

THE IMPACT AND SOCIAL CONTEXT OF NUTRITIONAL LABELING AND ITS
IMPLICATIONS FOR CONSUMER FOOD CHOICES

by

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To my friends and family.

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by

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The rates of obesity, diabetes and other nutrition-related illnesses have been significantly increasing over the last years. Moreover, the relationship has been established between the growing percentage of these problems and the development of the food industry, in particular, restaurants. One of the first significant policy efforts to increase consumers' awareness and address these issues was made in 2008 in New York City, when restaurant chains were mandated to provide calorie information on their signage. This led to further action across the country, bringing Patient Protection and Affordable Care Act in 2010, which instructed all the states to fulfill the same requirement. Meanwhile, to support this action and improve overall population health, researchers, health professionals and organizations have been developing different nutritional labeling systems, assessing their effectiveness and simplicity of usage. Current study aims to contribute to this relevant issue by exploring whether nutritional labeling can reduce purchase of unhealthy and high in calories food, and reviewing sociological factors that influence the impact of such labeling.

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CHAPTER 1

INTRODUCTION

Public health is among the most important issues in the United States, as well as worldwide. Growth of obesity, diabetes, heart disease, blood pressure, stroke, and other illnesses associated with nutrition is a significant threat to global health.

According to the 2016 Annual Report of National Center for Health Statistics, from 1988–1994 to 2003–2004, the percentage of children and adolescents with obesity increased from 10.0% to 17.1%. In 2013-2014 the number was 17.2%. Between 1988–1994 and 2013–2014, Grade 1 obesity among adults over 20 increased from 14.8% to 20.7%, Grade 2 rose from 5.2% to 9.5%, and Grade 3 grew from 2.9% to 7.6% (National Center for Health Statistics, 2017).

As reported by National Health and Nutrition Examination Survey, the prevalence of obesity was observed among 39.8% of adults and 18.5% of youth in 2015–2016 (Hales, Carroll, Fryar, & Ogden, 2017). Furthermore, between 1988–1994 and 2011–2014, diabetes among adults increased from 8.8% to 11.9% (National Center for Health Statistics, 2017). About 9.4% of adults (18 years old and over) have had this diagnose for 2016 (Clarke, T.C., Norris, T., & Schiller, J.S., 2017).

Research implies a direct relationship between the development of restaurant industry and increasing obesity rates (Dumanovsky, Huang, Bassett, & Silver, 2010). There have been many different actions taken over the period of the last 20-30 years to address these issues. One of the most significant efforts was the introduction of information about calorie intake to menus

at restaurants. The effectiveness of such signage has been evaluated by researchers all over the world, who were aiming to find out if such system should be further implemented and developed, and if it is bringing any positive outcomes. Thus, this study is intended to explore whether nutritional labeling can reduce purchase of unhealthy and high energy-density food. The study also reviews sociological factors that may influence the impact of nutritional labels.

CHAPTER 2

HISTORICAL BACKGROUND AND POLICIES

Up to the late 1960s, most families had been preparing meals at home, using basic ingredients (Wartella, Lichtenstein, & Boon, 2010). Thus, nutritional facts were not in high demand and labels contained minimum information. However, the number of processed foods at a marketplace was gradually growing, which led to consumers requests to provide information to be able to understand nutritional content better. A White House Conference on Food, Nutrition, and Health was held in 1969 (Wartella, Lichtenstein, & Boon, 2010), making a beginning of nutritional labeling history. The Food and Drug Administration (FDA) was advised to develop a new system describing nutritional qualities of a product in order “to provide truthful nutritional information.” Since then, significant policy efforts have been made and many changes have occurred to address consumer demand and growing health issues. These enhancements appeared gradually, labels were voluntary at first, and subsequently were mandated by governmental institutions.

The form of nutritional labeling, as we know it today, was finalized by Congress in Nutrition Labeling and Education Act in 1990 (Teisl & Levy, 1997). In 1993, final regulations were published for FDA and FSIS (Food Safety and Inspection Service), mandating labeling for most packaged foods in the form of a Nutrition Facts Panel (Wartella, Lichtenstein, & Boon, 2010). Labeling did not change its format until 2016, when FDA modified the existing label by adding more information and reflecting new scientific evidence in it to help consumers make healthier and more informed choices (Food and Drug Administration, 2016). However, this

initiative of the former First Lady Michelle Obama has been postponed until June 2018 (Food and Drug Administration, 2017).

Nevertheless, the abovementioned alterations addressed only packaged foods, leaving nutritional information available in food establishments. From 1980 to 2010 food expenditures occurring outside the home increased from 32% to 44% (Ellison, Lusk, & Davis, 2013). This tendency drew the attention of policymakers to initiate legislation to promote healthier meal choices away from home.

Research implies a direct relationship between the development of the restaurant industry (both fast food and sit-down) and increasing obesity rates. Between 1970 and 2000, fast-food sales went up from \$6 to \$110 billion while the number of people diagnosed with obesity doubled during the same period (Dumanovsky, Huang, Bassett, & Silver, 2010).

One of the first significant policy efforts to increase consumers' awareness in restaurants was made in 2008 by the New York City Health Department, which required restaurant chains to provide calorie information on their signage (Dumanovsky, Huang, Bassett, & Silver, 2010). This led to further action across the country, including the Patient Protection and Affordable Care Act (ACA) in 2010. The ACA required "restaurants and similar food establishments with a chain of 20 or more locations doing business under the same name and offering for sale substantially the same menu items" to state calorie information and suggested daily calorie intake on their menus (Congress, 2010). Moreover, restaurants were required to provide visitors with written nutritional information about every item on a menu upon request (Congress, 2010). In 2014, FDA issued a Final Regulatory Impact Analysis in accordance with the ACA, finalizing the new requirements for labeling on menus for these food providers, to clearly disclose calories

next to the menu items, as well as to provide other nutritional supplementary information (such as fat, carbohydrates, protein, cholesterol, fiber, etc.) (Food and Drug Administration, 2014).

Furthermore, in this Analysis the FDA (2014) stated potential benefits of introducing this enforcement, emphasizing the necessity to address major public health concerns in the United States, such as obesity. The primary reason for obesity is excessive calories consumption and lack of physical activity, in other words, consuming more calories than needed to maintain body weight and exercising less than needed to burn those calories. Restaurant food is often an impact contributing to increased calorie consumption, as it is generally higher in calories and fat, served in larger portion sizes, and lower in healthy nutrients compared to home-made meals (Food and Drug Administration, 2014).

It was assumed that once the nutritional information becomes more accessible, consumers would be able to use it and make informed and healthy dietary choices. In particular, FDA (2014) predicated several benefits, including increased knowledge and awareness among consumers, which might motivate them to choose meals lower in calories, and a reduction of calorie content. It was hoped that an increase in consumer interest in lower calorie food, would motivate establishments to improve and/or modify existing food options.

This enforcement was to be in effect in 2015, but it was subsequently delayed until May 2017. Since then, a series of extensions have been requested ,and a few delays of implementation have occurred to comply with this part of the law (Levine, 2017). For now, FDA has signed the agreement to start implementation of this mandate in May 2018 (Food and Drug Administration, Menu Labeling Requirements, 2017), while many restaurants already voluntarily provide nutritional information on their menus.

CHAPTER 3

CONSUMER BUYING DECISION AND THEORY BEHIND NUTRITIONAL LABELING

Consumer decision-making process consists of identifying the product choice, gathering information, determining alternatives available, and making the final decision (Payne, Bettman, & Johnson, 1991). The study of attitude formation and change focuses on how consumers process, understand and evaluate positive or negative impact of information (Grunert & Wills, 2007). As a result, their behavior is influenced by this information.

Purchasing behavior is expected to be changed once important information is provided to consumers (U.S. Department of Agriculture, 2000; Kiesel, McCluskey, & Villas-Boas, 2011), increasing their awareness. Lack of such essential information leads to misconceptions and an absence of knowledge about food nutrient content. Inaccurate perception can be influenced by advertisement, public health messages (Prathiraja & Ariyawardana, 2003), tricky “no sugar” / “low fat” / “organic” signs, general knowledge, misinformation received from families/friends, and many other factors. Thus, eventually people start to underestimate or overestimate content of some nutrients and make not fully informed, and, as a result, unhealthy choices. For instance, the calorie intake of meals not prepared at home is consistently underestimated by both regular consumers and health professionals (Dumanovsky, Huang, Bassett, & Silver, 2010).

According to FDA’s Dietary Supplement Guide (2017) nutrition labels allow consumers to maintain healthy diet and weight, decrease the consumption of saturated fat, cholesterol, sodium and sugars, as well to increase the intake of fiber, high-quality proteins, vitamins, etc.

Therefore, labeling can play an important role in identifying necessary facts, and affect purchase behavior significantly, and switching consumption of unhealthy products towards healthy ones (Prathiraja & Ariyawardana, 2003; Teisl & Levy, 1997).

Labels will be effective if consumers are exposed to them; that is more possible if consumers are interested and search for such information, understanding the connection between food consumption and their health (Kiesel, McCluskey, & Villas-Boas, 2011), and avoiding the negative consequences of an unhealthy diet (Azman & Sahak, 2014).

Subsequently, exposure may lead to a conscious or subconscious perception of information. Once perceived consciously, the information is expected to alter behavior stronger than it would subconsciously, followed by subjective or objective understanding. If consumers understand the label objectively, their meaning complies with the meaning of the sender. If it was subjective, it complies with only the consumer's belief or understanding (Grunert & Wills, 2007).

Additionally, the information might be understood better if it aligns to the pre-existing knowledge of consumers. After processing and perceiving information on a label, consumers may simply like the label because of the colors / symbols used, or how easy it is to comprehend. However, the information does not necessarily need to be understood, as liking will naturally lead to a positive evaluation and influence consumer's decisions (Grunert & Wills, 2007).

Ultimately, labeling may lead to direct or indirect effects, and to one-time or extended use of a product (Grunert & Wills, 2007). Direct, one time effects may occur once a label is perceived and stay in the context of one specific purchase. On the other side, direct, extended

effects may occur over time and may extend the impact of this label, after a consumer accumulates the information. Indirect effects are the ones that influence other purchases. For example, consumers' purchase of unhealthy / less healthy foods may decrease, as they are striving to keep track of the amount of micro-nutrients consumed and make informed estimations of product's overall value. Eventually, the whole pattern of food choices can be changed, as consumers learn more about categories of products through the labels and make overall healthier food choices.

CHAPTER 4

TYPES OF NUTRITIONAL LABELING

Since nutritional labeling has been evolving, scientists and nutritional professionals around the world have been developing new systems and evaluating the effectiveness of existing label variations. Initially, different types have been introduced to the marketplace only for packaged foods. However, with the advancement of policies, similar labeling initiatives have been launched in various food establishments, such as restaurants.

Nutritional labels can be found both on the back and front of a package. In the USA, Back-of-Package nutritional label is represented as Nutrition Facts Label (Figure 1) and includes: number of servings, serving size, calories, total fat (saturated and trans), cholesterol, sodium, total carbohydrate (dietary fiber, total sugars – including added sugars), protein, vitamin D, calcium, iron, potassium, and information about percentage of Daily Value.

Nutrition Facts	
2 servings per container	
Serving size 1 1/2 cup (208g)	
Amount per serving	
Calories	240
% Daily Value*	
Total Fat 4g	5%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 5mg	2%
Sodium 430mg	19%
Total Carbohydrate 46g	17%
Dietary Fiber 7g	25%
Total Sugars 4g	
Includes 2g Added Sugars	4%
Protein 11g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 6mg	35%
Potassium 240mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Figure 1 New and Improved Nutrition Facts Panel (U.S. Food and Drug Administration, 2018)

However, this Back-of-Package labeling has been found to be confusing and difficult to understand for many consumers, especially for elderly or less educated people. Although most consumers still can retrieve some parts of the information and make comparisons between products, the ability to apply this knowledge decreases, as the task becomes more complicated (Cowburn & Stockley, 2005). For example, usage of different measuring systems (Imperial and Metric), serving sizes, number of servings, grams and milligrams, etc. increases the time consumers spend on interpreting nutritional facts. Thus, to simplify it, instead of considering several nutrients, they take into account only one (e.g. fat) as a guide. This leads to a mistaken conclusion, as, for instance, foods low in fat also tend to be high in sugar and salt (Azman & Sahak, 2014).

To address these issues and summarize all nutritional information in a simple form, Front-of- Package labeling has been developed by health organizations and professionals, food retailers and manufacturers (Wartella, Lichtenstein, & Boon, 2010). It is used in addition to Back-of-Package label. A number of Front-of- Package systems have been introduced, and currently are used in the US and other countries. The committee on Examination of Front-of- Package Nutrition Rating Systems and Symbols Food and Nutrition Board has categorized these systems into three major groups.

The first group includes Nutrient-Specific Systems. On the front of package, they show some selected information from Nutrition Facts in percent daily values (%DV) or guideline daily amounts (%GDA). Symbols, traffic-light colors or words may be used in order to state “high,” “medium,” or “low” amounts of some nutrients. Calories can also be indicated (Wartella, Lichtenstein, & Boon, 2010). These systems have mostly been developed by manufacturers and

retailers, except for Traffic Light System (Figure 2) which was introduced by U.K. Food Standards Agency (2006).

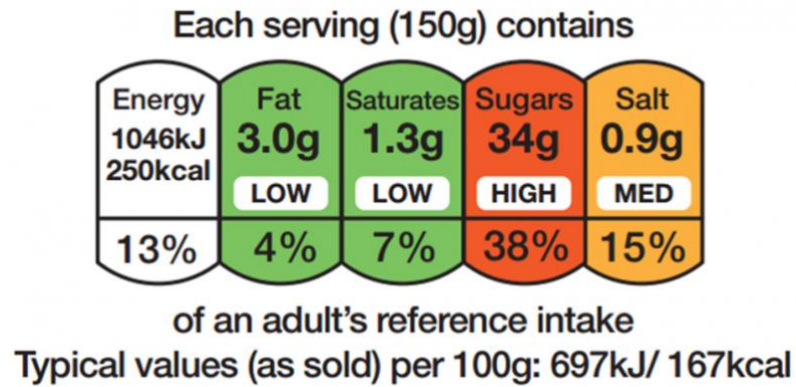


Figure 2 U.K. Traffic Light Nutrition Labeling System (Food Standards Agency, 2016)

Up to 2010 different manufacturers and retailers had been developing their own systems, including General Mills Nutrition Highlights, General Mills Goodness Corner, Harris Teeter Wellness Keys, Kellogg's Nutrition at a Glance, Wegmans Wellness Keys, etc. (Wartella, Lichtenstein, & Boon, 2010.)

However, after the Patient Protection and Affordable Care Act was introduced, a voluntarily initiative "Facts Up Front" (Figure 3) was created by the Grocery Manufacturers Association (2014), representing 300 of food and beverage companies in the USA.

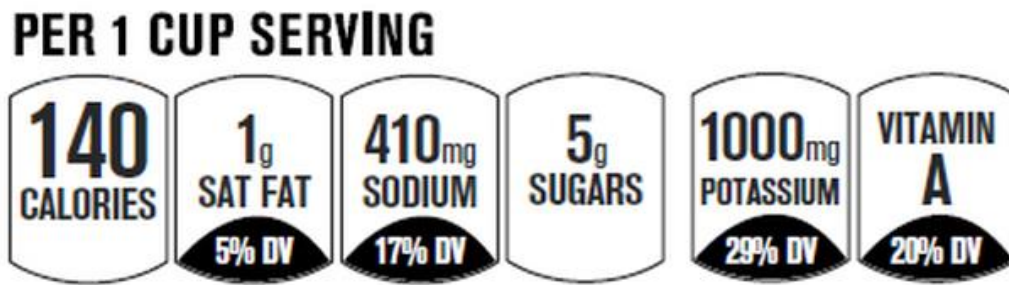


Figure 3 Facts-Up-Front Labeling (2018)

The second group represents Summary Indicator Systems. They provide a short summary of nutrient content by using a symbol, icon, or score. However, there is usually no specific content. Instead systems include various criteria relying on food categories (for instance, type) and evaluating food products, which assesses positive or negative nutrients. Thus, nutritional quality can be identified by a numeric score (e.g. scale 1-100) or number of symbols (0, 1, 2, 3) which are displayed on the icon. These systems are usually based on FDA and USDA guidelines, and also on regulations of US Health & Human Services, National Academy of Sciences, World Health Organization, etc. (Wartella, Lichtenstein, & Boon, 2010).



Initially, many systems were developed by separate organizations, including Giant Food Healthy Ideas, NuVal, Canada’s Health Check, Kraft Sensible Solution, Smart Choices, Nutrient Rich Foods Index, PepsiCo Smart Spot, Australia/New Zealand Tick Programme, etc. Due to their ineffectiveness or narrowness some of them merged or became more unified. There are several most utilized Summary Indicator Systems (Table 1):




- Heart-Check mark by American Heart Association aims to make it easy to identify heart-healthy foods;

- Guiding Stars Program (privately held by retailers) rates from one to three stars (good, better, the best), indicating nutritional value;
- The Choices Program by World Health Organization is aimed to help consumers to make healthier food choices;
- The Swedish National Food Agency's Keyhole is also aimed to provide consumers with healthier food choices.

USDA Organic Seal is aimed to ensure customers that its content is 95% or more certified organic without synthetic additives (e.g. chemicals, pesticides)

Table 1 Overview of Summary Indicator Systems

Icon	Program Name and Source of Icon
 <p>The logo is a red shield-shaped emblem with a white border. Inside the shield, the text reads: "American Heart Association" in bold black letters at the top, "CERTIFIED" in red letters below it, and "Meets Criteria For Heart-Healthy Food" in smaller black letters. At the bottom of the shield is a red heart with a white checkmark inside it. A small "TM" symbol is at the bottom right of the shield.</p>	<p>AHA Heart Check (American Heart Association, 2018)</p>
 <p>The logo features a stylized blue figure of a person running or jumping, with three yellow stars above its head. Below the figure, the text reads: "Guiding Stars®" in bold black letters, and "Nutritious choices made simple" in smaller black letters below that.</p>	<p>Guiding Stars Program (2018)</p>

	<p>The Choices Program (2018)</p>
	<p>The Swedish National Food Agency's Keyhole (2015)</p>
	<p>U.S. Department of Agriculture Organic. (2018).</p>

The third group depicts Food Group Information System. They utilize symbols that are assigned to a product depending on a food group / ingredient presence. Some of those symbols may illustrate a serving of a specific food group. Other symbols may point out important dietary components (e.g. whole grains).

For example, the Whole Grain Stamp (Figure 4), based on USDA’s MyPyramid, is being used by 55 countries (Whole Grain Council, 2018) and is aimed to help consumers identify the amount of whole grain ingredients per serving (“basic stamp”, “50+ stamp”, and “100% stamp”.)



Figure 4 Whole Grain Stamp (2018)

Thus, multiple labels have been introduced around the world during the last decades. Some of programs and systems remained the same throughout the years, but others either have changed or were closed due to ineffectiveness or resulting in a better unified form which is suitable for many retailers and manufacturers and less confusing for consumers.

CHAPTER 5

EFFECTIVENESS OF NUTRITIONAL LABELING AND ITS INFLUENCE ON CONSUMER CHOICE

Various studies have been conducted to explore the influence of nutritional labeling systems on consumer healthy / unhealthy food choices and reduction of calorie intake. Some of the research was held in real-world restaurants and cafeterias, while other research took place in simulation or laboratory settings. Essentially, all of them evaluate the effectiveness of nutritional labeling.

Most of the studies hypothesized that nutritional labeling, including traffic light labeling, reduces calorie intake (Ellison, Lusk, & Davis, 2013; Morley et al., 2013) and leads to more informed (Borgmeier & Westenhoefer, 2009), healthier choices among consumers, as well increased awareness (Hammond, Goodman, Hanning, & Daniel, 2013). One study went further by hypothesizing that higher levels of health-consciousness would lead to a lower impact of menu labeling, as these consumers would derive less new information (Ellison, Lusk, & Davis, 2013).

One experiment focused on the possible relationship between calorie consumption, socio-economic characteristics, and health consciousness (Ellison, Lusk, & Davis, 2013). Another one tested whether menu labeling can increase awareness on food consumption, and influence the way people use and consume this information (Hammond, Goodman, Hanning, & Daniel, 2013). Moreover, these studies investigate which food labeling format helps best to differentiate

between healthy and less healthy products (Borgmeier & Westenhoefer, 2009), and select meals with lower energy-density (Morley et al., 2013).

Ellison, Lusk, & Davis (2013) held a field experiment with three conditions (including a control group) in realistic settings. They did not perform any recruitment or selection, as upon arrival each visitor (total – 138) of Oklahoma State University campus' restaurant was assigned to one of three sections with dining tables, representing three experimental conditions. Researchers used record-keeping system of the restaurant to match dining choices with survey responses (diners filled out survey after the meal completion). As a result, the most significant impact of calorie labels was observed among less health conscientious people, having little influence on more knowledgeable about nutrition consumers. If symbolic labels (such as traffic-light label) are implemented, calorie intake can be reduced. These researchers also mentioned that the biggest limitation of their study was small sample size.

At the same time, positive attitude towards diet and higher health-consciousness among consumers lead to an increased interest in nutritional information (Cowburn, G., & Stockley, 2005). Hammond, Lillico, Vanderlee, White, & Reid (2015) performed a pre-post study of calorie labeling at a university cafeteria in South-Western Ontario, Canada. A baseline information was collected before calorie labels were displayed, and follow-up data were collected six weeks after. Patrons were approached by interviewers when exiting the cafeteria. Researchers were aimed to assess if nutritional information was noticed and used, as well estimated calorie content of food purchased and consumed. The results showed significant increase in noticing and use of the information provided. Moreover, calorie purchase decreased, which led to a conclusion about effectiveness of nutritional labeling on menus. The most

significant limitation of the study is that information provided was self-reported, which could lead to biased responses.

In two randomized controlled trials, Wisdom, Downs, & Loewenstein (2010) surveyed 638 customers of a fast-food sandwich restaurant, using a free meal offer as an exchange. Participants were randomly assigned to one of the conditions: with/without daily calorie recommendation statement, with/without calorie information, and there were some conditions that made it easier to order healthy food. In particular, the initial page featured healthy sandwiches. The results showed that significantly less calories were ordered in the conditions with daily calorie recommendation and calorie information.

In 2008, New York City Health Department's mandate to provide calorie information on restaurant chains' menus was followed by a series of research initiatives, the purpose of which was to evaluate effectiveness of the law. Some of those studies had very strong designs with large sample sizes, such as experiments by Bollinger, Leslie, & Sorensen (2011) and Elbel et al. (2009).

Bollinger, Leslie, & Sorensen analyzed more than 100 transactions at Starbucks locations before and after New York City calorie labeling law was implemented. As a result, a statistically significant decrease of 6% in mean calories consumed by each customer was observed in NYC comparing to control groups in Boston and Philadelphia.

Elbel, Kersh, Brescoll, & Dixon (2009) examined the impact of calorie labeling on fast food choices among 1156 adults in low income and minority communities in New York. Results were compared to a control group in Newark, New Jersey, where such labeling was not

introduced. Although researchers implied that 27.7% of participants' choices were influenced by calorie labeling, there was not any change in calories purchased.

An experiment conducted two years later (Elbel, Gyamfi, & Kersh, 2011) included 349 children and adolescents from 1 to 17 years old from racial or ethnic minority groups in the same settings. This study showed that this age group was slightly less responsive to calorie information, however in general demonstrating very similar rates and not showing any significant changes due to the introduction of labeling systems.

A follow up study (Cantor, Torres, Abrams, & Elbel, 2015) examined the information received from 7699 customers' survey responses and cash register receipts at four fast food chains. Comparing to the first study conducted in 2009, participants in the follow-up study saw and used menu labeling less often, so appearing the percentage had declined over the period of five years. The authors concluded that menu labeling at restaurants that is planned to be implemented to comply with the requirements of the Affordable Care Act is "an unproven strategy" for enhancing the healthy food choices of population, if used without any additional policy efforts and actions.

In 2013, Elbel et al. collected data before and after the labeling law from 2083 consumers outside 28 McDonald's and Burger King locations in Philadelphia, along with a control group was located in Baltimore. Researchers measured the use of calorie information (self-reported), calories purchased (receipts), and weekly fast food visits (self-reported). This study showed the same results: although information was self-reportedly noticed and used, there was no reduction in calorie purchase observed.

Similar results were obtained by Finkelstein, Strombotne, Chan, & Krieger (2011) who aimed to evaluate the influence of a regulation in King County, Washington on purchasing behavior at a Mexican fast food chain by examining these changes and comparing a number of total transactions and average amount of calories per transaction over two time periods. Seven King County restaurants and seven control locations were randomly selected. Research conducted during the period of over than one year showed that since the law was passed there was no significant impact on the number of calories and trends in transactions.

Tandon, et al. (2011) used a longitudinal design for a study, comparing restaurant receipts of 75 children (from 6 to 11 years old) and their parents before and after mandated labeling in Seattle/King County with a control group (58 participants) in San Diego county. The outcome was a small (about 100 calorie) decrease among parents, but in both locations. Although menu labeling regulation raised awareness among parents, it did not influence the calorie purchase among participants.

One of the most recent studies (Larson, Haynos, Roberto, Loth, & Neumark-Sztainer, 2018) went further by identifying patterns associated with use of calorie information on restaurant menus and relationship between concerns related to weight and usage of such information to decrease calorie intake and limit restaurant visits.

Researchers gathered information from 1830 participants in Minneapolis-St Paul, MN schools through online or mail surveys from 2015 to 2016. Respondents were asked to report their weight-related concerns, eating at the restaurant, dieting, intuitive and binge eating, and two types of weigh-control behavior: healthy and unhealthy.

Similarly the studies to previously discussed, around 52.7% of participants noticed calorie information. More than a third among those individuals did not use this information, while two thirds either used it to avoid high-calorie food or chose a smaller portion. Interestingly, results of the study also allowed researchers to conclude that calorie labeling is associated with binge eating, dieting and unhealthy behavior of respondents. Thus, there is a need for nutritional education with the regards of healthy use of such information among general population and necessity to research unintended consequences.

Several eye-tracking studies have been conducted and reflected in research by Graham, Orquin, & Visschers (2012) and Kim, Tang, Meusel, & Gupta (2018). The first group of researchers analyzed all studies involving eye-tracking technology by 2012 and concluded that small changes in food labeling placement can lead to significant diet and overall health improvements among consumers.

One of the latest studies, (Kim, Tang, Meusel, & Gupta, 2018) investigating consumer visual attention, formats of preference and food choices, examined three food labeling formats: numeric (control group), color-coded and physical activity based. Total of 95 participants took part in the study in a laboratory, by choosing items from a menu on a fictitious website. Visual labels showed the most effective results by attracting more attention among participants. Physical activity based labeling was found to be the optimal option to capture attention and make an informed food choice. These results aligned with the earlier conducted study by Dowray, Swartz, Braxton, & Viera (2013), who surveyed 807 participants through a web-based survey.

Thus, researchers concluded that visual types of labels are compelling and reduce the amount of effort consumers put into calorie evaluation, and potentially may lead to healthier choices.

Hammond, Goodman, Hanning, & Daniel (2013) conducted a between-groups experiment with four conditions: no nutritional information, calorie amounts only, calorie amounts and “traffic lights”; calorie, fat, sodium, and sugar shown and “traffic lights”. Researchers intended to explore if menu nutrition labeling can increase people’s awareness on food consumption, and influence the way they use and consume it, as well as to evaluate the effectiveness of a traffic lights labeling system alone and with other nutrients added.

Six hundred thirty-five adults were recruited in Ontario, Canada via different types of advertisement on newspapers, on buses, and online. Participants were monitored during the selection and consumption of food from Subway. Also, they were asked to complete a few surveys during the experiment. Results indicate that adding a traffic light system, as well as including amounts of nutrients such as sugar, fat and sodium, has little impact on awareness growth, nutritional information usage and reduction of calories consumption. However, researchers used experimental, not naturalistic settings, which did not reflect a realistic environment. Moreover, the menus provided to participants were mostly similar to those of a full-service restaurant, while Subway is a fast-food establishment.

Borgmeier & Westenhoefer (2009) conducted a randomized experiment with five conditions: “healthy choice” tick, multiple traffic light label, monochrome Guideline Daily Amount (GDA) label, colored GDA label and “no label” condition. The main goal was to investigate which food labeling format helps best to differentiate between healthy and less

healthy products and explore the influence of these labels on consumers' food choice and diet quality.

The authors chose a convenience sample of 420 adults from Hamburg, Germany, where 30 interviewers were asked to select 14 participants (50% males and 50% females between 18 and 80 years old). Participants of the study were asked to complete two tasks (food comparison and simulated grocery shopping), while the experiment was monitored by 30 interviewers. It had a convenience sample, which cannot be considered as representative of the general population.

Morley et al. (2013) also tested five types of treatment in between-subjects experimental design. Researchers aimed to investigate whether people select fast food meals with lower energy-density by using nutritional labels only with kilojoule information or with addition of other nutritional information.

The study had a large sample size: 1294 adults between 18 and 49 years old who purchased fast food in Victoria, Australia. List of participants was derived from online source (administered by marketing research company) and previously recruited by using different methods (telephone interviews and various databases). A survey link was sent to participants via e-mail. They were randomly assigned to view one of five menu options, which differed in types of labeling; and were instructed to make a dinner selection as if they were at a fast food restaurant. After, respondents had to fill out a questionnaire. The study was web-based and food purchases were simulated in online settings, representing a possible threat to an external validity.

Hence, after analyzing research conducted during the last years, we can see that most of the studies were focused on various labeling types, but mostly targeting calorie purchase and / or consumption. Results appeared to be controversial, as some research found that calorie labeling motivated consumers to purchase less energy-dense types of food and significantly decreased calories purchased. In addition, awareness among individuals increased, providing the necessary nutritional information and helping to make healthier choices. On the contrary, some researchers encountered no decrease at all in calories purchased and / or consumed, while the same consumers still were aware of some nutritional facts. Moreover, there is a possibility of negative effects of calorie labeling on menus, such as unhealthy behavior among individuals, including dieting and binge eating.

CHAPTER 6

INFLUENCE OF SOCIAL STRUCTURAL AND DEMOGRAPHIC FACTORS ON HEALTH, DIET AND USAGE OF NUTRITIONAL LABELING

Nutrition-related health issues might occur among people of different genders, ages, races, and socio-economic status, however there are certain disparities observed among specific groups. For instance, rates of diabetes among adults (aged 20 or older) grew from 8.8% to 11.9% between 1988–1994 and 2011–2014. During the same time periods, the percentage was higher for non-Hispanic black and Mexican adults comparing to non-Hispanic white adults (National Center for Health Statistics, 2017).

Adult men and women aged between 40 and 59 have a higher prevalence of obesity than the ones aged from 20 to 39. At the same time, boys and girls aged from 2 to 5 have lower obesity rates than older children. The prevalence of obesity among adults and youth of non-Hispanic black and Hispanic origin is higher than for other races; the percentage is lower for non-Hispanic Asian men and women compared to other races. Meanwhile, among non-Hispanic black, Asian, and Hispanic women had a higher predominance than men (it was different for non-Hispanic white); no significant difference was found for the same origin among boys and girls (Hales, Carroll, Fryar, & Ogden, 2017).

Obesity rates were similar for non-Hispanic black and non-Hispanic white men, and Hispanic men had higher rates than non-Hispanic men. The obesity rates for non-Hispanic black and Hispanic women were similar, however they were higher than for non-Hispanic white women. Obesity was more prevalent among non-Hispanic black and Hispanic youth, boys and

girls, while it was lower for non-Hispanic white and Asian youth. Also, Hispanic boys had higher tendency towards obesity than non-Hispanic black boys (Hales, Carroll, Fryar, & Ogden, 2017).

There are some population groups which appear to be more interested in nutrition than others. For instance, gender has a significant and definite impact on the willingness to use and pay for nutritional information (Prathiraja & Ariyawardana, 2003). Women were found to express more interest in such information, read nutritional labels more often and be more responsive (Grunert & Wills, 2007; Ellison, Lusk, & Davis, 2013) and consume less calories on average (Hammond, Goodman, Hanning, & Daniel, 2013), while men reported less interest in reading nutritional labels (Cowburn & Stockley, 2005). Young women might have this interest for weight control reasons and aesthetic concerns (Grunert & Wills, 2007). Educated and married females are also more interested in nutritional information (Kiesel, McCluskey, & Villas-Boas, 2011). Women were found to have more interest to provide safe and wholesome foods for family members (Prathiraja & Ariyawardana, 2003). As well, parents of children (in particular, pre-teenage) are more attracted to nutritional information than adults without children (Grunert & Wills, 2007).

After implementation of menu labeling regulation in New York there was no difference in seeing calorie information among genders: 71% of men and 73% of women noticed it (Dumanovsky, Huang, Bassett, & Silver, 2010). Nonetheless, among those who saw information, men reported being influenced by it and using it more often than women.

Some studies (Grunert & Wills, 2007; Borgmeier & Westenhoefer, 2009) found older consumers to be more interested in nutritional information compared to their younger peers. However, older people had greater difficulty understanding the terms on nutritional label, which led to limited usage of it (Cowburn & Stockley, 2005; Azman & Sahak, 2014). A study of menu labeling regulation in New York showed that young people (aged from 18 to 24) used calorie information less often than older customers (aged from 25 to 44), as only one in five of young adults were affected by posted information, while one in four older visitors noted the same. The authors concluded that more significant efforts are needed to influence young adults' choices due to the importance of fast food in young adults' lives (Dumanovsky, Huang, Bassett, & Silver, 2010). Another study found that people aged 55 and older tend to use nutritional labels less than people aged from 22 to 54 years old (Azman & Sahak, 2014).

Obesity rates are lower among people with a higher level of educational achievement (Hammond, Goodman, Hanning, & Daniel, 2013). Education also contributes to the interest in nutritional information, usage of nutritional labels and willingness to pay for it (Grunert & Wills, 2007; Cowburn & Stockley, 2005; Borgmeier & Westenhoefer, 2009; Azman & Sahak, 2014). In addition, those with higher education levels have a better capability to interpret, apply and incorporate the information on nutritional label (Prathiraja & Ariyawardana, 2003), while low numeracy and literacy skills definitely are major factors related to poor understanding of food labels for any gender, age, race, education, and income levels. Moreover, these adults are more inclined toward a greater risk for diet-related health outcomes. Thus, nutritional labels often do not serve those consumers who need it the most (Wartella, Lichtenstein, & Boon, 2010). In general, if a consumer lacks knowledge of nutrition it becomes a barrier to comprehend and

utilize it in the future (Barreiro-Hurle et al., 2010). Meantime, the usage of nutritional information is also influenced by knowledge about importance of maintaining a healthy body weight (Kiesel, McCluskey, & Villas-Boas, 2011).

Most of the studies agree that consumers with higher income and from higher social strata also tend to look at and use nutritional information, which, as a result, influences their food choices (Grunert & Wills, 2007; Cowburn & Stockley, 2005; Borgmeier & Westenhoefer, 2009; Kiesel, McCluskey, & Villas-Boas, 2011). As Ellison, Lusk, & Davis (2013) stated, participants of a study with higher income were more inclined to be low-calorie diners. However, Dumanovsky, Huang, Bassett, & Silver (2010) did not find any relationship between household income and usage of calorie information.

According to some authors, African-American, Asian, and Hispanic are less likely to comprehend and use nutritional labels than White consumers due to lack of time and ability to understand the information (Wartella, Lichtenstein, & Boon, 2010). On the other hand, Hammond, Goodman, Hanning, & Daniel (2013) found that “non-white” ethnicity consumers are more likely to utilize nutritional information in order to make a decision, while emphasizing that results might be connected with the lack of socio-demographic differences in the study.

Consumers from racial or ethnic minority groups, as well as low income groups, are also more inclined to misinterpret labels with “healthy” claims (such as “fat free” and “no sugar added”), considering such foods completely healthy and overgeneralizing its nutritional qualities (Wartella, Lichtenstein, & Boon, 2010). Some research (Thorndike, Riis, Sonnenberg, & Levy, 2014) suggests that specifically traffic-light labels were found to be effective for all racial/ethnic groups and people from diverse cultural background.

Overall, socio-economic and demographic factors significantly impact consumers' health, healthy / unhealthy choices, and general use of nutritional labeling. Women, older consumers, white people, individuals with higher levels of educational achievement and income express more interest in nutritional information and utilize it more often. Meantime, ethnic or racial, younger people, minority groups, individuals with lower income, and lower educational levels are less interested in such information and less likely to perform healthy behavior. However, an important fact is that as long as some factors, such as time and price, do not overweight benefits, consumers express interest, search, and use nutrition-related information (Borgmeier & Westenhofer, 2009).

CHAPTER 7

SOCIAL FACTORS IN HEALTH BEHAVIOR

A collective pattern of health-related behavior which relies on peoples' choices from available options is identified as health lifestyle (Cockerham, 2016). It reflects socio-economic circumstances, and depends on what people consume, but not produce. Thus, behavior itself is generated and relies upon a person's negative or positive choices, which as a result bring certain consequences and shape the entire pattern of health habits, leading to a specific lifestyle. Choices are based on person's potential to realize them, which in turn is dependent upon an individual's socio-economic status. Health lifestyles include different activities which might be visiting physicians for check-ups, or many individual practices, such as taking care of personal hygiene, exercising, relaxing, wearing an automobile seatbelt, and choosing specific types of food.

Based on the theoretical perspectives of Weber and Bourdieu (Cockerham, 2016), a theory of health lifestyles was initiated, which includes various variables. Box 1 in Figure 5 includes several categories. The first one is class circumstances, being the most influential on lifestyle and representing upper classes the healthiest and lower ones the least healthy. Upper and upper-middle class usually eat healthier diet, avoid alcohol and smoking, exercise more and in general make healthier choices. The second category is age, gender, race/ethnicity. Older people and women of any age tend to take care of their health more. While both age and gender have significant impact, social class has a more powerful influence as, despite age and gender, individuals on a higher social ladder have healthier lifestyles.

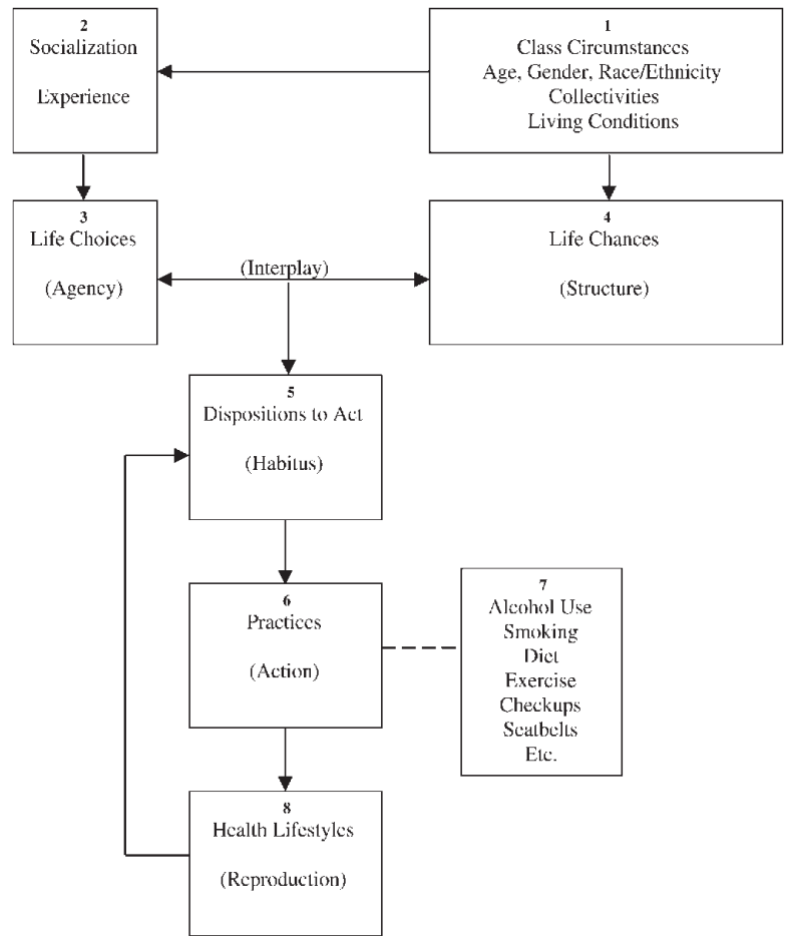


Figure 5 A theory of health lifestyles (Cockerham, 2016)

Race and ethnicity are very important parts as well. Non-Hispanic white people tend to have healthier lifestyles than Non-Hispanic black, and do more exercise than blacks and Hispanics. At the same time, whites are more inclined towards drinking and smoking, which at the end shows us mixed results. However, social class often determines racial disparities in health.

Another important category is collectivities, which basically represents different groups of people, connected by religion, work, politics, and kinship. Interestingly, some studies suggest that religious people tend to follow healthier lifestyle and avoid negative activities which might lead to certain consequences for health (Cockerham, 2016).

The last category is living conditions, which includes quality of housing, accommodations, access to utilities, safety, and neighborhood resources - they might have positive or negative influence on a lifestyle.

All the above mentioned structural variables determine social background for socialization and experience. Socialization occurs on the primary (family) and secondary (other daily interactions) levels, resulting in specific outcomes of the person's future course of action and providing the basis for life choices (agency). Also, an individual's life chances (Box 4) are determined by social structure. Interaction between choices and chances identifies one's health lifestyle. Life chances either help to evolve or negate the choices and lead to particular dispositions to act (Box 5). Their interplay constitute practices (positive or negative action), which consist of dieting, exercising, using seat belts, smoking, etc. All of them together compose the complete pattern of health lifestyles. Depending on what the person acquires from these experience, it might lead to reproduction, modification or nullification (Cockerham, 2016).

Furthermore, in the 19th century Max Weber divided factors which influence lifestyle formation by macro (socio-structural) and micro (individual choices) levels.

Considering the macro-approach to health behavior, authors have established four types of health-related elements that influence people's behaviors (Weiss & Lonquist, 2017):

1. Availability of adverse goods (e.g. high-fat foods, tobacco)
2. Physical structures and characteristics (e.g. seat belts)
3. Policies, laws, social structures (fines for selling tobacco and alcohol to under age individuals)
4. Media and culture (advertising)

Public health institutions have been preoccupied with promoting healthy lifestyles, motivating people to take action at a personal level, and encouraging individuals to avoid dangerous and unhealthy behaviors. Meanwhile, social structures, media, products, etc. were neglected as promoters of such behaviors, which influence the most daily consumer choices. For instance, most efforts were directed to persuade people to choose healthier and low energy density foods, rather than focusing on the food industry, producers, manufacturers, and retailers. Thus, according to some authors it is more effective to shape overall society health status by developing policies, than by only influencing choices made at an individual level.

As rates of obesity have been excessively growing over the last decades, researchers take more action to investigate reasons and foundation of it. There is genetic predisposition and some psychological factors. For many people, psychological influences are the main concerns. However, these factors have not changed over these short period of time and cannot explain the recent dramatic escalation in unhealthy behavior. Instead, the society has tremendously changed with its new culture and influences that urge consumers to make choices which have harmful consequences (Weiss & Lonnquist, 2017). We can see signs of it in many areas. For instance, dietary habits have significantly changed: as thirty years ago a restaurant visit would probably be

just an exception, now it is more of a normality. Restaurants prepare foods high in fat and sugar to elevate flavor and serve meals larger in portion sizes. And the more customers have on their plate the more they tend to eat (Weiss & Lonnquist, 2017).

Fast-food restaurants have a huge influence on obesity rates, as their visitors have 50% greater chances to be obese. At the same time, such places are usually located near schools, providing children with high-calorie unhealthy foods. However, even if it is a sit-down restaurant, often children consume items that are packed with adverse ingredients and do not provide young organisms with nutrients needed.

Thus, to address these issues, there have been actions taken at the macro level. Nutritional and calorie labeling on menus is considered to be one of the most effective responses.

A second possible solution is requiring schools to offer more nutritious school lunches. Authors (Weiss & Lonnquist, 2017) emphasize that current school lunches are based around roast beef and gravy, cheeseburgers, pizza, etc. due to Farm Bill legislation, requiring U.S. Department of Agriculture to buy specific foods (dairy and meat, but not fruits and vegetables) to support agricultural business. The Obama administration has made some changes, such as removing certain soft drink manufacturers from schools. A third alternative is regulations for advertising which target kids, to limit unhealthy advertising and promote a more balanced diet. And the fourth one is a very important action as well: tax increase on sugary beverages and foods. This would motivate producers to reduce sugar content in their products and help government to gather more funds for health promotion programs.

Even though the influence of macro-level determinants is important, it does not contradict the significance of micro-level - individual decisions leading to certain health behaviors (Weiss & Lonnquist, 2017).

There are two very significant theories aimed to explain health behavior. The first one is the Health Belief Model (HBM), which helps to understand why some people engage in health-related behaviors, and others do not, knowingly making unhealthy choices. At the same time, these people take into consideration health / nonhealth-related consequences of such actions. Engaging in such behavior is influenced by four individual beliefs: being exposed to specific diseases or conditions; catching such diseases could result in dangerous consequences; reducing susceptibility to disease by taking prevented action; and providing action by several cues, such as advise from someone, advertising, etc.) Meanwhile, these four conditions might be influenced by demographic and structural factors. Using these perceptions in action, it is appeared to be a positive motivation for a preventive care.

The second theory is the Theory of Reasoned Action (TRA), which implies that actual behavior is performed after an intention or motivation to behave. Attitude, social norms, advice / message from family, and importance to comply with all that - these are the factors that influence the intention to perform such behavior. Differently from the HBM, TRA is mostly rational and does not involve an emotional component. Similarly to the HBM, person's background characteristics make an important impact. Individuals feel they have more control over their own health (internal locus of control), they have a higher possibility to engage in HPB than those who believe they are unable to manage their health (Weiss & Lonnquist, 2017).

Nevertheless, as discussed previously in this paper, there are other factors that influence people's health. Upper-middle-class Americans are healthier, have lower rates of mortality, disability, various symptoms, etc. than lower-middle-class Americans. With each level up on educational, occupational, and income ladders the risk of different disease types significantly decreases (Barr, 2014).

Black Americans of any gender have poorer health and death rates higher than white Americans. These disparities might be explained by the facts that blacks are less likely to graduate from high school, get a university degree, have higher income than whites. However, with the adjustment of SES to the same level, black Americans still have higher death rates. Thus, it is important to acknowledge that the connection between SES and health involves more than solely an individual's position in the social hierarchy. It is also associated with other factors, including time preference, self-efficiency, and social anomie and a loss of trust in society (Barr, 2014).

An individual's position in hierarchy might lead to a person having a different time preference than others. For instance, to significantly improve health, reduce body mass index, and take seriously doctor's recommendations or warnings of the dangerous health consequences caused by overconsumption of sugary foods and drinks, one must have a clear understanding that avoiding adverse nutrients and overcoming immediate satisfaction desire will help to achieve long-term health goals. Those who find it difficult to forgo immediate satisfaction, are less capable of achieving desired results and tend to make unhealthier daily choices.

Furthermore, depending on childhood, family and social experiences, some people enter adulthood with a different understanding of capability to manage their own lives. If one believes

that the life and all choices are directed by external forces, he/she will be less likely to invest in longer-term outcomes. However, if a person believes in his/her own responsibility and success, then this individual will be more motivated to contribute to longer-term goals. For example, people who believe in their own success of achieving weight loss and health improvement goals, and feeling control over it, are more likely to take small daily actions in a restaurant or store by choosing a lower-energy dense meal (Barr, 2014).

The third possibility of influencing health behaviors is social anomie and a loss of trust in society, which relies upon an idea of individual's faith in norms and justice (Barr, 2014). A person simply believes that society does not treat him/her fairly and equally with other people. This leads to isolation and alienation of such individual. Being a member of a specific disadvantaged class makes people experience these senses more, including powerlessness and more shortened time preference.

In general, there are many variables involved aside from socioeconomic and demographic characteristics of population, and the whole pattern of health determinants is more complicated. Between a causal relationship of A (SES) and B (health), there is possibly a C, which is determined by ability to forgo immediate satisfaction for better future achievements, belief in own success, and faith in social justice.

CHAPTER 8

CONCLUSION

The majority of the researchers were able to find some measurable positive results of a nutritional labeling reduction of calorie purchase and consumption, increased health-awareness and an overall ability to make better food choices. However, some participants indicated seeing the calorie information, but not being influenced by it and not changing purchasing behavior.

Some authors suggest that population eating behavior may be changed on a long-term by “food environment interventions” (Thorndike, Riis, Sonnenberg, & Levy, 2014). Nutritional education for families is one of the ways to address these issues.

Research implies that consumers benefit the most from symbolic labeling, such as traffic light (Borgmeier, I. & Westenhoefer, 2009; Morley et al., 2013), as well as this system leads to healthier choices among consumers and decrease calorie purchase (Ellison, Lusk, & Davis, 2013). In general, visual types of labels, such as physical activity based label, are more effective and simple to comprehend.

Moreover, mandatory calorie / nutrition posting on menus may motivate restaurants and other food providers to offer low-calorie and healthier options. In 2011 Bollinger, Leslie, & Sorensen predicted a trend toward low-calorie options and much rapid response from consumers comparing to menu changes in food establishments.

Meanwhile, another research indicates that adding some labeling systems, as well as including amounts of nutrients such as sugar, fat and sodium has little impact on awareness growth, nutrition information usage and reduction of calories consumption (Hammond,

Goodman, Hanning, & Daniel, 2013). Many other studies suggest that calorie labeling has no significant and visible impact on consumer behavior.

Many studies suggest significant socio-economic and demographic disparities. Nevertheless, Hammond, Goodman, Hanning, & Daniel (2013) point out that the relationship between these characteristics and nutritional information, diet quality and healthy choices might be of a bigger importance when nutritional labels are not comprehensive and this information is less visible, what demotivates some consumers to search for it. Morley et al. (2013) indicated that traffic-light labels and labels with kilojoule information had a positive impact despite their gender, age, education and socio-economic status due to their simplicity and visible menu placement. Thus, simplifying nutritional labeling and providing this information at the most convenient for reading location may reduce inequality in nutritional information usage.

Hence, consumer choices in restaurants and similar establishments might not be easily influenced only by nutritional labeling itself, as there are many more variables and factors are involved. Providing information and increasing awareness is not a final goal for making significant changes in individuals' diets and choices, as information itself may not be sufficient. Some people might be more susceptible to such information, making expected positive conclusions and being influenced by it. In turn, others might not even see labeling, not take it into consideration, or even purposefully ignore it due to certain factors. More research with stronger design is needed on effectiveness of nutritional and calorie labeling in food establishments on consumer behavior from sociological and medical perspectives.

REFERENCES

- American Heart Association. (2018). How the Heart-Check Food Certification Program Works. Retrieved from http://www.heart.org/HEARTORG/HealthyLiving/HealthyEating/Heart-CheckMarkCertification/Heart-Check-Mark-Certification_UCM_001179_SubHomePage.jsp.
- Azman, N., & Sahak, S. Z. (2014). Nutritional label and consumer buying decision: a preliminary review. *Procedia-Social and Behavioral Sciences*, 130, 490-498.
- Barr, D. A. (2014). *Health disparities in the United States: Social class, race, ethnicity, and health*. JHU Press.
- Barreiro-Hurlé, J., Gracia, A., & De-Magistris, T. (2010). Does nutrition information on food products lead to healthier food choices?. *Food Policy*, 35(3), 221-229.
- Bleich, S. N., et al. (2017). A systematic review of calorie labeling and modified calorie labeling interventions: impact on consumer and restaurant behavior. *Obesity*. DOI: 10.1002/oby.21940.
- Bollinger, B., Leslie, P., & Sorensen, A. (2011). Calorie posting in chain restaurants. *American Economic Journal: Economic Policy*, 3(1), 91-128.
- Borgmeier, I. & Westenhofer, J. (2009). Impact of different food label formats on healthiness evaluation and food choice of consumers: a randomized-controlled study. *BMC Public Health*, 9:184, doi:10.1186/1471-2458-9-184.
- Cantor, J., Torres, A., Abrams, C., & Elbel, B. (2015). Five years later: awareness of New York City's calorie labels declined, with no changes in calories purchased. *Health Affairs*, 34(11), 1893-1900.
- Choices Programme. (2018). Retrieved from <https://www.choicesprogramme.org/about/the-programme/>.
- Clarke, T.C., Norris, T., & Schiller, J.S. (2017). Early release of selected estimates based on data from 2016 National Health Interview Survey. *National Center for Health Statistics*. Retrieved from <https://www.cdc.gov/nchs/nhis/index.htm>.
- Cockerham, W. C. (2016). *Medical sociology*. Pearson Education, Inc.
- Congress, U. S. (2010). Patient Protection and Affordable Care Act, 42 USC § 18001. *In Washington, DC: US Congress*.
- Cowburn, G., & Stockley, L. (2005). Consumer understanding and use of nutrition labelling: a systematic review. *Public health nutrition*, 8(1), 21-28.

- Deshpande, S., Basil, M. D., & Basil, D. Z. (2009). Factors influencing healthy eating habits among college students: An application of the health belief model. *Health marketing quarterly*, 26(2), 145-164.
- Dowray, S., Swartz, J. J., Braxton, D., & Viera, A. J. (2013). Potential effect of physical activity based menu labels on the calorie content of selected fast food meals. *Appetite*, 62, 173-181.
- Dumanovsky, T., Huang, C. Y., Bassett, M. T., & Silver, L. D. (2010). Consumer Awareness of Fast-Food Calorie Information in New York City After Implementation of a Menu Labeling Regulation. *American Journal of Public Health*, 12, 2520-2525.
- Elbel, B., Gyamfi, J., & Kersh, R. (2011). Child and adolescent fast-food choice and the influence of calorie labeling: a natural experiment. *International journal of obesity*, 35(4), 493.
- Elbel, B., Kersh, R., Brescoll, V. L., & Dixon, L. B. (2009). Calorie labeling and food choices: a first look at the effects on low-income people in New York City. *Health affairs*, 28(6), w1110-w1121.
- Elbel, et al. (2013). Calorie labeling, fast food purchasing and restaurant visits. *Obesity*, 21(11), 2172-2179.
- Ellison, B., Lusk, J. L. & Davis, D. (2013). Looking at the label and beyond: the effects of calorie labels, health consciousness, and demographics on caloric intake in restaurants. *International Journal of Behavioral Nutrition and Physical Activity*, 10:21. <https://doi.org/10.1186/1479-5868-10-21>.
- Facts Up Front. (2018). Retrieved from <http://www.factsupfront.org/AboutTheIcons>.
- Finkelstein, E. A., Strombotne, K. L., Chan, N. L., & Krieger, J. (2011). Mandatory menu labeling in one fast-food chain in King County, Washington. *American journal of preventive medicine*, 40(2), 122-127.
- Food and Drug Administration. (2014). Food labeling; nutrition labeling of standard menu items in restaurants and similar retail food establishments. Final rule. *Federal register*, 79(230), 71155.
- Food and Drug Administration. (2016). Food Labeling: Revision of the Nutrition and Supplement Facts Labels. Final rule. *Federal register*, 81(103), 33741.
- Food and Drug Administration. (2017). Changes to the Nutrition Facts Label. Retrieved from: <https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm385663.htm>.
- Food and Drug Administration. (2017). *Dietary Supplement Guide*. Retrieved from <https://www.fda.gov/Food/DietarySupplements/default.htm>.

- Food and Drug Administration. (2017). Menu Labeling Requirements. Retrieved from: <https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm515020.htm>.
- Food and Drug Administration. (2018). New and Improved Nutrition Facts Label. Retrieved from <https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm385663.htm>.
- Food Standards Agency. (2006). *Signpost Labelling*. Retrieved from <http://webarchive.nationalarchives.gov.uk/20120403164034/http://www.food.gov.uk/news/newsarchive/2006/mar/signpostnewsmarch>.
- Food Standards Agency. (2016). *Front-of-pack nutrition labelling*. Retrieved from <https://www.food.gov.uk/northern-ireland/nutritionni/fop-ni>.
- Graham, D. J., Orquin, J. L., & Visschers, V. H. (2012). Eye tracking and nutrition label use: A review of the literature and recommendations for label enhancement. *Food Policy*, 37(4), 378-382.
- Grocery Manufacturers Association. (2014). Facts Up Front Front-of-Pack Labeling Initiative. Retrieved from <https://www.gmaonline.org/issues-policy/health-nutrition/facts-up-front-front-of-pack-labeling-initiative/>.
- Grunert, K. G., & Wills, J. M. (2007). A review of European research on consumer response to nutrition information on food labels. *Journal of public health*, 15(5), 385-399.
- Guiding Stars Guiding Stars Licensing Company. (2018). Retrieved from <https://guidingstars.com/what-is-guiding-stars/>.
- Hales, C. M., Carroll, M. D., Fryar, C. D., & Ogden, C. L. (2017). Prevalence of Obesity Among Adults and Youth: United States, 2015–2016. *NCHS Data Brief*, 288.
- Hammond, D., Goodman, Hanning, S. R., Daniel, S. (2013). A randomized trial of calorie labeling on menus. *Preventive Medicine*, 57, 6, 860-866, doi: <https://doi.org/10.1016/j.ypmed.2013.09.020>
- Hammond, D., Lillico, H. G., Vanderlee, L., White, C. M., & Reid, J. L. (2015). The impact of nutrition labeling on menus: A naturalistic cohort study. *American journal of health behavior*, 39(4), 540-548.
- Kiesel, K., McCluskey, J. J., & Villas-Boas, S. B. (2011). Nutritional labeling and consumer choices. *Annu. Rev. Resour. Econ.*, 3(1), 141-158.
- Kim, E., Tang, L. R., Meusel, C., & Gupta, M. (2018). Optimization of menu-labeling formats to drive healthy dining: An eye tracking study. *International Journal of Hospitality Management*, 70, 37-48.

- Larson, N., Haynos, A. F., Roberto, C. A., Loth, K. A., & Neumark-Sztainer, D. (2018). Calorie Labels on the Restaurant Menu: Is the Use of Weight-Control Behaviors Related to Ordering Decisions? *Journal of the Academy of Nutrition and Dietetics*.
- Levine, D. I. (2017). The Curious History of the Calorie in US Policy. *American journal of preventive medicine*, 52(1), 125-129.
- Morley, B., Scully, M., Martin, J., Niven, P., Dixon, H., & Wakefield, M. (2013). What types of nutrition menu labelling lead consumers to select less energy-dense fast food? An experimental study. *Appetite*, 67, 8-15.
- National Center for Health Statistics. (2017). Health, United States, 2016: With Chartbook on Long-term Trends in Health. Hyattsville, MD.
- National Heart Foundation of New Zealand. (2017). Heart Foundation Tick. Retrieved from <https://www.heartfoundation.org.nz/wellbeing/heart-foundation-tick>.
- Prathiraja, P. H. K., & Ariyawardana, A. (2003). Impact of nutritional labeling on consumer buying behavior, Sri Lankan Journal of agricultural economics, 5, 35–46, doi: <http://doi.org/10.4038/sjae.v5i0.3475>.
- Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health education monographs*, 2(4), 328-335.
- Swedish National Food Agency's Keyhole. (2015). Retrieved from <https://www.livsmedelsverket.se/en/food-and-content/labelling/nyckelhalet>.
- Tandon, et al. (2011). The impact of menu labeling on fast-food purchases for children and parents. *American journal of preventive medicine*, 41(4), 434-438.
- Teisl, M. F., & Levy, A. S. (1997). Does nutrition labeling lead to healthier eating? *Journal of Food Distribution Research*, 28, 18-27.
- Thorndike A. N., Riis, J., Sonnenberg, L. M., Levy, D. E. (2014). Traffic-Light Labels and Choice Architecture: Promoting Healthy Food Choices. *American Journal of Preventive Medicine*, 46, 2, 143-149, doi: <https://doi.org/10.1016/j.amepre.2013.10.002>.
- U.S. Department of Agriculture. (2000). Agricultural Economic Report. *Economics of Food Labeling*, 793. Retrieved from https://www.ers.usda.gov/webdocs/publications/41203/18885_aer793.pdf?v=41063.
- U.S. Department of Agriculture. (2018). USDA Organic. Retrieved from <https://www.usda.gov/topics/organic>.
- Wartella, E. A., Lichtenstein, A. H., & Boon, C. S. (2010). Examination of front-of-package nutrition rating systems and symbols. *Phase I report. Institute of Medicine (IOM)*.

Weiss, G. L., & Lonquist, L. E. (2017). *The sociology of health, healing, and illness*. Pearson Education, Inc.

Whole Grain Council. (2018). Retrieved from <https://wholegrainscouncil.org/whole-grain-stamp>.

Wisdom, J., Downs, J. S., & Loewenstein, G. (2010). Promoting healthy choices: Information versus convenience. *American Economic Journal: Applied Economics*, 2(2), 164-78.

BIOGRAPHICAL SKETCH

Yulia Totskaya was born in Novosibirsk, Russia. After completing her schoolwork in 2009, Yulia entered Tomsk State University, where she obtained Honors Specialist Degree in Management and Master's Degree in Social Work. She was a Student Government leader and a Founder of Training School for students from 2012 to 2014. During the following two years, she was employed as a Project Manager at Di-Group and as a Research Assistant at Tomsk State University. Also, she participated in twelve forums and conferences in Europe, and published ten scientific articles. In 2016, she received Fulbright Scholarship and entered the Applied Sociology program at The University of Texas at Dallas. She is planning to do a PhD in the next few years.

CURRICULUM VITAE

EDUCATION & HONORS

Master of Science – University of Texas at Dallas, School of Economic, Political and Policy Sciences 2016 – 2018

Master's Degree – Tomsk State University, Department of Psychology & HR 2014 – 2016

Honors Specialist Degree in Management – Tomsk State University, International Department of Business Administration. GPA: 4.0 2009 – 2014

AWARDS

- Fulbright Scholarship
- Edmund S. Muskie Program
- Vladimir Potanin Foundation Scholarship
- Academic Excellence Scholarship
- “Academic Mobility” research travel grant by M. Prokhorov Foundation

LICENSES | CERTIFICATIONS

- **Professional Certified Marketer** by American Marketing Association
- **Google AdWords** Certified

PROFESSIONAL EXPERIENCE

Business Administration and Marketing Intern – ARI Financial group (Miami, USA) May – August 2017

• Marketing Research • Project Management • Marketing/Business Development Support

Research Assistant – Tomsk State University (Russia) 2015 – 2016

• Marketing and social research • Writing scientific articles • Presenting research results

at international conferences • Communicating with foreign researchers

Project Manager – DI-Group, LLC, Tomsk (Russia) 2014 – 2015

• Strategic and tactical planning • Collaborating with similar projects • Marketing

Research • Financial planning • Fundraising • Event management • Public Relations

Public Relations Department Intern – Gazprom Transgaz Tomsk (Russia) May – July 2013

• Content analysis • Advertising management • Event management • Public Relations

LEADERSHIP | ORGANIZATIONAL ACTIVITIES | VOLUNTEERING

President of Fulbright Association Dallas Chapter 2017 – now

Founder and leader of the training organization “School of Progressive Young People of TSU “Perspective” 2013 – 2014

Student Government leader of the International Department of Business Administration 2012 – 2014

Coordinator of the social project for orphan children “The Light of Goodness” 2011 – 2014

Volunteer and activist at the Student Trade Union of Tomsk State University 2009 – 2014

TRAININGS | FORUMS | CONFERENCES

Fulbright Enrichment Seminar Atlanta, USA 2017

Fulbright Pre-Academic Program Ohio, USA 2016

Human and Social Sciences International Conference Zurich, Switzerland 2016

16th International Academic Conference Amsterdam, The Netherlands 2015

International Journal of Arts and Sciences Conference Freiburg, Germany 2014

The European Interdisciplinary Forum Vilnius, Lithuania 2014

International Youth Forum “Strasbourg meetings” Strasbourg, France 2013

International Youth Forum “Seliger” Moscow, Russia 2011 & 2013

SKILLS

• *Languages:* English (fluent), Russian (native), Spanish (basic) • *Computer skills:* Microsoft Office; SPSS Statistics; Stata; Adobe Photoshop & Illustrator • *Personal skills:* Leadership; Initiative; Teamwork; Cross-Cultural Communications; Analytical and Problem-solving skills; Written & Verbal Communication skills.