AN ANALYSIS OF KOREAN CONSUMERS' ATTITUDES AND BELIEFS

TOWARDS SUGAR-FREE BEVERAGES

By

Ifrim Mihaela-Roxana

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF BUSINESS ADMINISTRATION

2010

AN ANALYSIS OF KOREAN CONSUMERS' ATTITUDES AND BELIEFS

TOWARDS SUGAR-FREE BEVERAGES

By

Ifrim Mihaela-Roxana

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF BUSINESS ADMINISTRATION

2010

Professor Yoon Cheong CHO

AN ANALYSIS OF KOREAN CONSUMERS' ATTITUDES AND BELIEFS

TOWARDS SUGAR-FREE BEVERAGES
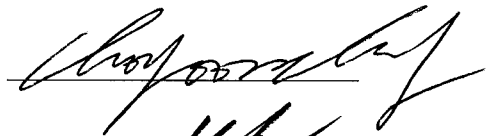
By

Ifrim Mihaela-Roxana

THESIS

Submitted to
KDI School of Public Policy and Management
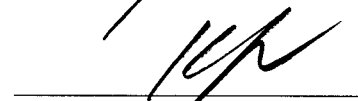in partial fulfillment of the requirements
for the degree of

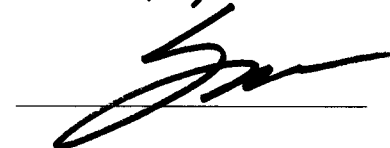MASTER OF BUSINESS ADMINISTRATION

Committee in charge:

Professor Yoon-Cheong CHO, Supervisor

Professor Kwon JUNG

Professor Seong-Ho CHO

Approval as of July , 2010

ABSTRACT

Sugar-free beverages represent a solution for the current trade-off between taste and health; they offer consumers an alternative to regular sugary drinks. They are a harmonious combination of two – otherwise- conflicting goals: the hedonic search for a great testing drink and the utilitarian aim to keep calorie and sugar intake at a low level. This study developed a model to measure customers' attitudes and beliefs toward sugar-free beverages with sweeteners in Korea. It questioned the degree to which cognitive variables like the perceived product awareness, the perceived weight management benefits, the self-concept congruity or the social norms impact consumers' intention to consume such functional drinks and their overall attitudes. The model also incorporates an affective component, which refers to the fear of disease, the anticipated enjoyment and the desire to drink sugar free beverages, which are also hypothesized to impact intention and the overall attitudes. The analysis revealed that in general Korean consumers have more positive attitudes towards these drinks, women being more likely to offer higher ratings on all variables. The most positive attitudes were observed when consumers also revealed a high degree of expected enjoyment and the desire to drink sugar-free beverages.

Table of Contents

Table of Figures

Table of Tables

Acknowledgements

This research would not have been possible without the support of many wonderful people I met in Korea.

First and foremost I would like to thank the KDI School of Public Policy and Management for granting me the Global Ambassador Scholarship which allowed me to further my education at the graduate level. I also want to acknowledge my supervisor, professor Yoon-Cheong Cho, who inspired and guided me throughout my studies at KDI and provided me with permanent support and immediate feed-back while I was writing this thesis. Further, I would like to thank Professor Jung Kwon who put me in the right direction and helped me decide on my MBA concentration, so that I could make the most out of the knowledge kindly shared with the students by the KDI academia.

I want to express my thanks to Professor Seth Leighton who gave me valuable suggestions so that I could meet the rigorous standards of an academic paper submitted to KDI. My gratitude also goes to all the class-mates who took time to participate in the in-depth interviews or filled out the research questionnaire that I developed for this study. I also appreciate the contribution of my former co-workers in the Paju English Village, especially Miss Min-ji Chang for giving me the chance to gain more insight on what motivates Koreans to choose sugar-free drinks.

Thank you so much for walking me throughout this research.

Chapter 1. Introduction

1.1 Statement of the Problem

1.1.1.The Korean Sweet Tooth

Each country and culture has its own relation with sugar; for instance, a traveler in Morocco would be surprised by the intense sweet taste of coffee and mint tea, and would find few cafes offering sugar on the side instead of mixing it straight inside the drink; in Romania most coffee houses brew a strong black coffee and provide a sugar jar and cream on the table; in Turkey, where there is an old coffee culture, the drink is still often made the traditional way, by boiling water, coffee bean powder and sugar together.

By contrast, a simple observation in any Korean coffee shop indicates that sugar is not requested by many consumers, and women in particular avoid it because of its calories. In Korea, customers are normally asked whether they wanted any sugar or syrup with their choice of coffee or tea, and often times are offered just a plain drink, which they can sweeten afterwards. In numerous American coffee shops consumers are used to being offered a selection of sweeteners including well known brands for the table top segment, such as Equal, Splenda, NutraSweet, Sweet'nLow or Truvia. By contrast, one will rarely find sachets of sweeteners in Korean coffee houses or restaurants. Although American coffee chains like Starbucks have been successfully doing business in Korea for over 10 years, they do not frequently provide low calorie sweetening alternatives.[1] On the other hand, brewed coffee does not seem to be an everyday choice. Korea's favorite is the 3-in-1 coffee mix, an affordable drink priced around 100-300 won. The coffee mix sachets contain a product high in fat, sugar and additives, a small coffee having on average 55 kcal. Data from AC Nielson

---

[1] However, in general coffee shops and bars at Korean hotels provide 3-4 kinds of sweets and sweeteners on the table.

indicates that an average Korean consumer drinks around 300 cups of coffee mix a year (Kang, 2009), but in case of office employees the number is at least double. According to an article in Korea Times relating Koreans' addiction with the 3-in1 coffee mix, "instant coffee still accounts for approximately 78 percent of total sales in local market as of 2008" (Kang, 2009). This explains the scarcity of bean or powder coffee in most Korean supermarkets and the market saturation with 3-in-one products in all form: full-fat, low-fat, with sugar, sugar-free, original or mild, regular or hazelnut flavored.

The ready-to-drink coffees grabbed by the busy Koreans from convenience stores, (numerous brands and assortments of moccachinos, macchiatos or lattes), have an intensely sweet taste and are even higher in calories (at least 100 kcal per 100 grams); alternatively, consumers may choose from the few options sweetened with an artificial sweetener (such as sucralose), or a blend of sweeteners (aspartame and Ace-K).

The existence of all these sugary coffee specialties can only be explained by consumers' demand and preference for such sweet products. Officials from Dongsuh Foods, the company which introduced the coffee mix on the Korean market in 1976 explained that the taste was tailor made for Korean consumers. (Kang, 2009)

The paradox is that most Korean consumers perceive sugar consumption as a threat to their health[2], and are receptive to food and drink innovations which allow them to enjoy the taste of a product which is not harmful for their health and allows them to cut back on calories. Such opportunity was spotted two years ago by Dongsuh Foods, marketer of Maxim instant coffee, who introduced the sugar-free, 1/2 calorie coffee mix, advertised as a wellbeing (sic) drink (see Figure 1 on the next page).

---

[2] A pre-testing of the questionnaire used for the present research was performed on 10 samples chosen among KDI university students. Nine of the respondents considered sweeteners to be healthier than sugar.

Figure 1. Maxim ½ calorie sugar-free coffee mix

1.1.2.Sugar-free Beverages and Their Consumers - at a Glance

Sugar-free beverages represent a solution for the current trade-off between taste and health; they offer consumers an alternative to regular sugary drinks. The sugar-free options are much wider in the soft-drinks sector, as products like Diet Coke, Pepsi Nex, Miero Fiber and low-calorie Kin-Cyder are easily found at Korean supermarkets, stores, marts and vending machines. They are a harmonious combination of two – otherwise- conflicting goals: the hedonic search for a great testing drink and the utilitarian aim to keep calorie and sugar intake at a low level.

The access to information is transforming today's consumer into a "pseudo" specialist, who has the chance to read on the label the ingredients mixed inside most foods and beverages. Although the labels list with minuscule characters the complicated names of preservatives, color and flavor enhancers, natural or artificial sweeteners consumers rarely pay attention to these ingredients. By and large consumers seem to be concerned with food safety issues. Yet, when a purchase decision is made, details like the nutrition facts are ignored in favor of the much persuading health claims written in big shiny letters on the front labels. In other words, consumers enjoy the benefits of a low calorie, low-sugar drink which

tastes sweet, without questioning how the calories were left out, or how the taste was produced. The complex mix of chemical substances is hard to understand by a non-specialist, and consumers rely on the Food and Drug Administration and believe that once a product passed their test, it must be "safe".

The perception of food safety is cultural and personal; in Korea, sugar is perceived in general as being unhealthy, while sweeteners are commonly seen as a healthier alternative. But consumers' trust in the healthfulness of sweeteners is accompanied by a **moral hazard**. Koreans have long developed a healthy diet, consisting of many vegetables and traditional herbal drinks and around 2004 a health craze erupted (Meyer, 2008) leading many consumers into searching for "wellbeing" foods and beverages. Sweets like Korean traditional rice cakes have been naturally sweetened with honey, red beans, raisins, jujubes and other fruits. These natural ingredients are often steeped in boiling water along with leaves and buds of tea bush, grains and roots to obtain various teas. In fact, according to Meyer (2008), "besides water, tea is the second most popular beverage in Korea." Koreans believe that their traditional beverages provide numerous health benefits, being an efficient remedy for many diseases.(Meyer, 2008). "Insam-cha"(인삼차,), the Korean ginseng tea for example, is believed to fight against stress and protect the liver. Research has confirmed some of these beliefs, suggesting the Panax Ginseg tea has therapeutic potential in cerebrovascular diseases (Shah, Gilani, Sharma&Vohora, 2005). "Saengang-cha" (생강차) or ginger tea is another popular beverage in Korea, used primarily to prevent cold and headaches (Meyer, 2008). Through inferential mechanisms consumers tend to associate Western beverages advertised as health-friendly, zero sugar or zero-calorie with helpful diet tools.

Diet drinks such as Coca Cola Zero, Coca Cola Light or Pepsi Nex sweetened with aspartame and Ace K provide little to no nutrition, and were developed in the western world more as a comfort food, than a real diet tool. During the past 5 years many companies

distributing snacks and processed foods high in calories, trans-fats and sugar (such as crackers or cookies) launched products under brand names which evoke health benefits; examples of such healthy (sic) snacks are "Calorie Balance" biscuits, "Dr. You" cookies, pies and bars or "Mother's Fingers" Snacks. These successful marketing techniques have negative consequences on the consumers, as people assume that advertising claims are in general truthful since they must comply with the KFDA regulations.

The marketing strategy for sugar-free beverages appeals especially to "healthy eaters" - consumers who pay attention to well-being claims. Expecting health benefits from beverages marketed as "1/2 calorie", "Diet", "Sugar-free" or "Zero-calorie" , many consumers may easily include in their daily diet too many artificially sweetened products (sugar free coffee, sugar-free flavored milk, sugar-free chewing-gum, sugar-free yogurt, sugar-free Coke etc.); an intake of sweeteners over the limit tested and approved by the Korean Food and Drug Administration as safe may be hazardous, as artificial sweeteners such as aspartame and sucralose are new chemical substances which haven't been studied and tested enough to determine their long term effect on human health. We need to understand that consumers don't drink carbonated water, sugar, caffeine, ascorbic acid, glyceryl abietate, brominated vegetable oil, sodium benzoate and other food additives; ultimately, consumers drink juice, tea, flavored milk or coffee mix, not the ingredients mixed inside and listed on the label.

The choice of drinks is determined by many factors, such as thirst quenching attributes, taste, nutritive value, packaging, advertising, word-of-mouth, social pressure and group influences, health benefits, emotional benefits, fear of disease, and many others. These factors mix in various proportions in different individuals and influence their intention to choose a certain beverage. In this paper we will look at those factors affecting Koreans' choice of sugar-free drinks and we will analyze the perceived benefits or risks, as well as

consumers' underlying motivations for avoiding sugar.

1.2 Purpose of the study

Each consumer is unique, having distinctive needs and preferences. Further more, each individual perceives a product in his or her unique way. Still, the emergence of economies of scale in the past century has led marketers into searching behavioral patterns used to group and segment consumers. This study will investigate whether there are factors which are more often involved in most Korean people's intention to consume one type of functional drinks: sugar free beverages. We will try to identify what type of benefits consumers expect from their sugar-free drinks and how much these beverages respond to their expectations. A second goal of the research is to assess consumers' knowledge about sweeteners in general. Special attention is given to *stevioside,* the natural sweetener made from the stevia plant.

This study developed a model to measure customers' attitudes and beliefs toward sugar-free beverages with sweeteners in Korea; the new model incorporates both cognitive and emotional factors, and broadens the Theory of Reasoned Action (Ajzen& Fishbein, 1980) by adding the perceived awareness as another cognitive variable, and e non-cognitive variables: hedonic involvement, self-concept congruity, self-expressive involvement (Fitzmaurice, 2005) and fear of disease (The Health Belief Model). Since consumers are not always fully aware of their motivations for making a certain purchase, this research aims to dig deeper into each individual's mind in search of possible hidden reasons.

The questionnaire designed for the survey contained questions investigating the awareness of a natural sweetener produced from the sweet leaves of the plant stevia; in Korea this sweetener is called stevioside, while in America is generally referred as Rebiana or Reb. A. This additive is mixed in soju and soy sauce to produce a particular sweet taste. The study of Stevioside perception among Koreans is particularly important at this time, as producers of

carbonated soft drinks consider switching from aspartame to the natural stevia-based sweetener. (Collier, 2008) Given the fact that stevioside was approved as a food additive in Korea in 1984 (Kinghorn, 2002) and since than has been included in foods and beverages produced locally, it is reasonable to speculate that global soft-drinks companies like Coca-Cola and Pepsi will consider testing the new generation of sugar-free drinks in Korea.

1.3 Significance of the study

This research was conducted to investigate the attitudes towards sugar-free beverages and the way they are linked to the purchasing behavior of young Koreans. Understanding what motivates Koreans to choose sugar-free beverages is an issue of interest for several actors: consumers concerned with nutrition and health education; companies manufacturing sugar-free or sugar-less drinks; marketers, who can find insights on what motivates consumers to buy sugar free beverages; and finally the Korean government, as the public health is a major concern and the health expenditures are expected to increase considerably during the next decade (Moon, 2008) when Korea is expected to become a super-aged society[3].

The results of this study may provide new consumer insights for marketers and producers of drinks in sugar-free versions. By analyzing the data collected for this research, this study will provide direction to design and plan effective marketing strategies for reaching and better satisfying targeted segments of consumers. A creative marketing campaign run in 2007 for Diet Coke was broadening on the consumer trend to drink more water and less carbonated soft-drinks; "Diet Coke is 99% Water", emphasized the advertisement, trying to

---

[3] South Korea is expected to become *the most aged society* among the advanced economies in 2050, with nearly four out of every 10 Koreans being aged 65 or over. Starting with 2018 the population is expected to decline, and the loss in number of people reaching 6.41 millions by 2050. According to the Korean National Statistical Office (KNSO) people over 65 years of age will account for 38.2 percent of Korea's population in 2050, making it the most aged society among the 30 member economies of the Organization for Economic Cooperation and Development (OECD) (Lee, 2009).

encourage people to replace water with something that tastes better. (LevittSteven, 2007) No marketer could have thought of such advertisements 20 years ago, when water was free (few people were drinking bottled water) and the consumption of soft drinks was rising. Nevertheless, the needs and wants of most costumers have changed, and marketers spot new opportunities to respond to the emerging health conscious consumer. In an effort to reposition the brand, Coca Cola Company launched in 2009 (in Japan and Europe) a sugar-free Coke enhanced with minerals and vitamins which has a mild green-tea flavor. The new "nutritious" drink is marketed as *Coca Cola Light Plus*, a functional drink with antioxidants, in other words, a wellness beverage. Consumers may be confused by such product innovations; a drink which was long categorized as non-healthy now has aspartame, vitamin B3, B6 and B12 blended inside.

Responsible marketing for sugar-free drinks sweetened with sweeteners should aim not just for the immediate satisfaction of consumer needs, but also for their long term well-being. In this respect, labels should offer information on ingredients and recommended portion size, formulated in a concise, easy to understand language for a non-specialist consumer. They should also contain warnings on possible side effects. Coca Cola Light is marketed with the warning sign ""Not suitable for phenylketonurics"; few people know what phenylketonuria is and even fewer know if they are suffering from this disorder; therefore, the sign may be easily ignored by a consumer who does have the PKU disorder and is allergic to phenylalanine, a component of aspartame. The allergy in this case is a very severe one, and the consumption of products sweetened with aspartame may cause mental retardation, muscle aches and even seizures in phenylketonucs, who must follow special diets with strict restrictions of phenilalanine (The US Calorie Control Council, 2006). Therefore, consumers as well as marketers would benefit from more health responsible advertisements.

Marketers and governments should in fact work together to create effective

regulations concerning food safety and food labeling requirements. In the United States for instance, issues regarding the soft-drinks industry have been intensely politicized, and high calorie, sugary beverages were linked to obesity. In 2009, the New York Department of Health ran the "Are you pouring on pounds?" campaign, which pictures a disgusting red liquid poured into a glass where it becomes an ugly mass of fat (Bernstein, 2009). Concerns revolve around the increasing expenditures for treatment of obesity related diseases such as diabetes, which are often supported in America by public funds, through programs like Medicare or Medicaid (Brownell, Kelly D cited in Neuman, 2009). In consequence, in 2009 the Obama administration proposed a tax on sugary soft-drinks as part of the health-care reform, aiming to discourage consumption; sugar-free beverages were exempted from the tax payment. (Neuman, 2009).

Although obesity[4] is not a severe problem of the Korean society, the obesity rate being as low as 3.5% according to OECD studies in 2006-2008 (S. Korea's Obesity Rate Lowest in OECD, 2009), the number of overweight people in Korea is on an upward trend, due to a change in dieting habits. Government research has found that 31.7% of the Korean adults were overweight in 2009, comparing to only 26% ten years before (Bae, 2009). Obesity could become a serious problem in Korea, warned researchers at the Chungnam National University (cited in Lee, H.S., 2009), therefore the government is expected to take action by promoting healthy dieting habits and by increasing the public awareness on the risks bared by overweight people. Sweeteners are given special attention, and should be carefully regulated along with the low fat foods which are expected be on the rise in a society told to count calories and watch the amount of sugar and trans-fats ingested daily.

Following the market trends towards healthier products, green or organic foods and beverages, companies producing sugar-free beverages are blending new sweeteners in search

---

[4] According to OECD, "obese" are people with a body mass index (BMI) of 30kg/sqm and over or those who weight over 30 pounds more than their ideal weight. The term is often confused with "over-weight", which describes a person with a BMI between 25 and 29.9.

for a perfect taste and a more natural sugar substitute. This research included questions designed to test the awareness of the stevia-made sweetener among Koreans. Stevioside is considered to belong to a new generation of natural sweeteners which was approved by the American FDA in December 2008. However, in Korea stevioside was approved as a food additive as early as 1984, and since 1991 was permitted for use in liquors (Kinghorn, 2002). Since than stevioside has been the main sweetener used in soju, the traditional liquor made from sweet potatoes. Data from 1995 indicated that stevioside had 40 % of the sweetener market in Korea (Kinghorn, 2002), and consumption was on the rise.

Due to the fact that stevioside was largely used in Korea, consumers are already used to its taste and enjoy it; this situation may be exploited by soft drinks companies, which could enter the Korean market with new beverages sweetened with stevioside. At the present moment the large majority of sugar-free soft drinks marketed in Korea are sweetened with aspartame.

Korean consumers themselves could benefit from the findings of this study, and would take a closer look of their own motivation for making certain food and drink choices. On the whole, consumers and marketers must understand there is need for more education and information on food safety. Functional drinks were initially designed for people with special needs such as sportsmen or diabetics, but now they are introduced to the mainstream customer. Without proper regulations, information and advertising, the consumers are likely to remain confused between the perception of sugar-free beverages as a healthful diet tool, an occasional treat, or a potentially poisonous substance.

1.4 Research Questions

The present study attempts to measure Korean consumers' attitudes and beliefs towards sugar free beverages. Attitudes have been intensely debated where they have or not have the ability to predict behavior. However, this study will assess the overall attitudes towards sugar-free drinks without measuring the correlation between them and the actual behavior. The research aims to bring clues on those factors most likely to influence the way Korean consumers perceive beverages sweetened with artificial sweeteners.

The analysis of the data collected for this research attempts to reveal whether consumers seek functional benefits, such as weight management or weight loss, if they perceive psychological benefits, such as ability of sugar-free drinks to communicate something about the user to other members of the society. The study questions the degree to which social pressure, anticipated enjoyment, perceived product awareness, fear of disease, self-concept congruity and self-expressive involvement are related to consumers' overall attitudes.

To summarize, this research investigates attitudes and beliefs towards sugar-free beverages sweetened with alternative sweeteners, and to identify the main predictors of consumers' attitudes. It seeks to identify patterns in the perception of sugar-free drinks and further, to describe profiles of consumers according to their attitudes towards sugar-free beverages and their motivations for making their choices. It also aims to broaden the studies conducted to assess the awareness of sugar substitutes and artificial sweeteners among Koreans, with special attention to a natural sweetener called stevioside.

Chapter 2. Background of the Study and Literature Review

2.1 Background of the Study

2.1.1.South-Korean Consumers, Food Additives and the Well-being Craze

"Food is culture". (UNESCO,1998) From one country to another, and even within the borders of one nation, people prefer different foods and beverages. Apart from satisfying physiological needs like hunger and thirst, the consumption of foods and drinks is linked to personal, religious or social meanings (Echols,2001). Korea is no exception, as the food and drink choice is a very complex process, influenced by many interrelated factors, such as *cultural background, geography, demographics, social status, lifestyle as well as personal values and motivations*. The beverage market offers a wide range of drinks, and these product categories themselves reflect the mixture of traditional Asian customs and health beliefs with Western influences, initially driven by the presence of the American troops and then by globalization and mass production. All these drinks exist to respond to specific needs of different customer segments. Those who purchase traditional ginseng or jujube tea do so because they perceive they obtain certain dietary benefits; their choice is not usually motivated by the taste of the product, nor by the thirst quenching attributes usually linked to beverages (Meyer,2008). Those consumers who prefer Korean functional drinks believe they are making a healthy choice for their body.

Next to traditional Korean drinks one can easily find Western diet drinks, aligned on the shelves of most shops, convenience stores or super-markets. Unlike the beverages discussed above, the Western soft drinks offer almost no nutrition, but compensate with their sweet taste and their low caloric content. In this product category fall drinks like Coca Cola Zero, Coca Cola Light and Pepsi Nex.

In general, Koreans don't pay attention to the nutrition facts specified on the labels of

foods and beverages. As a consequence, many products enter the market with misleading advertisement and untrue health claims on their packaging, taking advantage of consumers' granted trust. A study by Moon Young-sook (2008) revealed that out of 493 food products advertised on Korean TV, only 123 provided nutritional labels. Beverages advertised as *Lite*, *Light*, *Sugar-free*, *Zero*, *Low calorie* and *Low GI* sell well because they appeal to the health consciousness of the Korean consumer. Stricter regulations have been imposed in 2008 on imported food, and food safety zones were established around schools the same year, banning junk foods and soft drinks high in calories from children's menus. However, there is a need for more severe regulations to forbid false health claims and better protect the consumers.

Modern diet, sugar-less or sugar-free drinks, vitamin waters, teas, beverages and other functional drinks compete with Korean traditional beverages for well-being-seeking consumers; they are marketed with convincing 'health claims" and are adopted by Korean consumers in their daily diets. Some consumers may confuse the attributes of well-being beverages and those of western-style sugar-free drinks sweetened with artificial sweeteners. Korean well-being teas, such as those made of ginseng, jujube or ginger-, have been used for centuries and are believed to have a curative effect on the body, while most sugar-free modern drinks were produced to offer a sweet treat for people on low calorie diets.

Confusion also exists because few people know the actual meaning of "low sugar", "low calorie" or "zero calorie". According to the Korean Food and Drug Administration (2005, in KCPB) a product may be labeled "No sugar" if it contains less than 0.5 grams regular sugar per 100 grams or milliliters; it may be sweetened with artificial sweeteners (either non-caloric ones, like aspartame or sucralose or caloric ones, such as High Fructose Corn Syrup); "no sugar" products may also contain natural sweeteners like sorbet or xylithol. The caloric content may vary from 1-4 kcal to over 100 kcal per 100 grams, depending on the choice of sweetener. A beverage labeled "no *added* sugar" does not allow the use of any

artificial sweetener as ingredient.

Turning to calories, "low calorie" indicates a caloric content smaller than 40 kcal for 100 grams/milliliters, while "zero calorie" can be used only for products with less than 4 kcal for the same amount. (KFDA, 2005)

The light versions of foods and beverages contain alternative sweeteners to make up for the sugar left out; in the case of Coca Cola, one glass (200 ml) contains 6 teaspoons of sugar. Diet Coke and Coca Cola Zero contain no sugar, but are sweetened with aspartame, a food additive which is said to cause insomnia, memory loss, brain tumors, Grand Mall seizures and other serious neurological conditions if it is ingested regularly. (Roberts,1988, Garratinni, 1988, Guiso 1988, Jobe, 1988, Diomede, 2001 et al.).

The Acceptable Daily Intake (ADI) for aspartame is 40 mg/kg body weight (EFSA, 2006, 2009). ADI is the amount which have been tested and approved as safe for consumers. A dieter who drinks Coca-Cola Light, chews sugar-free chewing gum, eats calorie-reduced yogurt and chooses artificially-sweetened coffee, all containing aspartame, will probably consume more than the Acceptable Daily Intake. There are few studies investigating how much Korean consumers actually know about sweeteners and how they perceive these artificial substances in relation with their potential health risks. The potential dangers are actually increasing, as more artificial sweeteners are developed and new sugar-free products are launched into the market.

One study investigating perceptions of food-related hazards was conducted in 2005 on 500 Korean housewives (Choe, Chun, Hwang & Nam 2005). The research revealed that 95,7% of the participants of their survey identified food additives as high risk factors, while 75.2% were concerned about food labeling.

With the increasing market share of functional drinks (beverages claiming to contain minerals, vitamins and other active substances with physiological effects) concerns were

raised related with possible adverse effects and changing eating patters of the Korean consumers. Research conducted in 2005 investigated the intake pattern of health-intended foods marketed as containing health enhancing ingredients (Park, Park, Sung & Kwon, 2005). The 2005 study did not distinguish between foods and beverages, nor between traditional Korean products and western style ones. The findings revealed that the "heavy" consumers of health intended products were young people (under 20), who consumed daily 2 or more health-friendly foods; and women aged 30-45, whose consumption was raised to 4 and more of such foods.

It should be mentioned here that due to the well-being craze in Korea, numerous products have been categorized as *"Well-being"*; indeed, soybean paste, kimchi, and other Korean fermented side dishes have gained international recognition, being included in the world's healthiest foods (Raymond, 2009). Nonetheless, there has been an explosion of unhealthy foods advertised with health claims. A study on 493 food-related commercials aired on Korean television during 2008, concluding that only 27 percent of the products advertised were indeed healthy. Soft-drinks with health claims and instant coffee mixes fell in the unhealthy category (Han, 2009). Moon concluded that the excessive and abusive use of the world "well-being" is misleading the consumers.

2.1.2.Korean Standards of Beauty and the Perception of Weight

Another issue we need to consider for this research is the way Koreans perceive their weight. According to the latest statistics (2005) released by the World Health Organization there are over 400 million obese people worldwide, while the number of overweight adults was as high as 1.6 billion. However, in South Korea only 3% of the population aged 15 and older is obese, which is the lowest obesity rate among OECD countries (KoreaTimes, 2009). Koreans do not have serious weight problems, mainly because of a healthier diet than that of

many Western countries, which consists of many vegetables and less fat or sugary dishes. Despite this fact a large number of Korean women perceive themselves as overweight and are willing to include diet foods in their menus.

An article published in *Korea Times* attempting to demystify the zero-calorie foods myth gives a powerful example of how careful many women are with what they eat;

"A 28-year-old Chung drinks zero-calorie tea on her way to work. She

chews zero calorie gum and drinks diet only cola. These days, the trans fat

health warnings alerted her, and she only eats non-trans fat snacks. It's all

for the well-being, she says. Chung is one of the many ``minus food'' eaters

in the country." (Bae, 2007)

The same newspaper article reported research conducted by AC Neilson on 9,458 women from 13 Asian countries, which revealed that Koreans were the most eager to loose weight and paid more attention to their physical appearance.

A survey conducted in 2009 by Professor Kim Mi-Ok from the Daegu Health College on 101 female university students revealed that 47.5 percent perceived themselves as being fat. However, the tests and actual measuring performed during the research proved that only 4 percent of the participant students were obese. 86 percent of the girls confessed they needed to lose weight. Professor Kim, who was cited in *Korea Times* drew the conclusions: "It seems that people do not perceive themselves as accurately as they should. While most of them are extremely normal, people are more anxious about their weight than ever". (Bae, 2009)

The Korean pop culture and most advertisements promote an idealized image of women's body; however, many of these pictures have been modified in Photoshop so that they don't reflect anymore the natural proportions of the human body. This "slimming" effect encourages many women to go on diets in search for the perfect *S-line* (describing the body),

V-shape (for face) or *X-line* (term used by Koreans to describe long, slim arms and legs) (Turnbull, 2009). (See Appendix 1 for a sample of Korean advertisements for *Today's Tea,* which uses the metaphor of a corset wrapped around the tea bottle, to emphasize the beneficial effects the tea may have on the waistline – "*bellyline*" is the actual word invented for this commercial). Media obsessed with promoting a perfect body put a lot of pressure on the members of the Korean society, and both men and women strive to achieve the looks of their favorite star.

The content analysis of numerous women magazines published in Korea in 2006 suggested that these publications encourage their readers to adopt passive dieting methods, based primarily on pills and diet drinks (Kin & Lennon, 2006). The research found such slimming products were advertised as having miraculous effects. Physical activity was therefore less encouraged, in-stead, women were misled to believe they could quickly fix their weight by drinking the magic potions.

The social pressure and the standards of beauty promoted by the Korean society are expected to be strong predictors of behavior, since most women with normal weight (a mass body index under 25) consider dieting. In 2002 half of Korean high school girls were found anemic because of dieting-induced malnutrition, and were considered unqualified to give blood (Kim&Lennon, 2006). These unwritten rules and expectations of the Korean society in regard to body image in general, and female body image in particular-, are expected to strengthen consumers' utilitarian beliefs and thus their attitudes towards sugar free beverages.

2.2 Literature Review

2.2.1. Development of Consumer Behavior Theories

Individuals engage in specific behaviors motivated by a variety of factors. Numerous researchers (e.g. Rotter, 1954, Ajzen & Fishbein, 1975, 1980, Bandura, 1977, 1982, Bagozzi, 1992, Azjen, 1992, 1998 et al.) have attempted to develop models that could best explain consumers' mechanisms for making a certain choice of product. Broadly, researchers followed three perspectives on consumer behavior, proposing decision-making, experiential and behavioral models. Personality, personal values, lifestyle, knowledge, attitudes and beliefs, family, friends and the environment, product importance and hedonic involvement contribute in different proportions to the way consumers recognize their needs and search for suitable products. There are complex factors influencing consumers at all stages of the buying decision process: need recognition, information search, evaluation of alternatives, purchase decision and post-purchase behavior (Kotler & Armstrong, 2009).

By and large, soft drinks can be categorized as convenience goods (Copeland, 1923). Following this famous classification, we can think of soft drinks as products purchased with little effort and perceived risk. Consumers buy soft drinks regularly, without searching for information in advance, often following their impulses or relying on the preference maps existing in their minds. They habitually buy products like cola, orange juice or canned coffee-based on familiarity with a brand, from shops located conveniently-, in the immediate proximity.

However, in the case of sugar-free beverages and other functional drinks, consumers are willing to put in more effort to purchase their favorite drink, as they are looking for specific benefits. These characteristics of the buying behavior indicate that diet drinks sweetened with sweeteners move up on the product category ladder, and can be referred to as

preference goods (e.g. Holbrook & Howard, 1977, if the product is not available at the closest store). In order to purchase diet drinks, consumers may invest physical effort, as well as mental effort - to decide among brands or product types available. Knowledgeable consumers may pay attention to the ingredients used for a certain drink, and make their choice based on these details. The sugar-free drinks are therefore higher in risk than the regular ones and consumers may want to minimize their risk by learning about the product they intend to purchase. Soft-drinks in general are low intensity products (BucklinL.P., 1963) and are purchased with low involvement from the buyer. However, in the case of sugar-free beverages we may find consumers in a higher degree of involvement, since many heavy dieters are very careful to avoid sugary beverages. These facts suggest the search for information should be more extensive in case of diet drinks.

The psychoanalytical theory has demonstrated that the human behavior is often poorly explained by what people think they know. It was Sigmund Freud who revolutionized our perception of the human mind when he proposed the iceberg theory. "We are effectively cognitive icebergs with most of our thoughts occurring below the water line" (1953). According to Freud's theory, the conscious part of our mind is like the top of the iceberg; in other words, what we can know and understand logically is just around 10% of our mind; the largest part of the iceberg is under the water and consists of the preconscious (subconscious) and the unconscious mind. Freud suggested that although we may think we make our decisions based on the information we are consciously aware of, or we can easily retrieve from memory (the subconscious level), our behavior is in fact determined by things we are not aware of, and are stored in our unconscious. For the Austrian scholar the unconscious mind represented the place where people store their instinctual desires and needs. His theory can explain why sometimes consumers buy products without knowing why they purchased it.

A different approach to explaining human behavior was initiated by social

psychology; unlike Freud's psychoanalytic theory which emphasized the importance of biological instincts, the social psychological theory considered social variables to be stronger motivators of behavior (Blackwell, Miniard, Engel, 2006). Human actions were seen as the result of interactions, being influenced by internalized social and cultural norms.

According to humanists like Abraham Maslow, people are "self-actualizing" themselves, in other words they are making intelligent choices to improve and reach superior levels. Individuals strive to become better persons by satisfying their needs, on 5 different levels. However, the importance given to the different classes of needs at a particular time varies from one individual to another. In this respect, a consumer would choose a sugar-free drink to satisfy his thirst, while another one may do it because his behavior boosts his self-esteem, or because he anticipates that by doing so, he can be admired by other people. Maslow proposed a hierarchy of needs with physiological needs at the bottom, followed by the needs for safety and security, the needs for love and belonging, the needs for esteem, and on top of the pyramid, the need to actualize the self.

The road opened by Maslow was continued by researchers investigating personal values. Values are considered to play an important role in the first stages of the buying decision, when consumers recognize they have a particular need. Kahle suggested that values are formed from individuals' personal experiences and learning situations and they are guiding the human behavior. Therefore attitudes are derived from values, and together influence the intention to perform a behavior. (Kahle, 1983). Further Kahle developed the List of Values (LOV) (Kahle, Beatty, Homer, 1986) which includes nine variables: sense of belonging, excitement, warm relationships with others, self-fulfillment, being well respected, fun and enjoyment in life, security, self-respect and sense of accomplishment.

In marketing research, one method used to explore the personal values of consumers is the Means-End theory, developed by Jonathan Gutman in 1982. This approach aims at

discovering the linkages between product attributes (the "means"), the consequences for the consumer provided by the attributes (or the perceived benefits), and personal values (the "ends"). The means-end perspective, similar with the Expectancy-Value Theory introduced by Rosenberg in1956, explains how consumer actions produce consequences and how consumers learn to associate particular outcomes with specific product attributes. In other words, consumers learn to choose products containing attributes which are instrumental to achieving their desired consequences.

2.2.2 Development of Attitude Concept

For over one century scholars have tried to decipher the mystery of attitudes formation and to understand the way they impact our behavior. Attitudes cannot be directly observed in consumers, but must be infered from their thinking, feeling and doing. They are able to catch people's beliefs, feelings and intentions towards "objects" as different as love ones and mouse traps. Also, they may be evaluations of performing a behavior which involves the attitude object. Attitudes grasp degrees of intensity in people's thoughts, emotions and readiness to act, and influence their degrees of response.

The most recent definition of attitudes in a marketing manual, in accordance with the tripartite view of attitudes, refers to "a person's constantly favorable or unfavorable evaluations, feelings and tendencies towards an object or idea" (Kotler & Armstrong, 2009). However, an incurssion into consumer behavior theories and models reveales how the definitions of attitudes and the methods developed to measure them have changed over time.

From a hystorical perspective, as early as 1901 attitudes were defined as "readiness for attention or action of a definite sort" (Baldwin, in Ajzen & Fishbein, 1980, p13). However, the concept was used for the first time in emirical social research in 1918, when Thomas and Znaniecki considered attitudes to analyze the changing patterns of behavior of Polish

immigrants into the United States (Crano & Prislin, 2008). Thurstone, who developed unidimensional scales for the measurement of attitudes, defined them as "the affect for or against a psychological object" (1931, in Ajzen & Fishbein, 1980, p14).

> *"It is quite coceivable that two men may have the same degree of intensity or affect favorable towards a psychological object and that their attitudes would be described in this sense as identical but that they arrived at their similar attitudes by entirely different routes."*
> *(Thurstone, 1931, p.263, in Ajzen & Fishbein, 1980, p.15)*

In 1935 Gordon W. Allport opened the path for the tri-component view of attitudes. He proposed a new definition, wherein attitudes were conceptualized as "mental and neural states of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (p. 820, in Ajzen & Fishbein, 1980, p. 17). Thus, beginning with the 1950s the tripartite view of attitudes began to play a major role in the study of attitudes. The theory suggests attitudes are inferred as consistent responses to cognition, affection and conation (Katz & Stotland, 1959, Rosenberg & Hovland, 1960). Rosenberg (1956) and Fishbein (1963) developed expectancy-value models to explain the relationship between cognition and affect. According to these theories, consumers' judgments about sugar-free drinks will depend on their expectations, or beliefs that these beverages can help them reach their valued goals.

An important contribution to our understanding of attitudes has been brought by consistency theories, which focused on the relationships between beliefs, attitudes and behavior. Scholars like Heider (1944, 1958) and Festinger (1957) suggested that consumers' actions tend to be, in general, consistent with their attitudes. However, empirical results during the 70's supported only a low relation between attitude and behavior.

Consumers may have different motivations to form their attitudes towards a product object or towards performing a behavior. Katz (1960) and Smith (1947) developed a

functional theory of attitudes, suggesting that the attitudes are formed due to the functions they serve for individuals: utilitarian, value-expressive, ego-defensive and acquisition of knowledge (Kruglanski & Strobe in Dolores, Blair & Mark, 2005).

Several structural models of attitude were proposed, as scholars attempted to explain the formation of attitudes. Two of the most important ones are the Multi-attribute attitude models and the Tri-component Attitude Model.

Attitude models that can be classified as multi-attribute include the Attitude-towards Object Model, the Attitude-toward Behavior Model and the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980). According to these structural models, attitudes can be measured by identifying and combining consumers' specific beliefs about an attitude object. TRA considers the tripartite nature of attitudes (cognitive, affective and conative), but also includes subjective norms in the equation for predicting the intention. Theory of Reasoned Action explains the final behavior as a cognitive process. It suggests that individuals, as rational beings, consider the consequences their actions may have before actually performing a certain behavior. A continuation of the TRA, the Theory of Planned Behavior (TPB) was proposed by Icek Ajzen in 1985. As a consequence of later research which demonstrated that the behavior was not completely voluntary, rational and under control, Ajzen added to TRA the Perceived Behavioral Control, which is the perceived easiness or difficulty of performing the behaviour.

The Tri-component Model, starting with Rosenberg and Hoveland (1960) distinguished between three major components of attitudes: beliefs (cognitive), affects and behavioral affection (conation). This perspective on attitudes has in fact old roots, being grounded in the 18th century Faculty Psychology which emphasized the "trilogy of mind" (Figure 4). The cognitive component refers to the knowledge, perception and beliefs individuals have about a product, which may be formed from experience and past behaviors.

The affect function of attitudes refers to emotions and feelings (Schiffman & Kanuk, 2004, p. 257), which are evaluative in nature. Finally, the last element, conation, defines "the likelihood or the tendency that an individual will undertake a specific action, or behave in a particular way with regard to attitude object" (*ibid*., p.258)

Figure 4. The Tri-component Attitude Model (adapted from Schiffman & Kanuk, 2004)
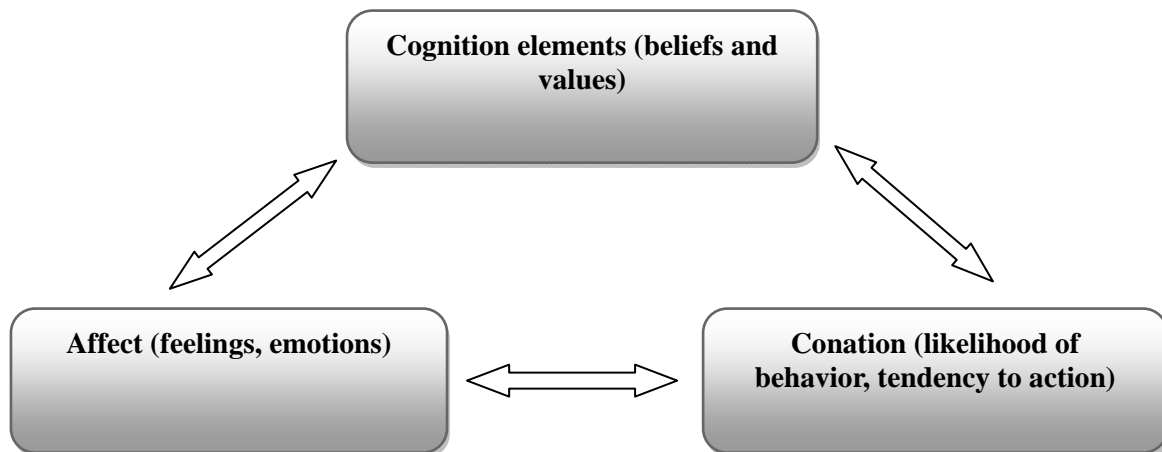
Current research on attitudes, marked by the studies of Eagly and Chaiken (1993), gave emphasis to this tripartite view. In *The Psychology of Attitudes* (1993) they refer to attitudes as "tendencies to evaluate an entity with some degree of favor or disfavor, ordinarily expressed in cognitive, affective, and behavioral responses"; attitudes are formed from cognitive, affective, and behavioral processes and lead to cognitive, affective, and behavioral responses. For this study on sugar free beverages we can conclude that attitudes are learned, can be driven by feelings and emotions and can influence consumers' future behavior.

Fishbein & Azjen's theorie offer a good framework for understanding the cognitive elements of attitudes. The equation proposed by Fishbein to measure attitudes is:

$$A_0 = \sum_{i=1}^{n} b_i e_i$$

A_0 attitude toward the object

b_i strength (degree) of belief

e_i evaluation of the attribute

n   number of beliefs

The role of affects and moods in the formation and functioning of attitudes has been less explored. Influenced by Freud's psychodynamic theories, many scholars view affective states as invasive forces which endanger rational thinking (Crano & Prislin, 2008, p. 132). However, the "affective revolution" which took place beginning with the 1980's shed new light on feelings and emotions, which are now understood as essential for the way people adapt their responses to certain social situations. According to Zajonc (2000) affect is the primary driving force towards attitudes.

The Health Belief Model (HBM) for instance, developed in the 1950's by the social psychologists Hochbaum, Rosenstock and Kegels, suggests that people are more likely to act if they are afraid of a disease, if they feel the danger and believe they can avoid a negative health condition (Glanz & Lewis, 2002). Therefore, *fear* may strongly influence consumers' overall attitudes towards health intended products.

Special attention has been recently given to eagerness, as a type of "goal oriented emotion" (Bagozzi 2001, Fitzmaurice, 2005 et al.). Eagerness can be understood as "a desire to move forward" (Fitzmaurice, p.913), considered to influence both the intention and the behavior. "Eagerness reflects one's enthusiastic desire to act and captures affective motivational readiness to act" (Fitzmaurice, p.924).

Turning to the third component of attitudes, conation, it refers to individuals' behavioral intention, which is the willingness to act towards the object. The recent study of attitudes has suggested that some attitudes may be enduring, while others change easily

(Scwartz & Bohner 2001); Attitudes may also be explicit, when people express them as judgments, feelings or behavior-, or implicit, when traces of past experiences are inaccurately identified. Although they are silent they can influence positively or negatively consumers' thoughts, emotions and actions (Greenwald & Banaji, 1995). As Rudman suggested (in Crano & Prislin, 2008, p.112), the tripartite model cannot fully explain the way attitudes are formed, as oftentimes they result from unconscious processes, not just from explicit or conscious ones. Wilson, Lindsay and Schooler (2000) proposed a dual attitude model, referring to cases when individuals have in mind more than one evaluation, but one can be accessed easier than the other (in Dolores, Blair & Mark, p. 543).

Consumers may form their attitudes before or after performing the behavior. According to Krugman's Passive Learning Theory (1970), in the low involvement decision making associated with convenience goods, such as water or orange juice-, there will be a different hierarchy of effects than in high involvement purchase, such as the acquisition of a car-. This theory suggests that behavior precedes the attitudes in low involvement contexts (Figure 5), and results from attitudes in high involvement situations. When consumers decide to buy beverages, they are generally expected to follow the hierarchy of effects for low involvement products. However, as shown in the beginning of the chapter, sugar-free drinks cannot be classified as convenience goods, due to their special attributes and benefits and the higher effort and risk consumers are willing to take to purchase them. Therefore we may expect consumers of sugar-free beverages to start from their beliefs (cognitive judgments), form their attitudes, and then act (Figure 6).

Figure 5. Hierarchy of Effects for Low Involvement Products

| **Beliefs** | ⟹ | **Behavior** | ⟹ | **Attitudes** |

Figure 6. Hierarchy of Effects for High Involvement Products

| **Beliefs** | ⟹ | **Attitudes** | ⟹ | **Behavior** |

2.3 Model Proposed for the Study and Development of Hypothesis

This study attempts to measure Korean consumers' attitudes and beliefs towards sugar-free beverages by using a multi-method approach. The model proposed is consistent with the tri-component view of attitudes; however, the affective and cognitive variables do not impact attitudes directly, as the behavioral intention is suggested to be a mediator between feeling and beliefs- and overall attitudes. The model also considers Krugman's Hierarchy of Effects, with respect to the idea that attitudes precede behavior in the buying decision process for sugar-free beverages. Although the new model borrows elements from Fishbein's value-expectancy model, it essentially differs from TRA which suggested that attitudes affect intentions, which then lead to behavior. The model attempts to incorporate beliefs about the utilitarian benefits, typically explored in multi-attribute models- and beliefs about the symbolic or value-expressive functions (Sirgy et al., 1991) of sugar-free beverages, common in congruity theories. This approach appears relevant for measuring Korean consumers' attitudes, the functional congruity and the symbolic congruity being integrated in the model as complementary, rather than competing variables.[5]

The model (Figure 7) proposed in this study includes several cognitive and affective variables and one conative variable, intention, which will be analyzed as mediator between the other variables and attitudes. The cognitive variables refer to subjective judgments and

---

[5] Most Korean advertisements for sugar-free beverages actually use both functional and value expressive appeals.

beliefs about sugar-free beverages, in terms of what they do, as functional products, and in respect to what they mean to consumers, as value-expressive products; here are included the perceived awareness, beliefs about the functional congruity between product attributes and the expected benefits, beliefs about the subjective norm, and beliefs about the congruity of self-concept/product image-. The emotional variables considered are fear of gaining weight, fear of sweeteners, enjoyment and eagerness to drink sugar-free beverages. It is hypothesized that consumers' degree of belief and their degree of emotional involvement determine the strength of their intention to consume sugar-free drinks, which than determines their current overall attitudes towards the beverages.

Without measuring the effect of attitudes on the actual behavior, this study will also attempt to determine whether consumer satisfaction impacts their overall attitudes and can be a source of attitude change. Previous behaviors are often a source of belief formation, therefore we can infer that consumers' attitudes may change post-behavior-, due to their actual satisfaction with the sugar-free drinks consumed. Therefore, consumer satisfaction, a post-behavior construct, may be treated as a pre-purchase construct, a source of attitude change, and thus may impact intention.

Figure 7. Proposed Model. Factors Affecting Consumers Attitudes towards Sugar-free Drinks

Cognitive factors (perceived awareness, functional congruity beliefs, subjective norm, and beliefs about the congruity of the self-concept)

Emotional factors (fear of gaining weight, fear of sweeteners, enjoyment, and eagerness)

Conative factors (intention)

Overall Satisfaction

Overall Attitudes towards Sugar-free Beverages
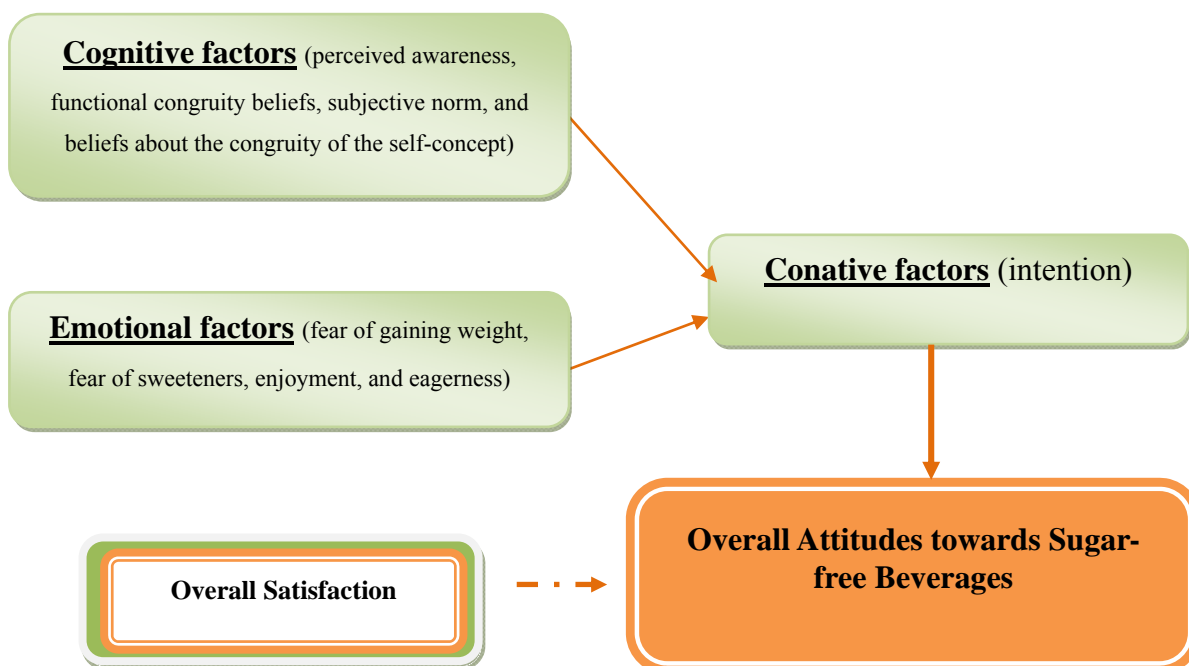
Cognitive Factors

Cognitive factors have long been found to be major components of attitudes. This model incorporates four cognitive variables, as they are explained below.

Perceived awareness will be a measure of how much consumers believe they know about sugar-free beverages and it is proposed as influencing the overall attitudes via intention. Perceived awareness is a subjective self-assessment of consumers' knowledge. Littlejohn (2002) viewed attitudes as "accumulation of information about an object", a predisposition to act in a positive or negative manner towards the object.

Functional congruity, based on the utilitarian criteria such as belief-evaluation or belief-importance has been confirmed as a strong predictor of intention (Earl & Kemp, 1999) in multi-attribute research. In this study it refers to the perceived weight management benefits or perceived health benefits associated with the functional attributes of sugar-free beverages. Consumers who associate sugar-free drinks with higher levels of functional benefits, such as weight control or health improvement are expected to have stronger intentions, and more positive attitudes.

Subjective norm refers to consumers' perception of whether their friends, family and colleagues approve of their behavior. It can be expressed as beliefs about other people's opinions with respect to sugar-free beverages. It may also take the form of perceived pressure from the generally accepted beauty standards of the Korean society. According to Ajzen and Fishbein (1980), the more individuals perceive that their significant others think they should perform the behavior, the more they will be willing to do so (p. 57). The perceived favorable or unfavorable opinions are weighted by the motivation consumers have to comply with them, and the sum of all these weighted perceptions represents the overall subjective norm. Individuals confer different weights to different opinions, depending, among others, on cultural influences, personality, sex or age. In this respect, due to the influence of the

Confucian philosophy on the Korean society, opinions expressed by family members are expected to have considerable weight in consumers' decision making processes. Moreover, members of Korean families tend to share similar views and beliefs, while younger members are expected to follow their elders' opinions.

Normative beliefs taking the form of perceived social pressure may also weight significantly, since a slim body is widely perceived in Korea as a sign of professional and social success and numerous young girls consider it an absolute requirement for a good marriage. It has been shown in the second chapter that such beliefs are fed by Korean media, which promote stereotypical images of a 'perfect' body and encourage their readers to use diet drinks for slimming down.

Self-concept congruity refers to consumers' beliefs about how much sugar-free drinks match their self-image. As early as 1967, Grubb and Gratwhol suggested that consumers will direct their funds "toward furthering and enhancing his self-concept throughout the consumption of goods as symbols" (p. 26).

The concept of self-congruity is used here in the context of symbolic consumption, as suggested by Sirgy (1986), who observed consumers use product symbolism to define themselves. Self-concept congruity differs from the functional congruity previously discussed-, as the latter refers to the match between product's attributes or utilitarian aspects and consumers expectations regarding product performance.

Different consumers look for different types of benefits from sugar-free beverages; therefore, self-concept congruity is expected to be a predictor of intention for those consumers seeking emotional benefits, being less important for those who drink sugar-free beverages motivated by their functional attributes. Sirgy's congruity theory suggests that the more consumers identify with the personality of sugar-free drinks or with the image of their typical consumer – "the health-conscious"-, the higher is their motivation to consume them.

The self-concept theory (Sirgy, 1986, Sirgy, Wright & Clairbone, 1992) further suggests that consumers may form or even change their self perception as a result of using a product. Therefore, consumers who drink sugar-free beverages may think they can infuse themselves with the products' image, which in turn can boost their self-confidence and make them feel better about themselves. Furthermore, they are more likely to appreciate sugar-free drinks as value-expressive products, which can communicate meaning about the user to others.

Rapaport and Orbell (2000, in Fitzmaurice, 2005, p.915) highlighted that "if a person identifies with a specific role or action, they are more likely to express a positive attitude towards the action". A higher congruity of self-concept/ image of sugar-free drinks- is expected to lead to stronger intentions, and more positive attitudes. Therefore, it is hypothesized that:

H1. Consumers who exhibit higher levels of impact from the cognitive factors (perceived awareness, perceived functional congruity, perceived self-concept congruity and subjective norms) will show stronger intentions to consume sugar-free beverages.

Emotional Factors

Affect has often been seen as an essential component of attitudes. The affective variables included in the proposed model refer to fear of gaining weight, fear of sweeteners, enjoyment (hedonic involvement) and eagerness.

Fear is considered in this study in two different forms: **fear of gaining weight**, proposed as a motivator (Witte, 1998) of intention and **fear of sweeteners**, the ingredients used to sweeten sugar-free drinks, proposed as an inhibitor (Witte, 1998). Fear has been conceptualized as "a negatively-valenced emotion, accompanied by a high level of arousal, […] elicited by a threat that is perceived to be significant and personally relevant" (Easterling & Leventhal, 1989; Lang, 1984; Ortony & Turner, 1990 in Witte, 1992).

In the first case, fear of gaining weight is related to the negative reinforcement, often used in fear advertising appeals. Consumers learn to believe that regular drinks with sugar may cause weight gain, and if they want to keep their shape they should drink sugar-free beverages. This approach is consistent with the Health Belief Model (HBM), which suggests that the greater fear consumers have of gaining weight, because they have seen or heard of other people becoming fat after drinking sugary beverages-, the stronger intention they will have to drink sugar-free beverages.

Rogers (1975) and later Witte (1992) in the Extended Parallel Process Model suggested fear can play an essential role in the formation of attitudes, and fear appeals may be a source of attitude change. Thus, we may assume that consumers with higher degree of fear of gaining weight will have stronger intentions to consume sugar-free beverages.

The second implication of fear, this time as an inhibitor, refers to the risk consumers may perceive from drinking beverages containing sweeteners. Many people do not fully understand what these chemical substances are, or they may have heard of health risks associated with sweetener consumption, and therefore may experience different degrees of fear (or uncertainty) about sugar-free beverages. The more afraid consumers are, the less strong intention they will have, and their attitudes towards sugar-free drinks will be less favorable.

The degree of **enjoyment or pleasure** associated by consumers with (drinking) sugar free beverages is expected to impact the strength of intention. Consumers are expected to be more willing to drink sugar-free beverages if they enjoy the taste and do not have to worry about calories. Figgie and Feick (1989, in Fitzmaurice, 2005, p.915) suggested the "arousal potential" of hedonic involvement, explaining that people will be more likely to perform a behavior that is anticipated as a source of pleasure and enjoyment. Consumers may look forward to drinking low calorie beverages which are fun to drink and saves them from having

to worry about negative consequences on their waistline

Eagerness, as explained by Fitzmaurice (2005) and Bagozzi (2001, in Fitzmaurice) refers to *goal oriented emotions*, or "a desire to move forward" (p.913). This strong desire was suggested to influence intention. In the case of sugar-free beverages a strong desire can take the form of cravings or compulsive consumption when consumers want to drink more and more of the product. Eagerness is thought to impact consumers' attitudes indirectly, through their intention. Therefore, the second hypothesis is:

> *H2. Consumers with a higher level of emotional involvement (fear, enjoyment, eagerness) with regards to sugar-free beverages will have stronger intentions to consume them.*

Behavioral intentions are proposed in this study as the conative variable which mediates the influence of cognitive and affective components on attitudes. Intentions are " psychological constructs distinct from attitudes, […] the person's motivation in the sense of his or her conscious plan to exert effort to carry out a behavior" (Eagly & Chaiken, p168). Defined by Ajzen & Fishbein (1980) as "subjective probabilities" (p.46), intentions were proposed in TRA as "immediate determinants of the action" (Ajzen & Fishbein, 1980 p.5), "likelihood that one will perform a behavior" (Kaballa, 1988, in Fitzmaturice, 2005, p. 913). The relationship attitude and intention in the proposed model is inverse to that suggested by The Theory of Reasoned Action. Azjen & Fishbein suggested that in order to determine behavioral intention, one would have to assess consumers' attitudes toward their own performance of the behavior (1980, p.56). Instead, this study suggests that intentions impact consumers' behavior indirectly, through their overall attitudes towards sugar free drinks.

Overall attitudes towards sugar free drinks will be a measure of how much consumers like or dislike these beverages. Attitudes are conceptualized as tendencies to evaluate an object favorably or unfavorably (Eagly & Chaiken, 1998). They are a distinct psychological construct, apart from the beliefs, feelings and behaviors which impact their

formation, and can be stored in the memory of consumers, from where they influence new beliefs, feelings and behaviors. The third hypothesis is that:

H3. Consumers with stronger intentions to consume sugar-free beverages will have more positive attitudes towards these drinks.

Consumers who have already drunk sugar-free beverages may have formed opinions about these products. Before repeating their purchase, consumers may change their previous attitudes as a consequence of the behavior and their level of satisfaction with the behavior, or due to their perceived self-efficacy. It has been suggested that attitudes may be inferred from observations of past behaviors towards the object, "in a process of self-perception" (Bem, 1972, Fazio, 1987, in Crano & Prislin, 2008). Therefore, we may infer that consumers who have tried sugar-free beverages and liked them-, will have more positive attitudes and thus higher intentions to repurchase them. Thus, the research may confirm that,

H4. Consumers who experience higher levels of satisfaction after consuming sugar-free beverages will have more positive overall attitudes towards sugar-free beverages.

2.4 Summary of Model and Hypotheses

The model proposed for this study attempts to determine which are the factors that can impact Korean consumers' attitudes and beliefs towards sugar-free beverages, broadly following the tri-component perspective on attitudes. The degree of belief regarding functional and self-concept congruity, the perceived awareness and the subjective norm on one hand-, and the intensity of emotions (fear, enjoyment, eagerness) associated with the consumption of sugar-free beverages on the other hand, are hypothesized to determine the levels of intention, which afterwards impact the overall attitudes. Beliefs formed as result of past experiences are proposed to also impact the overall attitudes.The next chapter will relate on the methodology used to assess consumers' attitudes and the main predictors of intention.

Chapter 3. Methodology

"Attitudes can be measured."(Thurstone, 1928).

3.1 Data Collection

The final research was conducted as a survey on a sample on 210 Korean consumers. Respondents were chosen on the basis of convenience among the students and administrative staff at the KDI School, and among the Korean employees of the Paju English Village. The choice of the sample was motivated by the need to access respondents with a good level of English proficiency, as the questionnaire was designed in English. However, Korean translation was provided for specific terms, such as names of sweeteners. To avoid any confusion, pictures of sugar-free beverages which contain alternative sweeteners and are available on the Korean market were included in the introductory part of the questionnaire.

As mentioned before, the study is not limited to attitudes towards the beverages presented as example in the questionnaire, as it measures attitudes towards any kind of drink containing sweeteners other than sugar. Hence, it was clearly stated that the study investigated attitudes towards drinks sweetened with alternative sweeteners.

3.2 Development of the Research Questionnaire

Before the development of the questionnaire, a qualitative research was conducted to gather opinions through in-depth interviews. A pilot study has been performed to test questionnaire items using 10 respondents. The results of the field test thus allowed for an exploration of the underlying reasons for variations in answers. The questionnaire items which appeared unclear were rephrased and the research model was adjusted according to the validated factors.

In the main survey, items addressing attitudes and beliefs about sugar-free beverages were assessed on 7-point Likert like scales and 7-point semantic differential scales. Opened

ended questions were used to evaluate respondent's actual awareness. Participants did not have to rank items, but were asked to rate attributes of diet drinks and perceived benefits on a 7-point scale from *not important at all* to *extremely important*.

For the Likert scales 1 was the most negative end, while 7 was the most positive. This method of summated ratings requires a large number of questionnaire statements which reflect positivity or negativity towards sugar-free beverages (Manstead & Hewstone, 1995). The participants to the survey are requested to reflect on these statements and express their degree of agreement or disagreement. Then, a total score is computed for each person, and each questionnaire item is tested for correlation with the overall score. Those items which are not highly correlated with the overall score are excluded, while the remaining ones are considered good determinants of attitudes (Manstead & Hewstone, 1995).

A second method used in this study was Osgood's semantic differential scale. The answers of each respondent are summated into an overall attitude score. To avoid the halo effect, the positive and the negative ends were constantly permuted, as shown in the below excerpt from the research questionnaire:

Unpleasant	___	___	___	___	___	___	___	*Pleasant*
A good think to do	___	___	___	___	___	___	___	*A bad think to do*
Harmful	___	___	___	___	___	___	___	*Healthful*
A special treat	___	___	___	___	___	___	___	*An all time choice*

The 7 point scales were preferred over the common 5-point scales originally used by Rensis Likert, for their ability to detect more subtle differences and produce more accurate data. Research done by Krosnick & Fabrigar (cited in Manstead & Hewstone, 1995) suggested that scales with more points allow for greater precision. Nevertheless, too many points are likely to confuse the respondents, as the human mind can not perceive very well small differences on scales of 9 points or more. 7-point scales appeared in numerous studies

to be more reliable than greater scales, therefore, 7 appeared to be the optimum number.

An odd number scale was chosen over an even number scale because the existence of a midpoint allowed respondents to express a neutral position when it was the case, rather then forcing them to agree or disagree with the statement. Empirical studies (Bishop, 1987; Schuman & Presser, 1981 cited in Manstead & Hewstone, 1995) indicated that by providing a middle alternative the validity of the attitude score is increased.

For internal consistency, most variables were assessed in several ways, using the 7-point Likert scales and the semantic differential scales. For instance, four separate questionnaire items were developed for the construct "hedonic involvement".

Dependent Variables

Overall attitude. Two questionnaire items were developed to measure the "overall attitudes". One statement assessed consumers' attitudes towards the sugar-free drinks object, by asking respondents to specify on a 7-point scale the degree to which they favor sugar free beverages from *not at all* to *a great deal.*

For consistency, attitudes were also assessed through a semantic differential scale, with the end points respectively *a good thing to do*, and *a bad thing to do*. In this case the accent was moved from attitudes towards sugar-free drinks object to performing the behavior of drinking sugar-free beverages.

Intention was assessed with a single item on a Likert-like 7-point scale. Single-item measures have been previously used by other researchers; Pierro & Livi (2002) used single items to evaluate behavioral intention, while Fitzmaurice (2005) used them to assess eagerness. Respondents were asked to evaluate how much they were willing to drink sugar-free beverages in the forthcoming days. For more accurate answers, besides numbers, the scale also contained signposts as follows: 1- "not at all", 2- "very little", 3 – "slightly", 4 – "fair enough", 5- "somewhat", 6 – "a great deal" and 7- extremely". Those respondents who

were unable to judge their willingness to consume sugar free beverages could tick the "Not applicable" box. Numerous studies have been performed during the last 3 decades to assess the meaning that respondents confer to such verbal labels. Krosnich & Berent (1993) concluded that signposts attached to all scale points enhance reliability.

Independent Variables

Perceived awareness was measured through a 7-point Likert-like scale. Respondents had to assess their degree of knowledge and understanding of beverages sweetened with alternative sweeteners, the end points ranging from "Not at all" to "Extremely likely". The degree of interest consumers had in the ingredients mixed inside sugar-free drinks was considered relevant for this variable. Therefore one item measuring their level of concern was also included in the survey, asking consumers how likely they are to read the nutrition information on the label of a drink before purchasing it. Answers were on a 7-point scale from "very unlikely" to "very likely".

Functional congruity beliefs. The survey included four items which evaluated consumers' beliefs about the health benefits they would have by consuming sugar-free drinks, and the efficiency of sugar-free beverages used as a weight control tool. Answers were on a 7-point scale with end points "strongly disagree" to "strongly agree". The questionnaire items were: "If I drink sugar-free beverages I can stay healthier", "There is scientific evidence that sweeteners are healthier than sugar", "People who drink sugar-free beverages don't need to worry about getting fat." and "If I drink sugar-free beverages I can control my weight."

For consistency, semantic differential scales with the endpoint *useful - worthless, harmful – healthful, well-being – ill-being* were included in the questionnaire.

Subjective Norm. To measure the subjective norm three 7-point scale items were developed. Respondents were asked to reflect on the degree to which they think their significant others would approve or disapprove drinking sugar-free beverages. A second

questionnaire item assessed the degree to which consumers' believed Korean media was recommending or not recommending sugar-free beverages. Finally, participants in the survey had to assess their level of perceived social pressure to watch the daily caloric intake.

Beliefs about self-concept congruity. This study used five items to measure the perceived match between consumers' self-image and their image of sugar-free beverages. Respondents had to provide answers on a 7-point scale, ranging from "strongly disagree" to "strongly agree" for the following statement: "Sugar-free beverages match my own image of myself.", "Sugar free beverages boost my self-confidence.", "If I drink sugar-free beverages I can be more attractive" and "I like being seen drinking sugar free beverages". The first two items investigate how much consumers think sugar free drinks match their self-image, while the last two statements assess the degree to which consumers favor drinking sugar-free beverages as a self-expressive activity, which communicates their something about their values or personality to others.

Self-concept congruity was also assessed through a semantic differential scale, with the end-points of *for me –*and *not for me.*

Fear of gaining weight. Fear as motivator was measured on a 7-point Likert scale. Respondents had to specify their degree of agreement with the statement "I am afraid of gaining weight if I drink regular beverages with sugar." A second statement, incorporating beliefs about the solution to the perceived threat of weight gain followed immediately, affirming that "people who drink sugar-free beverages don't need to worry about getting fat". The two items have been found to be highly positively correlated in studies using the Health Belief Model as research framework.

Fear of sweeteners. Fear as inhibitor referred to a negative emotion felt because of consumers' uncertainty regarding the possible negative sweeteners may have on their health. One 7-point Likert item measured respondents' fear of sweeteners: "How likely are you to be

afraid of the possible harmful effects of sweeteners on health?" This factor is expected to be negatively correlated with the intention.

Enjoyment or hedonic involvement. Four questionnaire items measured consumers' degree of enjoyment. Respondents had to agree or disagree on a 7-point scale with the statement "sugar free beverages are fun to drink". Secondly, they had to evaluate to what degree they are likely to enjoy drinking sugar-free beverages. Finally, enjoyment was also assessed through semantic-differential 7-point scales, with the end points "fun to drink – not fun to drink", respectively "pleasant – unpleasant". Using this interrelation of variables, a multivariate analysis was performed.

Eagerness. To measure eagerness, 2 items were developed, similar to those used by Fitzmaurice (2005). Firstly, respondents were asked to how much they desire to drink sugar-free beverages in the forthcoming days. Answers were on a 7-point scale, and point labels were provided in the same manner used to measure intention: 1- "not at all", 2- "very little", 3 – "slightly", 4 – "fair enough", 5- "somewhat", 6 – "a great deal" and 7- extremely".

A second approach to assess eagerness was to ask respondents to reflect, on a 7-point scale how *hesitant* or *eager* they are to drink sugar free beverages.

Overall satisfaction. This study did not attempt to determine what factors affect consumers' satisfaction. In stead, it attempted to measure to what degree the perceived satisfaction influences intention and the overall attitudes. Therefore, satisfaction was addressed through one questionnaire item, answers being on a 7-point Likert scale with endpoints *very dissatisfied* to *very satisfied*.

Although the actual behavior does not make the subject of this study, one questionnaire item assessed the frequency of drinking sugar-free beverages in the past 30 days using ordinal scales. The data obtained may be useful in segmenting respondents as heavy or light consumers and further gain insights on a specific segment's patterns. On a

semantic differential scale the study also appraised whether consumers perceive sugar-free drinks as an all time choice or, on the contrary, a special treat.

One section on the questionnaire contained items designed to explore consumer's knowledge and understanding of sweeteners. As the goal of the study was to follow an exploratory approach, without having the ambition to assess the actual awareness of the Korean consumers, open ended questions were designed allowing respondents to write anything they can recall about sweeteners used in sugar-free drinks in general and about the stevia plant in particular. Another item asked consumers whether they had ever consumed any beverage sweetened with stevioside (스테비오사이드), possible answers being "yes", "no" or "I don't know."

Chapter 4. Data Analysis and Interpretation of Results

4.1 Data cleaning and response rate

210 Korean consumers were asked to fill out the questionnaire investigating their attitudes towards sugar-free beverages. 172 returned the questionnaires, which results in a response rate of 82%. The high response rate is justified by the fact that respondents had been conveniently selected among the KDI school peers and administrative staff and the Korean stuff working within the Paju English Village. Among the 172 questionnaire, 18 had incomplete demographic data or several missing variables, therefore they were excluded from the final analysis.

The data was collected and interpreted using the statistical software SPSS 11.

4.2 Demographic information

96 of the respondents were women, while men were the remaining 58, as shown in the pie chart below.

Figure 9. Gender
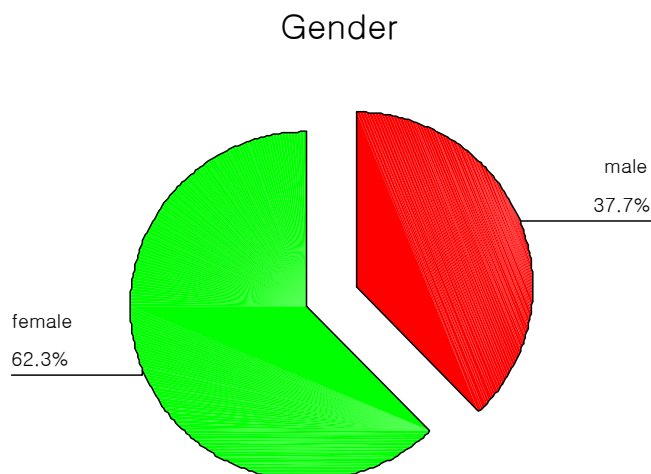
With regards to the level of education of those who participated in the survey, the data revealed that 91 respondents had graduated or were enrolled in bachelor studies, 59

attended master's studies or graduate schools, while 4 attended only high school. The participants to this research belong to numerous age groups, their distribution in each age category being illustrated in the underneath bar chart. Thus, 41 percent of respondents were aged 25-29, 30 percent fell in the 20-24 group, and 17 percent belonged to the 30-34 category. The groups aged 35 – 39, respectively 40 – 44 had each 5 percent of the respondents. The percentage of very young consumers aged 19 and under was only 1.9, while the oldest group, 45 -49 had only 1.3 percent.

Figure 10. Age Groups
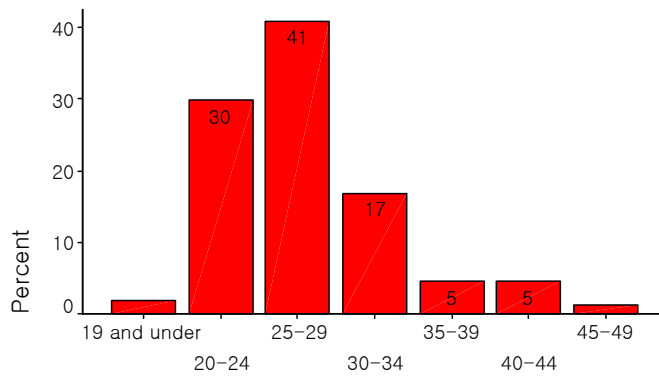
Regarding the marital status of the participants, 99 declared they were single, while the other 55 that they were married. The participants were also asked to self-assess their degree of body fitness. Answers were on a 7 point scale, as shown in Figure 11. As much as 65.6 percent of respondents considered themselves as fit. Only 22.1 percent of the people thought they were 'a bit overweight', while 10.4% declared they were "a bit underweight". The percentage of overweight and underweight consumers was very low in this sample, with only 1.3 percent falling in the first group, and 0.6 percent in the latter group. Such results are not unusual for the Korean society in general, given the fact that Korea registered the lowest obesity rate among OECD countries, at only 3 percent.

4.3 Descriptive Statistics and Measures of Central Tendency

The Cronbach Alpha test run on 30 questionnaire items produced a coefficient of 0.8792, which indicates a high reliability, in general a coefficient of 0.7 or higher being considered reliable.

One categorical question asked respondents to reflect on their main reason for consuming beverages in sugar-free version. Answers revealed that 46.1 percent of the participants to this survey chose to drink sugar-free beverages because they wanted a healthy lifestyle. Surprisingly, for an equal percentage sugar-free drinks appealed because of their weight control benefits. Only 5.2 percent of the respondents declared that sugar-free beverages matches who they are. The remaining 2.6 percent of respondents tack "other", the reasons most often invoked being 'convenience' or 'lack of options". The bar chart in Figure 12 illustrates the above mentioned information.

Figure 12. Main reason for consuming sugar-free beverages

The actual behavior was assessed through one questionnaire item asking respondents how often they consumed sugar free beverages during the last 30 days. According to their answers, respondents can further be classified into different groups, reflecting the regularity of their behavior. Those who drink sugar-free beverages at least 3 times during one week can be regarded as *regular consumers*. O*ccasional consumers* are those whose consumption was 1 to 3 times, or not at all in the last 30 days. Regular consumers may further be divided into 3

subgroups:

- *heavy consumers – drinking sugar-free beverages daily or almost every day;*

- *moderate consumers – consuming sugar-free beverages several times a week;*

- *light consumers – drinking once or twice a week.*

These subgroups may present mean differences on various variables, therefore they will be used in more advanced analyses to identify common characteristics of consumers with similar consumption patters.

Table 1. Behavior Frequency

During the last 30 days, how often did you drink sugar-free beverages sweetened with sweeteners

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	daily or almost every day	24	15.6	15.6	15.6
	several times a week	49	31.8	31.8	47.4
	once or twice a week	40	26.0	26.0	73.4
	1 to 3 times in the last 30 days	26	16.9	16.9	90.3
	not at all during the past month	15	9.7	9.7	100.0
	Total	154	100.0	100.0	

Regular consumers: 47.4%

The analysis of frequencies indicated that the largest group of consumers (73) can be regarded as *regular consumers*, counting for 47.4 percent of the total number of respondents. The percentage of consumers who declared they had not drunk any sugar-free beverage during the past month was at a low 9.7 percent. Respondents who declared a medium consumption of 1 to 2 drinks per week accounted for 26 percent of the respondents, while the remaining 16.9 percent were occasional consumers, using sugar-free beverages 1 to 3 times in the last 30 days.

In general, respondents had positive attitudes towards sugar-free beverages. However, there existed cases when answers were either extremely positive, or extremely negative. This situation can be explained by the fact that sweeteners and the sugar-free beverages which contain them are controversial products. While some consumers love them, trust them and

use them frequently, others are afraid of using them or even dislike and avoid them. The following data reports descriptive statistics for the questionnaire items measured on 7-point scales.

Intention scored a mean value of 4.71, with 1 as the most negative value and 7 the most positive one; the mode was 5, while the median was also 5. The bar chart below illustrates the distribution of ratings among the 154 respondents, 65.5 percent of them choosing ratings of 5 and higher. These high values suggest a high willingness to drink sugar-free beverages among the large majority of respondents.

Perceived awareness. Participants were asked to self-assess their awareness of ingredients used in sugar-free beverages to produce the sweet taste. Their answers produced a mean value of 4. The mode was 5, chosen by 31.2 percent of the respondents-, and the median was 4. Responses tended to be extremely diverse.

The questionnaire included a separate item measuring consumers' interest for nutrition information and the likelihood for them to check a product's label before they purchase it. Those who are used to checking the nutrients in their beverages were expected to perceive higher levels of awareness. The mean scored by the variable measuring interest was higher than the one measuring awareness, 4.72. This may be due to the fact that 67.5 percent of respondents chose ratings of 5 and higher. Although 30.2 percent rated their interest for nutrition information below 4, still the data produced a median of 5.

The perceived awareness and the interest for ingredients used in sugar-free beverages were found to be moderately correlated, the Pearson correlation coefficient being 0.625.

Beliefs about the Functional Congruity. Four independent variables were included in the questionnaire to measure the perceived match between the functional attributes of sugar free beverages and consumers' goals of losing weight and staying healthy.

The highest mean value, 5.19-, was produced by the questionnaire item measuring

consumers' beliefs about the positive consequences sugar-free beverages have on their health,. However, the item measuring consumers' level of agreement with the statement claiming that sweeteners have been scientifically proven as healthier than sugar is produced a mean of only 4.28. The variables measuring consumers' beliefs about the weight control benefits they could have from drinking sugar-free beverages produced lower means, of only 4.39 and 4.28.

The three questionnaire items developed to measure respondents' beliefs about **subjective norms** obtained mean ratings higher than 5. The great majority of respondents indicated that people who are important for them as well as the media can significantly influence their choice with regards to what they eat. Another powerful influencer may be the society and its beauty norms which numerous respondents admitted to feel pressure from.

Beliefs about the self-concept congruity. The variables measuring the perceived match between respondents' self-image and that of sugar-free beverages registered low mean ratings (under 4). As a consequence, the items deriving from the perceived self-concept congruity, such as self-expressive involvement also had low ratings, however, higher than 4.

The fear of gaining weight was one of the emotional factors measured in the questionnaire. The variable scored a mean of 4.99, 5 being the value most often chosen by respondents. The graph below illustrates the variation in ratings among participants to this survey.

Fear of sweeteners was considered in this study as potential inhibitor of behavior and was measured as fear of the negative effects sweeteners may have on health. The mean obtained for this variable was 4.78, however, the median was 5. 40.9 percent of respondents rated their fear with 5, while other 22.1 percent chose 6, and 5.2 percent reported the maxim degree of fear. The percentage of respondents who rated their degree of perceived fear above 4 raises to 68.2 percent, which suggests more consumers are likely to be afraid of sweeteners.

Several questionnaire items measured the **degree of enjoyment** perceived by

respondents. The statement employing the word "fun" generated a mean of 4.83, the result being similar with the one obtained for the semantic differential scale "Unpleasant – Pleasant". Another statement, using the word "enjoy" generated higher mean, 5.31.

Two items were developed to measure **eagerness;** they generated similar mean scores, of 4.47 and 4.56. The mean for the variable measuring respondents **overall satisfaction** was 4.99. As much as 76 percent of respondents chose ratings higher than 4, which suggests a high degree of satisfaction among more consumers. Both the mode and the median were 5.

Intention. The items requiring respondents to reflect at how much they were willing to drink sugar-free beverages in the forthcoming days generated a mean of 4.71, the mode and the median being 5. This suggests respondents were, in general, more willing to consume drinks in sugar-free version. Intention and Eagerness produced high correlation coefficients, of 0.801 which suggests that the affect may have a significant impact on consumers' willingness to act.

Respondents indicated that their **overall attitudes towards sugar-free beverages** are more positive than negative. The data collected for this study generated a high mean score for the variable 'overall attitude", of 5.05 on a 7 point scale.

4.3 Assessment of Proposed Model and Hypothesis

Table 2. Factor Analysis

Rotated Component Matrix ^a

	Component			
	1	2	3	4
Sugar-free beverages match my own image of myself	.840	.298	.143	2.982E-02
Sugar-free beverages boost my self-confidence	.832	.320	.154	1.196E-02
I'm afraid of gaining weight if I drink regular beverages with sugar	.745	.102	.191	5.876E-02
If I drink sugar-free beverages I can be more attractive	.715	.438	.106	9.522E-02
People who drink sugar-free beverages don't need to worry about getting fat	.512	.222	.157	.345
I am very hesitant … eager to drink sugar-free beverages.	.313	.845	9.957E-02	2.580E-02
sugar-free beverages are fun to drink.	.165	.765	6.361E-02	.168
How much do you desire to drink sugar-free beverages in the forthcoming days?	.368	.755	.188	-7.07E-02
I am less likely…. more likely to enjoy drinking sugar-free beverages	.216	.723	-8.63E-03	.226
Perceived awareness: How well do you know the ingredients used to replace the sugar in sugar-free beverages?	.123	9.829E-02	.877	3.599E-02
Interest for sweeteners How likely are you to check the ingredients on the label of a drink?	.333	2.818E-02	.762	.176
Most articles in magazines say that I should…should not drink sugar-free beverages	5.778E-02	.236	.245	.693
Most people who are important to me would approve … dissaprove drinking sugar-free beverages	.342	.293	.284	.618
How Likely are you to be affraid of the possible harmful effects of sweeteners on health?	-.108	-.258	-.404	.570

Factor 1: Self concept congruity factors (better image, self-confidence, feeling of attractiveness)

Factor 2: Affect factors (desire & enjoyment)

Factor 3: Perceived awareness

Factor 4: Normative belief

Regression analysis in SPSS was used to identify the patters that appear in most consumers' attitudes towards sugar-free beverages and validate the research model. In order to reduce the data first factor analysis was performed, as shown on the previous page. Factor

analysis was performed using the principal components method, with Varimax rotation. As shown in Table 2, 4 factors with eigenvalues over 1 were extracted, and they were used further in the regression analysis as they also made sense conceptually.

Regression Analysis with Intention as Dependent Variable

The first regression used the 4 extracted factors as independent variables and Intention as dependent variable. The model is presented below.

Table 3. Regression Analysis with the 4 factors and Intention

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.657[a]	.431	.427	.998
2	.730[b]	.532	.526	.907
3	.765[c]	.585	.577	.857

a. Predictors: (Constant), REGR factor score 2 for analysis   1

b. Predictors: (Constant), REGR factor score 2 for analysis   1 , REGR factor score 1 for analysis   1

c. Predictors: (Constant), REGR factor score 2 for analysis   1 , REGR factor score 1 for analysis   1 , REGR factor score 3 for analysis   1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.699	.081		58.265	.000
	REGR factor score 2 for analysis 1	.866	.081	.657	10.697	.000
2	(Constant)	4.699	.073		64.060	.000
	REGR factor score 2 for analysis 1	.866	.074	.657	11.761	.000
	REGR factor score 1 for analysis 1	.420	.074	.318	5.703	.000
3	(Constant)	4.699	.069		67.797	.000
	REGR factor score 2 for analysis 1	.866	.070	.657	12.447	.000
	REGR factor score 1 for analysis 1	.420	.070	.318	6.036	.000
	REGR factor score 3 for analysis 1	.303	.070	.230	4.360	.000

a. Dependent Variable: How much are you willing to drink sugar-free beverages in the forthcoming days?

Affect (enjoyment and desire) scored the highest Beta, 0.657, followed by the consumers' self-concept congruity factors with a lower Beta of 3.18. A not so strong predictor

of intention was found to be the perceived awareness, what consumers think they know about the sugar-free beverages they are drinking, the value of Beta being 0.230. The three factors validated in the model could explain up to 57% of the variance in consumers' intention, while the emotional factors alone could play a major role, as indicated by the R squared value in Model 1 (Table 3), 0.431. The regression however did not confirm the normative beliefs to be significant predictors of intention.

Regression Analysis with Overall Attitude as Dependent Variable

A second regression was run with the 4 factors extracted as independent variables and the overall attitude as dependent variable. The reason behind this second regression was the need to determine whether the four factors are not stronger related to the overall attitude than they are to intention.

Table 4. Regression analysis with the four factors and the overall attitude

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.508[a]	.258	.253	1.046
2	.578[b]	.335	.326	.993
3	.627[c]	.393	.381	.952
4	.647[d]	.419	.403	.934

a. Predictors: (Constant), REGR factor score   2 for analysis   1

b. Predictors: (Constant), REGR factor score   2 for analysis   1 , REGR factor score   1 for analysis   1

c. Predictors: (Constant), REGR factor score   2 for analysis   1 , REGR factor score   1 for analysis   1 , REGR factor score   4 for analysis   1

d. Predictors: (Constant), REGR factor score   2 for analysis   1 , REGR factor score   1 for analysis   1 , REGR factor score   4 for analysis   1 , REGR factor score   3 for analysis   1

Coefficients ^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.059	.085		59.832	.000
	REGR factor score 2 for analysis 1	.614	.085	.508	7.239	.000
2	(Constant)	5.059	.080		62.987	.000
	REGR factor score 2 for analysis 1	.614	.081	.508	7.620	.000
	REGR factor score 1 for analysis 1	.336	.081	.277	4.165	.000
3	(Constant)	5.059	.077		65.727	.000
	REGR factor score 2 for analysis 1	.614	.077	.508	7.952	.000
	REGR factor score 1 for analysis 1	.336	.077	.277	4.346	.000
	REGR factor score 4 for analysis 1	.292	.077	.242	3.786	.000
4	(Constant)	5.059	.076		66.966	.000
	REGR factor score 2 for analysis 1	.614	.076	.508	8.102	.000
	REGR factor score 1 for analysis 1	.336	.076	.277	4.428	.000
	REGR factor score 4 for analysis 1	.292	.076	.242	3.857	.000
	REGR factor score 3 for analysis 1	.196	.076	.162	2.583	.011

a. Dependent Variable: Overall, I favor sugar-free beverages not at all ... a great deal

All four factors were found to influence consumers' overall attitudes, the strongest influencer being again the affective factors, with a Beta value of 0.508. This is a lower coefficient than the one which determines the relation between affect and intention of 0.657, which suggests intention should be kept in the model as a mediator. However, in the case of normative beliefs, which were not found to significantly impact intention, the data produced by the second regression indicated that this factor may be a predictor of the overall attitudes, with a Beta of 0.242. This is still a low value which suggests that the role played by consumers' significant others in the formation of their overall attitudes towards sugar-free beverages is just a limited one.

When Intention was added as a fifth independent variable into the regression to determine predictors of overall attitude, it was not found to be a significant predictor into the model. Intention alone accounted for only 18% of the variation, (R square 0.180), the Beta

coeffient being 0.424.

Satisfaction with the sugar-free beverages was found to account for only 14% of the variance in the model (R Square 0.143), with p<0.0005 using the stepwise method of the regression. The Beta coeffienct was 0.379.

The analysis performed in SPSS revealed that several factors may have a significant role in the formation of the overall attitudes towards sugar-free beverages of Korean consumers. The cognitive factors alone would be responsible for just a small quota of the variation in attitudes, and so would be the affective or the connative factors if they were to be considered sole predictors. The regression analysis performed with the Stepwise method produced the highest values for R Square when several factors were included in the model. This suggests that, in order to form or change more of Korean consumers attitudes towards sugar -ree beverages one should not neglect any of the emotional, the cognitive or the behavioral patterns. The analysis also confirmed that satisfaction with the product may be a source of attitude change, although not a significant factor.

The factors which appeared to count more in the model were the emotional ones, enjoyment and eagerness, their correlation coefficient with the overall attitude beign 0.508. In relation with consumers' intention, the affect could play a bigger role, as indicated by a Beta coeffient of 0.658. Enjoyment and desire to consume sugar-free beverages alone could explain up to 43% of the variation in consumers' intention to do so, but only 25% of their overal attitudes.

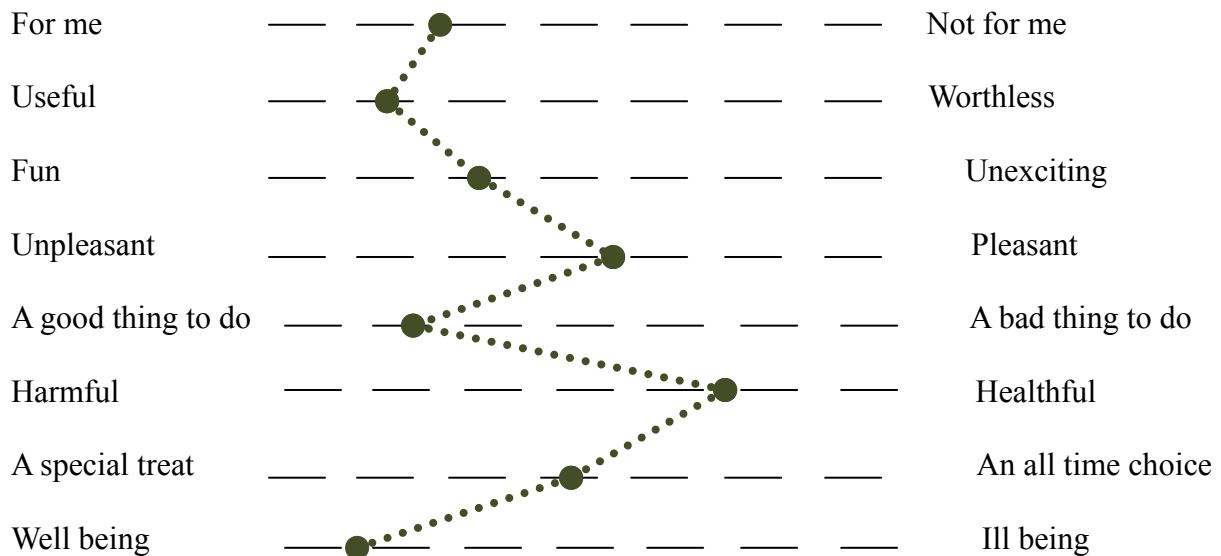In conclusion, the regression analysis supports the research model, confirming that enjoyment, eagerness, concept congruity and consumers' perceived awareness impact their intention and overall attitudes. The normative beliefs were found to impact the overall attitudes directly, without being a segnificant predictor of intention. Another source of attitude change could be satisfaction with the product.

4.4. Analysis of the Semantic Differential Scales

Semantic differential scales were developed for the internal consistency of the research. The summary of the results they produced can be seen in Table 6.

Table 5. Mean values for the Semantic Differential Variables

Statistics

		for me – not for me	useful – worthless	fun–unex citing	unpleasant – pleasant	a good thing to do – a bad thing to do	harmful – healthful	a special treat – an all time choice	well–being – ill–being
N	Valid	154	154	154	153	154	154	154	153
	Missing	0	0	0	1	0	0	0	1
Mean		2.44	2.18	3.28	4.86	2.32	5.60	4.33	1.97

4.5 Gender differences

The observation of the mean values produced by male respondents only and female respondents only made necessary a T-test, in order to determine if the observed differences have any statistical significance or they have simply occurred by chance.

The analysis suggested there were significant differences between the male and female groups with respect to the perception of self-concept congruity. The T-tests results indicated that all p values [Sig. (2-tailed) value] were smaller than 0.05, therefore we conclude there are statistically significant mean differences between men and women. The

differences in rating on concept-congruity variables are presented in Table 7 below, which clearly indicates that women tended to perceive a better match between themselves and the sugar-free beverages than men did.

Table 6. Gender differences in mean ratings for concept congruity variables

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
I like being seen drinking sugar free beverages	male	57	3.47	1.416	.187
	female	96	4.68	1.593	.163
If I drink sugar-free beverages I can be more attractive	male	58	3.00	1.338	.176
	female	96	4.23	1.695	.173
Sugar-free beverages match my own image of	male	58	3.14	1.572	.206
	female	96	4.32	1.689	.172
Sugar-free beverages boost my	male	57	2.68	1.490	.197
	female	96	3.92	1.751	.179

With respect to social norms, both men and women tended to acknowledge the high influence on their choice of sugar-free beverages of those people who are important for them. Mass media seemed to be perceived as another strong influencer by both gender groups. The mean ratings for these variables were similar for both men and women and the differences were not found to be statistically significant.

Table 7. Gender differences in mean ratings for social norms

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Most people who are important to me would approve … dissaprove drinking sugar-free beverages	male	58	4.95	1.330	.175
	female	96	5.42	1.149	.117
Most articles in magazines say that I should…should not drink sugar-free beverages	male	58	5.21	1.120	.147
	female	96	5.65	1.273	.130
I feel under social pressure to watch the	male	58	4.62	1.554	.204
	female	96	5.43	1.588	.162

On the other hand, the variable measuring the degree of social pressure perceived by respondents produced a lower mean for the male group, of 4.62 , in contrast with the women group, their mean being 5.43. This difference is not surprising given the fact that women have been always encouraged to slim down. The T-test confirmed that these differences in the gender perception of the social pressure are statistically significant, with a p value of 0.02.

Other statistically significant differences between gender groups were found with respect to the weight control benefits offered by sugar-free beverages. Women again tended to perceive higher weight management benefits than men did.

Table 8. Gender differences in mean ratings for weight control variables

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
I'm afraid of gaining weight if I drink regular beverages with sugar	male	58	4.36	1.703	.224
	female	96	5.36	1.377	.141
People who drink sugar-free beverages don't need to worry about getting fat	male	58	3.81	1.638	.215
	female	96	4.56	1.420	.145
If I drink sugar free beverages I can	male	58	3.93	1.705	.224
	female	96	4.67	1.351	.138

No significant gender differences were found with respect to the overall attitudes of the respondents, although the male group again produced a slightly lower mean than the women did, as shown in Table 10.

Table 9. Gender differences in mean ratings for overall attitudes

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Overall, I favor sugar-free beverages not at all ... a great deal	male	58	4.81	1.131	.149
	female	96	5.19	1.251	.128

Although the overall attitudes seemed similar, significant differences were found with respect to men's and women's intention and eagerness to consume sugar free beverages. Women again tended to be more willing and more eager to have these drinks than men did.

Table 10. Gender differences in mean ratings for intention and desire variables

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
How much are you willing to drink sugar-free beverages in the forthcoming days?	male	58	4.21	1.361	.179
	female	96	5.01	1.201	.123
How much do you desire to drink sugar-free beverages in the forthcoming days?	male	58	4.00	1.364	.179
	female	96	4.75	1.330	.136
I am very hesitant … eager to drink	male	58	4.24	1.081	.142
	female	96	4.76	1.279	.131

With respect to the health benefits provided by sugar-free beverages women again tended to be more positive than men. Women's answers produced a mean value of 5.36, comparing to a lower 4.90 for the male group. However, the T-test suggested these differences are more likely explained by chance and do not have statistical significance (p value of 0.54). Women and men had different opinions on whether sugar-free beverages are healthier than the sugar (4.52 for women, 3.88 for men) and they were found to have statistical significance (p 0.04).

4.6 Assessment of Respondents Awareness of Sugar-free Drinks and Sweeteners

The great majority of the participants to this survey had at least a college education, therefore it was expected that they had a good knowledge and understanding of the beverages they drink. The results indicated a mean value 0f 4.72 on a 7 point scale for the general interest Koreans have for reading the ingredients listed on the labels of the sugar-free beverages. The mean for the perceived awareness is even lower, at 4.00, which suggests consumers are closer to a neutral position. However, the mode for both variables was 5.

The questionnaire included open-ended questions, requesting respondents to write anything they may recall about sweeteners (such as name of sweeteners, products that contain them or general opinions about these sugar substitutes). The information collected from open ended questions was intended to be interpreted as qualitative data.

The sweetener most often recalled was aspartame, mentioned by 32 of the respondents. The second sweetener recalled was xylithol, mentioned by 11 consumers. However, xylithol is not used to sweeten beverages, as it is generally used in dry products, such as sugar-free candies and chewing gum. Two women mentioned that they knew aspartame was a substance very dangerous for health. The product most often recalled was Coca Cola Light. None of the respondents had heard of stevia. Asked whether they had ever drunk a beverage sweetened with stevioside, the sweetener made from the stevia plant, 110 respondents declared they didn't know, while the other 44 declared they had never drunk anything sweetened with stevioside. It is hard to believe that there is one Korean consumer who has never drunk any beverage sweetened with stevioside, given the fact that it is included in soju, the most popular alcoholic drink consumed by both men and women. On the other hand, the lack of awareness among consumers of the ingredients contained by most soju brands is understandable if we consider the little nutrition information provided on the labels of most of the soju beverages.

Conclusions

This study supports the idea that, in general, Korean consumers have more positive attitudes towards sugar-free beverages with sweeteners. They are more likely to perceive sugar-free drinks as being healthier than the ones sweetened with sugar. Women, more than men, tended to offer higher ratings.

The regression analysis revealed that emotional factors like the expected enjoyment and the desire to drink sugar-free beverages are the strongest predictors of intention, being also highly related to the overall attitudes. Other constant predictors for both intention and overall attitudes were consumers' perceived match between their self-image and the sugar-free beverages they drink. A third variable validated by the analysis was the perceived awareness, what consumers believe they know about these drinks. An interesting aspect was that the social norms were not found to significantly impact intention, but they were confirmed as predictors of overall attitudes.

The T-tests performed to determine whether there were statistically significant differences between the mean rating of male and female respondents indicated that the differences observed in this research were significant for several variables, women showing higher levels of intention to consume these drinks. Women were more eager to drink sugar-free beverages and perceived them as being healthier than sugar in a higher degree that men did. The female group tended to consider these drinks more efficient weight control tools than men did and perceived stronger social pressure to stay fit. More women perceived sugar-free drinks as a useful dieting tool and also acknowledged higher degrees of concept congruity than men, who did not see a good match between their self-image and diet drinks. In general, respondents reported a high degree of perceived social pressure, which lead them to search for low calorie products. However, in terms of overall attitudes the differences observed

between the gender groups were not significant.

With regards to the awareness of sugar-free beverages and the ingredients used to replace sugar, more respondents were more likely believe that they did not know much about such products are. Very few respondents could actually write down the name of any sweetener they could recall. The most popular sweetener among Koreans was aspartame. Surprisingly, nobody mentioned sucralose, although this sweetener is used in numerous coffee mixes, several ready-to-drink coffee brands, flavored milk, drinking yogurt and fruit juice. Xylitol was another sweetener recalled, but this sugar substitute is mainly used in dry products, not in beverages.

In terms of overall satisfaction, it was found that on average Koreans were more satisfied than dissatisfied with the sugar-free drinks they consume; this aspect is especially important as the overall satisfaction was found to influence consumers' overall attitudes, being a source of attitude change.

Producers and marketers of sugar-free beverages may find these results useful, as they offer a key for new products and advertising. Sugar-free drinks designed for the men segment, for instance, may have considerable success, if we consider that the men who took this survey perceived the existing no-sugar drinks a bad match with their personality and self-concept; the main reason for this is that sugar-free drinks have targeted exclusively women.

Companies such as Coca-Cola and Pepsi which are developing new sugar-free drinks based on the new sweetener stevioside may consider launching these products on the Korean market first, given the fact that consumers are already used to the stevia taste from other beverages, like soju. However, the data collected through this survey revealed that the great majority of Koreans have never heard about this sweetener and an informational campaign would be here as necessary as it would be on other markets.

On the whole, the data analysis confirmed the proposed model and offered insights

on the gender differences in the perception of sugar-free beverages. The central tendency measures presented in the descriptive part of the analysis show values higher than 4, therefore we can conclude that Korean consumers have more positive attitudes and beliefs towards sugar-free beverages. Further research, conducted on a larger sample, may generate different results and may support the research model to a greater extent.

Limitations and Further Research

This study offered insight on what motivates Korean consumers to choose sugar-free beverages. However, the sample used to test the proposed model was relatively small and imbalanced, given the fact that the wide majority of respondents had at least university education and lived in urban areas. Therefore, the results may have little statistical significance for the Korean population as a whole; consumers with different educational levels, living in different environments and exposed to different sources of information may have diverse attitudes and beliefs about sugar-free beverages.

The present research was carried out entirely in English, the language of the questionnaire being English. This required and educated respondent and limited the researcher's access to consumers who did not know English. Thus, for further research, the questionnaire could be translated into Korean, which would allow a better understanding of the questionnaire items by the respondents, while permitting the selection of a wider, more diverse and representative sample. Consequently, further research should carefully select a more representative population parameter. Just by conducting the same survey on a bigger and more diverse sample, we may obtain dissimilar results, confirming or infirming the self-congruency beliefs and the perceived functional congruity as strong predictors of intentions. Results may differ substantially if the research is repeated in two years time.

Further studies may focus on identifying other possible factors which might positively affect the intention to consume sugar-free drinks, at the cognitive level of commitment, as well as at the emotional level. The model may be tested on other sugar-free products, such as chewing gum, yogurt or table-top sweeteners; it may also be used to survey attitudes toward other foods marketed with well-being, slimming or health claims, such as low fat snacks or dairy products, high fiber, vitamin enhanced or organic goods.

Appendices

Attitudes and Beliefs towards Sugar-Free Beverages (무설탕 음료수)

Thank you for participating in this survey. We are investigating people's attitudes and beliefs towards sugar-free beverages.

What are sugar-free beverages?

Sugar-free drinks or diet beverages are those which contain no sugar. Sugar has been replaced with a non caloric (zero-calorie) sweetener (감미료). Often these drinks are labeled as *Light*. Popular soft drinks in sugar-free version are: Coca-Cola Light (or Diet Coke), Coke Zero, Pepsi Max, Pepsi Nex, Sugar-free Dynamic Kin; tea: Lipton Ice Tea Light, Miero-Fiber Drink (미에로화이바), 1/2 calorie coffee mix (please see pictures below for a few examples).

These examples are for the purpose of illustration, and the present study doesn't refer to any of these drinks in particular, but to all sugar-free beverages. Please complete all 5 sections of the questionnaire in the given order. Do not skip questions and do not return to previous answers.

SECTION 1 – Warming Up

.1 Do you drink any sugar-free beverages?

○ *Yes*   ○ *No*

If your answer was "Yes", continue with the next question.

If you answered "No", we ended our survey here. Thank you.

.2 During the last 30 days, how often did you drink sugar-free beverages sweetened with sweeteners?(Please chose only one answer.)

☐ *Daily or almost every day*

☐ *Several times a week*

☐ *Once or twice a week*

☐ *1 to 3 times in the last 30 days*

☐ *Not-at-all during the past month*

☐ *Other*

3 How much are you willing to drink sugar-free beverages in the forthcoming days?

Not at all	Very little	Slightly	Fair enough	Some what	A great deal	Extremely	Not applicable
1	2	3	4	5	6	7	☐

4 How much do you desire to drink sugar-free beverages in the forthcoming days?

Not at all	Very little	Slightly	Fair enough	Some what	A great deal	Extremely	Not applicable
1	2	3	4	5	6	7	☐

5 What is your main reason for drinking sugar-free beverages?

☐   *Healthy lifestyle*   ☐ *Weight control (loss)*

☐   *Feel better about myself*   ☐ *Other (please specify)*

6. Overall, how much are you satisfied with the sugar-free beverages you drink?

Strongly dissatisfied 1 2 3 4 5 6 7 Strongly satisfied

SECTION 2 – Attitudes towards Sugar-free Beverages

2.1 Please indicate your perception of sugar-free drinks by checking the line corresponding to your opinion for each pair of descriptors.

Sugar free-beverages are …

For me	—— —— —— —— —— —— ——	Not for me
Useful	—— —— —— —— —— —— ——	Worthless
Fun	—— —— —— —— —— —— ——	Unexciting
Unpleasant	—— —— —— —— —— —— ——	Pleasant
A good think to do	—— —— —— —— —— —— ——	A bad think to do
Harmful	—— —— —— —— —— —— ——	Healthful
A special treat	—— —— —— —— —— —— ——	An all time choice
Well-being	—— —— —— —— —— —— ——	Ill-being

2.2 Please indicate the degree to which the following statements are applicable to you:

2.2.1. Overall I favor sugar-free beverages

Not at all   1   2   3   4   5   6   7   *A great deal*

2.2.2. I like being seen drinking sugar-free beverages.

Not at all   1   2   3   4   5   6   7   *A great deal*

2.2.3 I am   *less likely*   1   2   3   4   5   6   7   *more likely* to enjoy drinking sugar-free beverages.

2.2.4 Most people who are important to me would …

disapprove   1   2   3   4   5   6   7   *approve*   drinking sugar-free beverages.

2.2.5 Most articles in magazines say that

I should not   1   2   3   4   5   6   7   *I should*   drink sugar-free beverages.

2.3 Please indicate to which degree do you agree or disagree with the following statements:

2.3.1. Sugar-free beverages are fun to drink.

Strongly disagree   1   2   3   4   5   6   7   *Strongly agree*

2.3.2 I'm afraid of gaining weight if I drink regular beverages with sugar.

Strongly disagree   1   2   3   4   5   6   7   *Strongly agree*

2.3.3 People who drink sugar-free beverages don't need to worry about getting fat.

Strongly disagree   1   2   3   4   5   6   7   *Strongly agree*

2.3.4 If I drink sugar free beverages I can control my weigh.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

2.3.5 I feel under social pressure to watch the calories I eat every day.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

2.3.6 People who drink sugar-free beverages can stay healthier.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

2.3.7 If I drink sugar-free beverages I can be more attractive.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

2.3.8 Sugar-free beverages match my own image of myself.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

2.3.9 Sugar-free beverages boost my self-confidence.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

2.3.10 I am *very hesitant   1   2   3   4   5   6   7 very eager* to drink sugar-free beverages.

SECTION 3 . Information and understanding of sweeteners

3.1 How likely are you to check the nutrition information label of a drink before making a purchase decision?

Very unlikely   1 2 3 4 5 6 7   Very likely

3.2 How well do you know the ingredients used to replace the sugar in sugar-free beverages?

Not at all   1 2 3 4 5 6 7   Extremely well

3.3 Do you remember the name of any sweetener used in sugar-free drinks? What do you know about alternative sweeteners? Please write in the box below anything you can recall:

3.4 Do you know anything about the plant called STEVIA? Please write your answer in the box below.

3.5 Have you ever consumed any beverages sweetened with stevioside (스테비오사이드), a sweetener made from the stevia plant?

☐ *Yes* ☐ *No* ☐ *I don't know*

3.6 There is scientific evidence that sweeteners are healthier than sugar.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

3.7 How likely are you to be afraid of the possible harmful effects of sweeteners on health?

Very unlikely 1 2 3 4 5 6 7 Very likely

SECTION 4 – Demographic Information

Please tell us a little bit about yourself.

In accordance with our privacy policy we will not share any of your personally identifiable information with any person or organization.

4.1 Gender

☐ *Male* ☐ *Female*

4.2 Please indicate in what age group you are

☐ *19 and under* ☐ *35 - 39*
☐ *20 - 24* ☐ *40 – 44*
☐ *25 – 29* ☐ *45 – 49*
☐ *30 – 34* ☐ *50 and over*

4.3 What is the highest level of formal education you have completed/or are currently attending?

☐ *High school* ☐ *Graduate school*
☐ *College / University* ☐ *Doctorate*

4.4 Are you currently ?

☐ *Single*

☐ *Married*

4.5 On a 7 point scale, you would describe yourself as being

Extremely Underweight	**Underweight**	**Bit underweight**	**Fit**	**Bit overweight**	**Overweight**	**Extremely Overweight**
☐	☐	☐	☐	☐	☐	☐

Thank you!

References

Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior.* Prentice Hall.

Bae, J.-S. (2009, 09 18). Koreans Fighting Obesity. *Korea Times* .

Berstein, R., (2009), Fighting the Right to Drink Soda, *The New York Times* http://www.nytimes.com/2009/10/08/us/08iht-letter.html?_r=1

Blackwell, R. D., Miniard, P. W., & Engel, J. F. (2006), *Consumer Behavior, 10th edition.*

Boeree, G. C. (1998, 2006). *Personality Theories - Abraham Maslow.* Retrieved 10 06, 2009, from George Boeree's Homepage: http://webspace.ship.edu/cgboer/maslow.html

Bucklin, L. (1963). Retail strategy and the classification of consumer goods. *Journal of Marketing* , 51-56.

Calorie Control Council(2006), Aspartame Myths: Phenylketonuria, http://www.aspartame.org/aspartame_myths_phenyl.html

Choe, J.-S., Chun, H.-K., Hwang, D.-Y., & Nam, H.-J. (2005). Consumer Perceptions of Food-Related Hazards and Correlates of Degree of Concerns about Food. *Journal of the Korean society of food science and nutrition 34(1)* , 66-74.

Collier, J. G. (2008, August 17th). Sweetness and Light Wanted. Coke and Pepsi Cultivate Stevia for a More Natural Drink. *The Atlanta Journal-Constitution*

Copeland, M. T. (1923). Relation of Consumers' Buying Habits to Marketing Methods. *Harvard Business Review, Vol1,* , 282-289.

Crano, W.D., Prislin, R., (2008) Attitudes and Attitude Change, Psychology Press, New York

Diomede, L., et al.,(1991), Interspecies and Interstrain Studies on the Increased Susceptibility to Metrazol-Induced Convulsions in Animals Given Aspartame, *Food and Chemical Toxicology*, Volume 29, 101-106

Dolores, A., Blair, T.J. & Zanna, M.P., (2005), A Handbook of Attitudes, Laurance Eribaum Association, New Jersey

Earl P. E.& Kemp, S. (1999), The Elgar Companion to Consumer Research and Economic Psychology, Edward Elgar Publishing Limites, UK

Echols, M. A. (2001). *Food Safety and the WTO - The Interplay of Culture, Science and*

Technology. Kluwer Law International.

EFSA. (n.d.). Retrieved from http://www.efsa.europa.eu

Egley, A. H., & Chaiken, S. (1993). The Psychology of Attitudes. Harcourt Brace Jovanovich, New York.

Fitzmaurice, J. (2005). Incorporating Consumers' Motivations into the Theory of Reasoned Action. *Psychology&Marketing* , 911-929.

Freud, S. (1953). Life and Work. Hogarth Press.

Garrattini, Silvo, et al., (1988) Studies on the Susceptibility to Convulsions in Animals Receiving Abuse Doses of Aspartame, *Dietary Phenyalalnine and Brain Function*, Birkhauser, Boston, USA, 131-143

Glanz, R. K., & Lewis, B. K. (2002). *Health Behavior and Health Education. Theory, Research and Practice.* San Fransisco: Wiley & Sons

Grubb, E.L. & Grathwohl H. L., (1967), Consumer self-concept, symbolism and market behavior. A theoretical approach, *Journal of Marketing* (31), 22-27.

Guiso, G., et al. (1988). Effect of Aspartame on Seizures in Various Models of Experimental Epilepsy, *Toxicology and Applied Pharmacology*, Volume 96, No. 3, 485-493

Han, J., (2009), Most Food Advertised on TV Unhealthy, *The Korea Times* http://www.koreatimes.co.kr/www/news/biz/2009/04/123_42403.html

Holbrook, M. B., & Howard, J. A. (1977). Frequantly Purchased Non-durable Goods and Services. *National Science Foundation Project on Consumer Behavior*, 189-222.
http://www.koreatimes.co.kr/www/news/nation/2009/04/113_42993.html
http://www.koreatimes.co.kr/www/news/nation/2009/09/117_52100.html

Hull, J. S. (n.d.). *Dangers of Aspartame Poisoning.* Retrieved from http://www.sweetpoison.com/aspartame-information.html

jgballard.ca. (n.d.). Retrieved from http://www.jgballard.ca/images/surrealism/freud_iceberg.jpg

Ji-Sook, B. (2007). Zero Calorie Foods - A Myth. *Korea Times* .

Jobe, P.C., A.F. Bettendorf, S.M. Lasley, J.W. Daily, (1988), Effects of Aspartame on Pentylenetetrazol (PTZ)-Induced Convulsions in CD1 Mice, *Toxicologist*, Volume 8, 85.

Kahle, L. R. (1983). *Attitudes and Social Adaptation: A Person-Situation Interaction Approach.* London: Pergamon.

Kahle, L. R., Beatty, S. E., & Homer, P. (1986). Alternative Measurement Approaches to Consumer Values: The List of Values (LOV) and Values and Life Style (VALS). *Journal of*

Consumer Research, 13 (December) , 405-409.

Kang, H.-k. (2009, April 22). Koreans Addicted to Instant Coffee. *Korea Times* .

Kim, M., & Lennon, S. (2006). Content Analysis of Diet Advertisements: A Cross-National Comparison of Korean and U.S. Women's Magazines. *Clothing and Textiles Research Journal* , Vol. 24, No. 4, 345-362

Kinghorn, D. A. (2002). *Stevia. The Genus Stevia.* http://books.google.com/books?id=nzRU9byD63MC&pg=PA196&dq=stevia+korea&hl=ko#v=onepage&q=stevia%20korea&f=false.

Korean Consumer Protection Board -KCPB (2005), How to Correctly Read Food Labels, http://english.cpb.or.kr/user/bbs/code02_detail.php?av_jbno=2005012400040&av_pg=191&gubun=

Kotler, P., & Armstrong, G. (2009). Understanding the Marketplace and Consumers. In P. Kotler, & G. Armstrong, *Principles of Marketing, 13th edition.* Pearson Prentice Hall.

Krugman, H. E. & Hartley, (1980), E. L. Passive Learning Form Television, *Public Opinion Quarterly 34*, 184-190

Lee H.S., "Korea to Become Most Aged Society in OECD in 2050", July 7th, 2009 http://www.koreatimes.co.kr/www/news/biz/2009/07/123_48264.html

Lee H.S., Average Korean Turning Overweight, *The Korea Times*, July 26th, 2009 http://www.koreatimes.co.kr/www/news/biz/2009/07/123_49117.html

Levitt, S. D. (2007, August 20). Diet Coke is 99% Water (And That is Now a Good Thing). *The New York Times* .

Littlejohn, S (2002), Theories of Human Communication, California: Wadsworth Thomson Learning

Manstead, R.A & Hewstone, M., (1995), The Blackwell Encyclopedia of Social Psychology, Cambrige, M.A., Blackwell

Meyer, C. (2008, 09 18). Uniqueness of Korean Cuisine (V): Beverages. *Korea Times* .

Meyer, C., (2008), Uniqueness of Korean Cuisine (IV) - Tea, *The Korea Times,* http://www.koreatimes.co.kr/www/news/art/2009/10/146_30578.html

Moon, G.P, (2008)., Economic Impacts of Demographic Changes in Korea, paper presented at The International Conference on Public Finance/Social Security System and Intergenerational Issues in De-population*, Tokyo*

Neuman, W., (2009), Proposed Tax on Sugary Beverages Debated, The New York Times *http://www.nytimes.com/2009/09/17/business/17soda.html?emc=eta1*

Park, K.-Y., Park, M.-Y., Sung, M.-K., & Kwon, H. (2005). Study on the Intake Pattern of Health Intended Foods Depending on Inclusion of Proclaimed Health Functional Food Materials. *Korean Society, Food, Science and Nutrition* , 374-379.

Raymond, J, (2009), World's Healthiest Foods, *Health*
http://eating.health.com/2008/02/01/worlds-healthiest-foods/

Roberts, H.J., (1988), Reactions attributed to aspartame-containing products: 551 cases, *Journal of Applied Nutrition*, 84-94

Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change, *Journal of Psychology,* **91,** 93-114

Shah, Z. A., Gilani, R. A, Sharma, P., Vohora, B. (2005). Cerebroprotective effect of Korean ginseng tea against global and focal models of ischemia in rats. *Journal of Ethnopharmacology* , 299-307 .

Shiffman, L.G., Kanuk, L.L., (2004), Consumer Behavior, 8th ed, Prentice Hall, Pearson Education Asia Limited

Sirgy, M.J. (1986), *Self-congruity: Toward a Theory of Personality and Cybermetics*, Praeger, New York, NY

The Korea Times (2009, 04 12). *S. Korea's Obesity Rate Lowest in OECD*. Retrieved from http://www.koreatimes.co.kr/www/news/nation/2009/04/113_42993.html

Turnbull, J. (2009), Korean Women Are Not Alphabets, *The Korea Times*
http://www.koreatimes.co.kr/www/news/nation/2009/05/117_44576.html

UNESCO. (1998). *World Culture Report: Culture , Creativity and Markets.*

Witte, K. (1992), Putting the Fear Back into Fear Appeals: The Extended Parallel Process Model, *Communication Monographs* (59), 329-349,
https://www.msu.edu/~wittek/fearback.htm

Witte, K. (1998). Fear as Motivator, Fear as Inhibitor: Using the Extended Parallel Process Model to Explain Fear Appeal Successes and Failures, 423-450). in P. A. Andersen and L. K. Guerrero (Eds.), *The Handbook of Communication and Emotion: Research, Theory, Applications, and Contexts*. San Diego, CA: Academic Press.

World Health Organization – Obesity http://www.who.int/topics/obesity/en/

Wright, N. D., Claiborne, C. B., Sirgy, M. J. (1992), The Effects of Product Symbolism on Consumer Self-Concept, *Advances in Consumer Research* Vol. 19, 311-318.