the visualization of green tea produced ambivalence. The EsSense25 results

showed strong positive emotional scores of "Good", "Satisfied", and "Pleasant" for both

groups content with the green tea product as a whole. The significant inverse relationship

between FaceReader "Happy" outputs and self-reported outputs of "Aggressive", "Wild",

and "Worried" may provide elucidation of the nuances of the emotional outputs recorded

by FaceReader. The qualitative thematic elements demonstrated that nostalgia influences

product appreciation. Branding, at least in the present study, had no effect on taste. The

brand product was associated with being cheap, the can affected consumer desire for the

product, and only unbranded tea was associated with health.

This study shows that emotional schemas do indeed influence our neural

processes which were uncovered through open-ended interview responses. In any case,

the use of FaceReader and EsSense25 are evolving methods that have made an impact in

the industry to help produce newer technologies, such as the Wunderkammer, which was

discussed above (McCall, 2016). The Wunderkammer has the potential to replicate real

world situations about branded food products, besides green tea, to increase

understanding of consumers' desire for food products based on memories. Understanding

how consumers interact in everyday life situations could ultimately determine the choices

made on branded food products (McCall, 2016). Further research could use the thematic

elements that were purged from the present interviews to simulate experiences. The

memory themes generated could inform a quantitative study in hopes of uncovering new

testing methods that could be applied.

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