Underlying Food Values Influencing Food-Related Behaviors of Consumers in Turkey

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Abstract: While the world is struggling with the obesity epidemic, the novel coronavirus pandemic has started to spread, and has become more in need of health conscious consumers and healthy eating habits along with new approaches in designing policy interventions. In this new situation, it is urgent to examine the food attributes to identify the underlying food values, which lead consumers to eat healthy. This study aims to explore consumers' food values and their influences on health consciousness and food-related behavior in Turkey. Also, the study shed light on identifying the underlying dimensions that capture the meaning of food values used to segment consumers. Ultimately, policy interventions are designed benefited from behavioral insights to encourage healthy diet. Data were obtained from a random sample of 385 consumers through face-to-face interviews in Turkey. Factor analysis was performed to determine the underlying dimensions that summarize and capture the meaning of food values. Then, consumers were classified into segments considering their perception of food values. The food values were fairness, environmental impact, origin and nutrition (ethical and environmental), defined as social food values in Turkey. Classifying consumers into two segments regarding their perception of social food values showed that 57.4% of the consumers had a positive perception, while 42.6% had a negative perception, named as ethical consumers and apathetic consumers respectively. The results showed that ethical consumers had higher health conscious, and healthier food consumption behaviors than apathetic consumers. The study recommends policy interventions aimed at altering the decision-making environment of consumers to promote healthy eating behavior.

Key Words: Food values, Consumer perception, Food consumption behavior, Policy intervention

1. INTRODUCTION

Numerous initiatives develop policy interventions in all regions of the world, regardless of whether it is a wealthy nation or not, in order to struggle with the growing epidemic of obesity, and increasing obesity related diseases such as diabetes and heart disease (Just and Gabrielyan, 2016). Overall, overweight and obese adults were 39% and 13% of the world's population, respectively, in 2016 (WHO, 2020a). In Turkey, the prevalence of obesity among adults nearly tripled between 1980 (10.4%) and 2016 (32.1%) (WHO, 2020b). Increasing obesity rates indicate that improving current policy instruments or enacting various measures are not effective enough to mitigate the prevalence of obesity (Dipietro et al., 2016). In addition to the epidemic of obesity, the novel coronavirus disease (COVID 19) has been spreading rapidly worldwide. In particular, recent reports emphasize that no food or dietary supplement prevents COVID-19, but healthy foods and balanced diet positively affects the immune system and thus strengthens body resistance to the virus (FAO, 2020c; WHO, 2020d). Therefore, the expectation of the society with health consciousness and healthy eating will increase; meaning that scholars, policy-makers and public health professionals in world countries will make more efforts to design food policies to achieve sustainable and healthy food consumption goals.

Ensuring sustainability in consumption as well as in food production is inevitable in order to achieve the goal of being a sustainable society (Robinson and Smith, 2003; Ghvanidze et al., 2016; Gunden and Thomas, 2018). In order to clarify the conceptual link between health consciousness and food consumption, it is useful to first examine the multidimensional structure of sustainability. The underlying dimensions of sustainability, which is an abstract construct, are conceptualized as temporal dimension, regarding environmental concerns (trade-offs between present and future), and social dimension, dealing with ethical concerns (trade-offs between consumers and others) (Grunert et al., 2014). Sustainable consumption refers to the decision-making by taking into account the social responsibility of the consumer (Vermeir and Verbeke, 2006). However, a sustainable (or reflexive) consumer is by definition not an ethical consumer. Actually, sustainable consumer is

surrounded by general cultural norms, and associated with the environment. On the other hand, ethical consumer incorporates social and ethical issues, and feels responsibility for both the environment and society (Vermeir and Verbeke, 2006; Ghvanidze et al., 2016). Health and sustainable development have important contributions to each other. Therefore, health is included in sustainability as the fourth dimension, and sustainable development now consists of: Environmental, economic, social and health sustainability. To better understand the relationship between health and sustainability, researchers have suggested the duality thought (Peterson and Land, 2010; Kjærgård et al., 2013; Jelsøe et al., 2018). The duality of health and sustainability means the mutual linkages between health promotion and sustainable development that are considered to produce, reproduce and constraint each other.

The given conceptual explanations emphasize why healthy eating habits are closely related to environmental and ethical food consumption. Although consumers have different meanings for sustainability, most consumers relate sustainability to some aspects of environmental protection and to a lesser extent to ethical issues (Grunert et al., 2014; Ghvanidze et al., 2016). In this recent view, conceptually narrowing sustainability to environmental sustainability and reducing the priority of the social dimension negatively affect the relationship between health and sustainability (Jelsøe et al., 2018). This argument reveals the need to examine aspects of food products that address environmental, ethical and social issues.

When it comes to policy implementations, even though intensive educational and information campaigns targeting final consumers have been conducted, policy makers are looking for alternative approaches anyway to change consumers' food choices (Vecchio and Cavallo, 2019). So, why not we primarily focus directly on health consciousness to promote healthy food consumption? The reason might be that conscious thought has a small effect on much of individual's behavior (Hallsworth et al., 2016). On the other hand, along with the failure to integrate health promotion and sustainable development, policy implementations aimed at solving public health problems or environmental sustainability problems may result in new health or environmental problems (Jelsøe et al., 2018). To prevent another misunderstanding, research suggests that food and health policy implementations that make an effort to convince consumers to increase healthy food choices and change their eating habits should not focus on "what is right" (Kroese et al., 2016). Indeed, consumers' food purchase and eating behaviors are influenced by the environment they make decision. In this case, the right approach is to adjust the environment where the food consumption decisions are made, rather than efforts to increase health consciousness and deliver "Make the right choice" as a content of message to ensure that consumers eat healthy food. This argument highlights behavioral design as an approach to change consumer behavior as desired.

As seen so far, the major problem is to identify the most appropriate approach to better understand why still unhealthy food choices and eating behaviors happen. To solve this problem, it would be necessary to make changes to the current perspective. To reach a rigorous approach: Firstly, consumers don't place importance solely on taste, appearance and convenience attributes of food products to make decisions on what to purchase and eat. Instead, environmental issues, animal welfare, origin, production methods and sharing benefits of trade have been an increasing impact on consumers' food purchase and eating behaviors, result in changing consumers' priorities and preferences towards healthy eating habits (Lusk and Briggeman, 2009; Dagevos and van Ophem, 2013; Grunert et. al., 2014; Bazzani et al., 2018; Lim, 2017; Rejman et al., 2019). Secondly, psychographic variables, describing consumers based on their psychological and behavioral characteristics, may be more predictive than demographic variables in order to explain consumer behavior (Hoyer and MacInnis, 2008). Indeed, since demographic variables are not considered as very substantial in profiling socially responsible consumer (Vermeir and Verbeke, 2006), psychosocial variables are claimed to be more influential in predicting consumer intention to purchase sustainable food products than the demographics (Robinson and Smith, 2002). Thus, instead of a group of consumers defined by demographics, researchers stated that informational messages could be delivered effectively to consumers by considering their attitudes about sustainable foods. From this point of view, the problem encountered is to define and measure attitudinal variables, and how they affect consumer behavior when making food-specific decisions. At this point, researchers investigate consumers' attitudes by means of applying different methodologies in order to provide evidence to policy makers to design policy interventions to positively change these attitudes towards health and healthy nutrition (Gunden and

Thomas, 2012; Thomas and Gunden, 2012). However, attitude-behavioral intention gap stated that a particular attitude alone does not guarantee that a consumer will behave in a certain way, meaning that consumers with positive attitude toward sustainable consumption may not intend to buy sustainable food products (Vermeir and Verbeke, 2006). Additionally, even if consumers report to prefer the environmental and ethical aspects of food products, other food attributes (like price, quality, brand familiarity) may still be important in consumers' food purchasing decisions (Vermeir and Verbeke, 2006; Ghvanidze et al., 2016). To sum, all this indicates that we need profoundly understand the underlying values that can take precedence over attitudes and food attributes.

Individuals' behavior is formed through values that have a position in the center of self-conception (Schwartz, 1992). Values are defined as enduring belief that a specific end-state of existence is personally or socially preferred over an opposite one (Rokeach, 1973). They may be thought of as the criteria individuals employ to evaluate situations or objects (Brunso et al., 2004a). That is, values determine individuals' reaction to their surroundings, which consider what is good or bad, and right or wrong (Hoyer and Macinnis, 2010). We could say that realizing our values is our ultimate goal, since we generally strive to achieve those things that are consistent with our sense of values (Gunden and Thomas, 2017). In a general sense, values are beliefs about desirable end states that are not situation specific; they guide the evaluation or selection of behavior or events and are ordered by importance (Schwartz, 1992).

On the other hand, food values are defined as stable basic preferences for broad categories of food attributes, such as nutritional value, taste, and price. The relative importance that consumers associate with these food values can help explain food purchasing and consumption decisions (Lusk and Briggeman, 2009).

In Turkey, it is also highlighted the necessity of sustainable food consumption. The existing research studies have set side on organically produced food consumption or one dimension of sustainable consumption, such as environmentally friendly consumption (Günden et al., 2020). Therefore, lack of knowledge with regard to the impact food values on consumers' health consciousness, food purchase and eating behaviors have reduced the ability of policy makers and health care professionals to design customized interventions that will result in concrete behavioral changes that lead to the adoption of healthy eating habits.

The objective of the study is to explore consumers' food values, and the role of these values in influencing food-related behavior in Turkey. The study aims to identify the underlying dimensions that capture the meaning of food values, and to classify consumers into segments based on their food values. The ultimate goal is to propose food policy interventions, designed by means of behavioral insights, in order to prevent unhealthy nutritional behavior.

In the present study, we seek answer to the following question: Does food values influence consumers' food consumption habits? The answer to this question concerns health policymakers as well as food policymakers, because both groups need to better explain consumer behavior. In such a way that, knowledge generated by this study on how food values determine food consumption behavior will enable researchers, extension services, health professionals and health care providers to tailor nutritional/education programs to target those consumers who need to change shopping, eating and cooking behaviors that are consistent with food values. In attempt to developing new strategies designed to produce behavioral changes in gaining a healthy nutritional habits among individuals in the community, policy makers will be likely to benefit from a better understanding of food values that form consumer behaviors.

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2. LITERATURE REVIEW

Values have been examined in the studies that attempt to find a relationship between global or personal values and consumers' purchase behavior for a certain group of food products. Aertsens et al. (2009) tried to understand the relationship between consumption of organic food and global values, suggested by Schwartz' (1992) value

theory: Security, hedonism, universalism, benevolence, stimulation, self-direction and conformity. The authors acknowledged the positive effects of these values on organic food consumption. Also, consumers with traditional values were more inclined to buy sustainable products than consumers with power seekers (Vermeir and Verbeke, 2008). In addition, researchers found out the remarkable influence of moral attitude and subjective norms on consumers' willingness to buy organic food (Arvola et al., 2008). Similarly, Tanner and Kast (2003) showed that positive attitudes of consumers toward environmental protection were one of the major facilitators of green food purchases.

As for personal values, Homer and Kahle (1988) explored two different groups based on List of Values (LOV) developed by Kahle, 1983: Internal and external values. The authors revealed that people who gave more importance to internal values (self-fulfillment, fun and enjoyment in life, sense of accomplishment, and self-respect) and less importance to external values (sense of belonging, being well-respected, and security) tended to purchase natural foods. Additionally, researchers investigated correlations among personal values, attitudes and behaviors. They found that excitement had significant positive correlation with pro-snacking attitude, whereas warm relationship with others had negative (Goldsmith et al., 1995). Moreover, self-respect as internal values, and security as external values were correlated negatively with convenient food consumption. In contrast, achievement was correlated positively with convenience food product usage, convenience orientation towards food shopping, meal consumption and meal preparation (Botonaki and Mattas, 2010). In another pioneering study, Brunsø et al. (2004) constructed a model that showed value-lifestyle-behavior relationship. They proposed a hierarchical structure using LOV as personal values, food-related lifestyle instrument developed by Brunsø and Grunert (1995) as a measure of lifestyle specific area of food consumption, and food-related behavior (Brunsø et al. 2004) as an indication of consumers' shopping, cooking and eating behaviors. The research studies illuminate that food related life style is a mediator between values and behavior (Brunsø et al., 2004; Brunsø & Grunert, 1995; Grunert et al., 1997; Scholderer et al., 2002).

The strength of personal values may be low level on explaining consumers' food-related behavior due to other influencing factors. Controversially, food values can be powerful depending on consumers' prioritization tendencies (Paasovaara, 2011). The relationship between consumers' food values and behaviors has been rarely investigated in the literature. In the previous studies, consumers were given a certain number of food values related to food consumption patterns (Lusk and Briggeman, 2009; Bazzani et al., 2018). These studies attempted to resemble the values proposed by Schwartz (1992). Lusk and Briggeman (2009) purposed a List of Food Values including 11 food values based on human values and preferences to determine how these values affected consumers' preferences for organic food by employing best-worst scaling and econometric methods in the USA. The authors found that safety, nutrition, taste and price were the most important, whereas environment, fairness, tradition and origin were the least important food values. They pointed out the significant influence of food values on consumers' preferences. Bazzani et al. (2018) classified the List of Food Values into three groups of attributes: Credence (Naturalness, safety, environmental impact, origin, fairness, nutrition and tradition), experience (taste, convenience and appearance) and search (price). Unlike the study conducted by Lusk and Briggeman (2009), the authors have modified the list by means of including novelty and animal welfare, and excluding tradition. Another extended definition of food value is the food consumption value (FCV) introduced by Dagevos and van Ophem (2013). The FCV comprises two relevant values: Product value, which refers to physical product attributes, and process values, which is related to practices and characteristics of production process. List of food values proposed Lusk and Briggeman (2009) and the FCV are directly related as follows: Product value is associated with six food values (i.e. taste, price, safety, convenience, nutrition and appearance), while process value corresponds to remaining five food values (i.e. naturalness, tradition, origin, fairness and environmental impact) (Dagevos and van Ophem, 2013). As an example of value-attitude-behavior chain, Hauser et al. (2013) investigated the impact of food-related values on consumers' food purchase behavior along with the mediating role of consumer attitudes toward eight food product categories. They found a partial mediation of values through attitudes, meaning that food values have a strong impact on attitudes, and attitudes influence food purchase behavior. Recently, Thomas and Gunden (2017) and Gunden and Thomas (2017) considered food-specific values developed by Lusk and Briggeman (2009) instead of Brunsø et al. (2004) model that utilized personal values defined as LOV above, and explored the

influence of food values and food-related lifestyle on food-related behavior among food desert residents in the US. They found that self-centered consumers tended to eat fast food out.

Researchers might produce a different list of food values that capture the major values describing food consumption (Lusk and Briggeman, 2009). Therefore, the present study provides a different approach: We initially considered the food values used in the previous studies and then performed a multivariate analysis technique for identifying the underlying values that influence consumers' health consciousness and food-related behavior. Thus, the approach designated whether the values could measure consumers' food values or not in the study area, instead of measuring solely the importance of pre-determined food values assumed as the values that influence consumers' choices.

Consumers have recently increased their interest in ethical, environmental and health issues. Since there is a relationship between healthy eating, environmental and ethical consumption, this interest of consumers has changed their preferences (Ghvanidze et al., 2016; Ghvanidze et al., 2019). Although there have been studies analyzing food values in relation to solely consumers' food purchasing behavior (Lusk and Briggeman, 2009; Hauser et al., 2013; Bazzani et al., 2018) or food-related behaviors (Thomas and Gunden, 2017; Gunden and Thomas 2017), none of the studies have examined together the influence of these values on consumers' food shopping, cooking and eating behaviors.

3. MATERIAL and METHODS

A structured questionnaire was developed to collect data from a random sample of consumers in Izmir, which is the third biggest city and located in Aegean region of Turkey. The sample size was designed following the proportional sampling procedure outlined by Newbold (1995), with a 95% confidence interval and 5% margin of error. The sample was drawn proportionate to population size by 11 provinces. Data were obtained from 385 consumers through face-to-face interviews. Pre-trained interviewers carried out data collection in June 2017. Consumers were approached during their food shopping in the most visited hypermarkets in each province. They were invited to volunteer to participate in a survey. Then, face-to-face interviews were conducted with only the consumers stated that they were 18 years or older, and mainly responsible for food shopping and cooking in the household.

3.1. Food values

In this study, List of Food Values developed by Lusk and Briggeman, (2009) was utilized to determine consumers' food value system. The scale used to measure each value ranged from (1) not at all important to (9) very important. Table 1 shows 11 food values examined in the study area and their corresponding food attributes (Bazzani et al., 2018) and food consumption values (Dagevos and van Ophem, 2013) as mentioned before.

Table 1: Food values

Food values	Description*	Corresponding attribute**	Food consumption value***
Naturalness	Extent to which food is produced without modern technologies	Credence	Process
Taste	Extent to which consumption of the food is appealing to the sense	Experience	Product
Price	The price that is paid for the food	Search	Product
Safety	Extent to which consumption of food will not cause illness	Credence	Product
Convenience	Ease with which food is cooked and/or consumed	Experience	Product
Nutrition	Amount and type of fat, protein, vitamins, etc.	Credence	Product
Tradition	Preserving traditional consumption patterns	Credence	Process
Origin	Where the agricultural commodities were grown	Credence	Process
Fairness	The extent to which all parties involved in the production of the food equally benefit	Credence	Process
Appearance	Extent to which food looks appealing	Experience	Product
Environmental Impact	Effect of food production on the environment	Credence	Process

Source: * Lusk and Briggeman (2009); ** Bazzani et al. (2018); ***Dagevos and van Ophem (2013)

3.2. Food-related behavior

Brunso et al. (2004a) prepared a food-related behavior list in order to measure the self-reported frequency of shopping, cooking and eating behaviors. Food-related behavior instrument consists of 37 behavioral frequency statements measured on a 7-point scale: (1) every day or almost every day, (7) never.

3.3. Analytic approach

Factor analysis was conducted to determine the underlying dimensions that summarize and capture the meaning of food values in order to make these values comparable and understandable in terms of their influences on food-related behaviors (Gunden and Thomas, 2017). Factor analysis enabled us to reduce the number of values by combining two or more values into a single food value dimension. Eventually, the analysis provided food values by their common underlying dimensions. In the present study, principal component analysis utilizing varimax rotation was performed to determine the minimum number of dimension that will account for maximum variance in the data (Tabachnick and Fidell, 2007; Mazzocchi, 2008; Hair et al., 2010). Factor analysis process described by Thomas and Gunden (2017); Gunden and Thomas (2017) for food values was followed by the steps given below:

In the first step, factor analysis was applied using 11 food values and 385 responses. In the preliminary result, all food values were checked to ensure that they met the requirements for employing factor analysis. The second step was devoted to validating the results obtained from the factor analysis. To test the generalizability of the results, the sample was firstly split into two halves by generating a random variable (0, 1). Then, factor analysis was conducted on each half of the sample. The results from the two sub-samples were compared with the results obtained from the complete data set. All communalities for two sub-samples met the criteria of being more than 0.50, and the dimensions generated by the sub-samples were similar to the original sample. This validation process demonstrated that the results of the factor analysis were used to identify consumers' food values represented by this data set. To verify that the food values for a dimension are measuring similar concept, we computed Cronbach's alpha by performing reliability analysis to evaluate the internal consistency among the values. Tabachnick and Fidell (2007) provide a rule of thumb that sample size should be at least 300 responses for the factor analysis. Generally speaking, the minimum requirement for sample size is 1:5 ratio (five cases per variable). This study met the criteria for sample size with 385 responses and the values retained, corresponding to adequate responses per food value.

Following the first round of factor analysis, a second round of factor analysis was performed to create a new composite variable from responses to the food values. Factor analysis enables the identification of a group of values that is a better measure of food values. By using responses to the food values, a new composite variable was created from the results of factor analysis. The estimated factor scores of the new variable were used to capture consumers' perception of food values, and obtain consumer segments by their perceptions. A new binary variable was created by assigning zero to consumers with negative factor scores and one to the consumers with positive factor scores in order to classify consumers into segments (Thomas et al., 2011).

Point Score Analysis was conducted to rank food values by the importance consumers put on. Food values were ranked considering the share of summed scores reported by consumers in total scores (9x385) for each value.

In the study, Kolmogorov-Smirnov normality test was used to check whether the variables used in the analyses showed normal distribution. For non-parametric variables, Mann-Whitney U test was performed to compare different groups of consumers. Friedman test, which is the non-parametric alternative to the one-way repeated measures analysis of variance (Pallant, 2010), was conducted to detect differences among food values.

4. RESULTS and DISCUSSION

Table 2 shows basic descriptive statistics on food values obtained from consumers in the study area, and corresponding attributes for each food value. An overall reliability test of food value scale yielded a Cronbach's alpha of 0.69; meaning that all the items included in the analysis were measured with a reasonable degree of reliability. The Friedman test, which is significant (χ^2 = 667.205; $p<0.01$), confirms that consumers concern some food values more than the other food values, which means that the degrees of importance reported by consumers for food values are significantly different. The results indicate that safety is the most important food value, followed by taste, naturalness and nutrition, whereas convenience, appearance, origin and tradition are the least important. Besides, price, environment and fairness are intermediate ranked food values.

Table 2: Descriptive statistics and importance ranking for food values

Food–related values	Mean*	Standard deviation	Score	%	Rank
Naturalness	7.93	1.62	3054	88.14	3
Taste	8.26	1.20	3179	91.75	2
Price	7.45	1.74	2869	82.80	5
Safety	8.41	1.27	3239	93.48	1
Convenience	6.14	2.57	2362	68.17	11
Nutrition	7.57	1.87	2913	84.07	4
Tradition	6.67	2.15	2568	74.11	8
Origin	6.52	2.40	2512	72.50	9
Fairness	7.06	2.16	2717	78.41	7
Appearance	6.46	2.23	2487	71.77	10
Environmental Impact	7.30	1.99	2812	81.15	6

* 1: Not at all important, 9: Very important; Cronbach's Alpha = 0.69; Null hypothesis was rejected under Friedman Test for $p<0.01$

Table 3 shows the results of research studies that rank food values as the most important, intermediate and the least important. Safety and taste seem to be common food values in the most important group, whereas convenience and appearance are the most common in the least important group. While freshness steps forward in the intermediate group, it is clear that the other food values change between the groups. Although the importance of food values may vary by country, it has been agreed that demographic variables such as education and income have little affect on food values (Lusk and Briggeman, 2009). For instance, Lusk and Briggeman (2009) have drawn a sample with higher education and income than the US average, while Gunden and Thomas (2017) have collected data from the residents of a food desert with a low level of education and income in the US. Both studies have shown that safety, nutrition, taste and price were the most important, and fairness, tradition and origin were among the least important food values (Table 3). Another remarkable point is that the most important food values in the USA are all product values, whereas Turkey has naturalness, Norway has naturalness and animal welfare as process values.

Table 3: Comparative Importance of Food Values by Research Studies

Authors	Country	The most	Intermediate	The least
This study	Turkey	Safety, taste, naturalness, nutrition	Price, environmental impact, fairness	Convenience, appearance, origin, tradition
Lusk and Briggeman (2009)	USA	Safety, nutrition, taste, price	Convenience, appearance, naturalness	Environmental impact, fairness, tradition, origin
Bazzani et al. (2018)	USA	Safety, price, taste, nutrition	Naturalness, animal welfare, environmental impact, fairness	Appearance, origin, convenience, novelty
	Norway	Safety, naturalness, taste, animal welfare	Nutrition, price, fairness, origin	Environmental impact, appearance, convenience, novelty
Gunden and Thomas (2017)	USA	Safety, taste, nutrition, price	Appearance, environmental impact, naturalness, convenience	Fairness, origin, tradition

During factor analysis process, we removed seven problematic food values from the analysis due to low communalities and measures of sampling adequacy, which fell below the cut-off point of 0.50 (Hair et al., 2010). The remarkable finding generated by the factor analysis was that taste, convenience and appearance (all experience attributes); price (search attribute); naturalness, safety and tradition (some credence attributes) from the initial list of food values in the literature (Lusk and Briggeman, 2009; Bazzani et al., 2018) were completely excluded in the analysis. It means that these food-related values do not capture adequately the meaning of food values as represented by the underlying dimension, identified via the factor analysis, as defining health consciousness and food-related behaviors. Consumers may perceive the aforementioned

values, removed from the list of food values, as food attributes in general manner. Finally, factor analysis process was replicated using four food values retained.

The results of factor analysis illustrated that the number of retained dimension described in Table 4 was only one with an eigenvalue > 1 employing the Kaiser rule (Merter and Vannatta, 2010). The total variance explained was 58.30%. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy used to examine the appropriateness of factor analysis with high values between 0.5 and 1.0 (Hair et al., 2010) was 0.74 in the study. Bartlett's test of sphericity was significant ($p<0.001$), indicating that the correlation matrix is significantly different from identity matrix (Mazzocchi, 2008). All these criteria for deriving a dimension revealed that it was appropriate to conduct factor analysis for summarizing data to identify underlying dimension that capture consumers' food values (Mazzocchi, 2008; Hair et al., 2010). Following factor analysis, reliability test conducted to assess the internal consistency among the set of values on the dimension produced a Cronbach's alpha of 0.76. Table 4 presents the dimension that is valid and reliable for defining consumers' food values in Izmir, Turkey.

If paying close attention to the dimension of food values defined by fairness, environmental impact, origin and nutrition in the study area, all food values are credence attributes rather than experience and search attributes classified by Bazzani et. al. (2018). Given the conceptualization of Dagevos and van Ophem (2013), three food values are process (fairness, environmental impact, and origin), and only one is product value (nutrition). In short, it is possible to say that process values are dominant among the food values of the consumers.

Values have been grouped differently in the literature (Rokeach, 1973; Homer and Kahle, 1988; Schwartz, 1992). For example, Rokeach (1973) proposed two groups of values such as terminal (goals) and instrumental (means) values. Rokeach's terminal values were used as the frame of reference for interpreting the extracted dimension (Rokeach, 1973). In this framework, terminal values were categorized as personal (self-centered) and social (society-centered). In the light of what has been explained so far, fairness, environmental impact, origin and nutrition represent a dimension that can be named social food values (Lusk & Briggeman, 2009). Likewise, Gunden and Thomas (2017) determined that two different dimensions underlie food values in the USA: Social (origin, tradition, fairness) and personal values (naturalness, nutrition). In any case, the general idea is that social-oriented values are more related to environmental awareness than to personal values (Pinto et al., 2011).

When food values retained in the study are considered in terms of sustainability (as in introduction), environmental impact is involved in temporal dimension of sustainability, whereas fairness and origin are included in social dimension. Else, sustainable consumers pay attentions to the environment, ethical consumers attach importance to both environment and society. Therefore, environmental impact, fair trade and origin can be incorporated in social issues. In terms of nutritional value, even Lusk & Briggeman, (2009) and Gunden and Thomas (2017) took tradition into social value category in the US, it replaced with nutrition in this study. The reason for this replacement is that the food products produced traditionally are common in the market, and consumers consider tradition as a food attribute when making comparison among food products with different production technologies in purchasing food products. On the other hand, nutritional deficiencies noticeably have a problem in the community. Availability of individuals who can't get the necessary amount of nutrient in the community may cause consumers to recall nutrition as a cue to make judgment about social food values. In this case, traditional consumption is seen as a personal preference, whereas nutrition is considered as a social issue for consumers due to the poor diet problem in the study area. Also, since nutrition is related to health consciousness, which is a part of social sustainability (i.e. environmental and ethical consumption) (Ghavanidze et al., 2016; Kjærgård et al., 2013), then, nutrition can be counted among social issues.

Food production, or agricultural production specifically, can have negative consequences for the environment, which can lead to health-related problems (Pedersen and Land, 2010). Therefore, environmentally responsible consumption or green consumption is defined as any consumption activities aiming to reduce negative impact on the environment. So, environmentally responsible consumers are motivated by environmental values (Schaefer and Crane, 2005). It is well known that environmental protection is considered as the key motivating factors for organic food purchase (Makatouni, 2002; Padel and Foster, 2005). In the study area, we can conclude that environmental consumption is taken into consideration as well. Consumers seek food products produced by sustainable agricultural practices including organic

agriculture and Good Agricultural Practices (GAP). It can be said that the fairness is associated with the origin in the study area. In fact, Ghvanidze et al. (2019) has also approved fairly trade and locally grown products as ethical products. The origin of food products plays a large part in consumer food purchases due to increasing awareness of geographical labels. Along with increased importation for food products, consumers intend to buy locally grown products to support small businesses instead of alternatives from abroad, which leads consumers to pay more attention to the origin. Therefore, the origin is more than an attribute in the study area.

In the light of what has been described on value groups so far, the food values captured by the analysis in the study, that are fairness, environmental impact, origin and nutrition (ethical and environmental), were defined as social food values in the study area.

Table 4: Summary of factor analysis results for food values of consumers

Value dimension	Mean*	Standard deviation	Factor loading
Social food values			
Fairness	7.06	2.16	0.808
Environmental Impact	7.30	1.99	0.764
Origin	6.52	2.40	0.761
Nutrition	7.57	1.87	0.719
d			*2.332*
Total variance explained (%)			*58.302*
Kaiser-Meyer-Olkin measure of sampling adequacy			*0.737*
Bartlett's test of sphericity			*372.574*
Sig.			*0.000*
Cronbach's Alpha			*0.759*

* 1: Not at all important, 9: Very important

In value segmentation, researchers attempt to divide consumers into groups, each with different values. Classifying consumers into two segments regarding their perception of social food values showed that 57.4% of the consumers had a positive perception, while 42.6% had a negative perception (Table 5). Then, the segments were named based on consumers' perception: Negative perceivers and positive perceivers. Positive perceivers pay attention to both environmental and ethical aspects of sustainable consumption; on the contrary, negative perceivers are not interested in these issues in food consumption. From now on, we will call negative perceivers as apathetic consumers, positive perceivers as ethical consumers.

Table 5: Value segmentation by consumer's perception

	Segments			
	Apathetic consumers (Negative perceivers)		Ethical consumers (Positive perceivers)	
	Mean*	Standard deviation	Mean*	Standard deviation
Factor score	-0.93034	0.81824	0.69039	0.35409
n	*164*		*221*	
%	*42.6*		*57.4*	

Hauser et al. (2013) argued that food values could have direct impact on behavior. Examining consumers' food-related behaviors in relation with shopping, cooking and eating behaviors by their perception of social food values provides policy makers, health specialist and extension services an enriched knowledge on consumer segments. Therefore, a statistical comparison was made between the two segments based on the behavioral frequencies of statements in food-related behavior list. Then, consumer profiles in each segment were clarified taking into account statistically significant behavioral statements. Table 10 shows the profiles described using the frequencies of shopping, eating and cooking behaviors reported by consumers.

For ethical consumers, the profile based on food-related behavior is worded as follows (Table 6): These consumers read food labels, shop at the fishmonger's and the cheese shop, and buy ecological food products. Ethical consumers eat green salad, fish, fruit, lentils, and lean meat. Eating with family is common. They spare enough time for cooking. Dinner plans are made the day

before. Further, they know how to cook per se. A supporting finding reported that consumers' environmental, and ethical values affected positively their purchase behavior toward green products (Joshi and Rahman, 2015). Apathetic consumers open to new taste experience in food purchase. These consumers eat sweet deserts, sneak food and more than one course at dinner. They lunch out, eat fast food and drink alcohol. Also, they use pre-prepared dishes and mixes at home.

We can say that ethical consumers have healthier nutritional habits and behaviors, which prove the result that they are health conscious stated above. So, health consciousness is associated with environmental and ethical food consumption.

Table 6: Food-related behaviors by consumers' perception of social food values

Behavioral statements	Apathetic consumers[a]	Ethical consumers[a]	Z	Asymp. Sig.
I shop at a supermarket	2.69	2.69	-0.249	0.803
I read advertising circulars about food products	4.68	4.58	-0.611	0.541
I read the informative labels on the food products in the supermarket**	4.12	3.73	-2.206	0.027
I shop at the cheese shop**	4.22	3.93	-2.049	0.040
I shop at the fishmonger's*	4.54	4.09	-2.866	0.004
I shop at the butcher's	4.45	4.26	-1.367	0.172
I shop at the baker's	2.18	2.09	-1.093	0.274
I shop at the fruit shop/greengrocer's	4.12	4.04	-0.606	0.545
I buy food products at the market	3.18	3.14	-1.016	0.310
I eat green salad*	2.80	2.12	-4.526	0.000
I eat fish*	3.99	3.63	-3.176	0.001
I eat fruit*	2.25	1.86	-3.721	0.000
I eat lentils**	3.29	2.96	-2.090	0.037
I eat lean meat*	4.01	3.55	-3.118	0.002
With my food, I eat sauces with cream and butter	3.32	3.15	-1.335	0.182
I eat sweets and cakes**	3.02	3.43	-2.047	0.041
I drink alcohol***	5.01	5.44	-1.935	0.053
I drink milk	4.09	3.95	-0.733	0.463
I spend more than one hour for cooking dinner*	3.62	3.00	-3.099	0.002
I buy ecological food products*	4.86	4.22	-3.849	0.000
I buy new food products, i.e. food products that I have never tried before***	5.15	5.37	-1.782	0.075
In our household we do the baking ourselves	6.31	6.45	-0.037	0.970
In our household we make pickles/preserves ourselves	5.45	5.37	-0.912	0.362
I use complicated and time-consuming recipes	5.52	5.43	-0.106	0.916
I use new recipes, i.e. recipes that I have never tried before	5.30	5.23	-0.353	0.724
I use ready-prepared dishes that just need to be heated up*	5.30	5.88	-3.594	0.000
In our household we use pre-prepared cake mixes**	5.81	6.09	-2.338	0.019
I plan dinner at least one day in advance**	4.12	3.57	-1.978	0.048
At dinner, the entire household comes together	2.01	1.93	-1.424	0.154
I eat more than one course at dinner***	4.08	4.56	-1.732	0.083
I cook without the help of other people in the household***	3.20	2.94	-1.696	0.090
I snack instead of eating a big dinner*	5.45	5.82	-3.242	0.001
I lunch at a cafe/restaurant**	4.10	4.48	-1.892	0.059
I dine at a cafe/restaurant*	4.67	5.13	-2.642	0.008
I lunch with my friends	3.73	4.02	-1.320	0.187
I dine with my family**	1.93	1.60	-2.107	0.035
I eat fast food out*	4.44	5.16	-3.758	0.000
I have guests over for a meal	4.40	4.28	-0.899	0.369

[a] *1: Every day or almost every day, 7: Never*

[*] *Null hypothesis was rejected under Mann-Whitney U Test for p<0.01*

[**] *Null hypothesis was rejected under Mann-Whitney U Test for p<0.05*

[***] *Null hypothesis was rejected under Mann-Whitney U Test for p<0.10*

Consumer segments were examined by performing Pearson's chi-square (χ^2) test in order to analyze any association between each consumer characteristic and the segments. Table 7 shows consumer profiles by the apathetic and the ethical segments. The results indicate that two segments are significantly different in terms of the characteristics: Generation, education and marital status.

Older generations were more likely to be ethical consumer than the young generation Z. Also, there was a statistically significant difference between apathetic and ethical consumers, whose average age was 34.56 and 42.10 respectively (Mann-Whitney U test, Z: -5.276; p: 0.000). We concluded that ethical consumers were older than apathetic consumers. Consistently, elderly consumers were found to be more likely than young consumers to have purchase intention of sustainable food products (Robinson and Smith, 2002). In another study whose results overlap with this study, consumers with 40 years old or over were very likely to purchase locally grown products (Ross et al., 2000). Compared to the result about the generations obtained from this study, it can be concluded that the age threshold for purchasing local food products may be around 40. Also, Yadav (2016) stated that egoistic value (health concern) had a stronger influence than altruistic value (environmental concern) in terms of determining young consumers' intention to purchase organic food. Similarly, Kihlberg and Risvik (2007) reported different personal values by age groups, which caused younger consumers to like white bread (conventional wheat) more than older consumers.

Compared to single consumers, married and divorced/widowed consumers were more likely to be ethical consumers. Furthermore, social food values consumers possess showed statistically significant difference between marital statuses (Kruskal-Wallis H: 11.725; p: 0.003). Married and divorced/widowed consumers reported higher degree of importance to social food values than single ones. Studies found that married individuals were prone to keep healthy dietary behavior. For example, Robinson and Smith (2002) found that marital status was independently predictive of intention to purchase sustainable food products, where they reported married couples had healthy dietary behaviors. Gunden et al. (2020) informed that married consumers were more in tendency more to be green consumers in Turkey. In another study, married women consume vegetable frequently, while never married counterparts consume sugared beverage more (Mouttapa and Wallace, 2017). Mata et al. (2015) support our finding, stating that married consumers possessed higher preferences for fair trade, organic, regional and unprocessed food, and lower preference for convenience food compared to never married consumers in the European countries.

As the level of education increased, consumers appeared less likely to be ethical consumer. In other words, more educated consumers looked as if decrease their given importance to social food values. Since we expect that higher educated consumers would be more ethically minded consumer than lower educated ones, this finding may seem that there is a glaring discrepancy in the first instance. Therefore, it may not be possible to interpret the finding directly with food values. Instead, it would be better to evaluate the finding indirectly by taking personal values and food product categories such as organic food products that are associated with environmental friendly production systems into account. For instance, universalist consumers, broad-minded, loyal and wise, tended to protect the environment and buy sustainable food products (Vermeir and Verbeke, 2008). Indeed, education correlates positively with self-direction and achievement values (Schwartz, 1992; Schwartz, 2006). When viewed from this aspect, research show that consumers valuing achievement intend to consume convenience foods (Botonaki and Mattas, 2010). In another study that examines the influence of personal values on environmental awareness, consumers with a primary education are more environmentally aware than consumers with other higher education levels (Pinto et al., 2011). However, research on organic food products suggests different results.

Previous research indicated that demographic variables such as gender, income and education level were not related to purchases of sustainable food products (Robinson and Smith, 2002). In the present study, the level of income also doesn't show statistically significant difference between the segments (Table 11). These findings support that education and income may not influence food

values as we mentioned before. Additionally, gender and BMI of consumers are also not statistically significant for differentiating between the two segments (Table 11). Unlike these findings, for instance, research found that females had more positive environmental attitude and green purchasing behavior than males (Dagher et al., 2015). Else, Ross et al. (2000) revealed that females were more likely to purchase locally grown produces.

Table 7: Consumers' profiles by the segments

Variables	Categories	Apathetic consumers		Ethical consumers		Pearson χ^2	Sig.
		n	%	n	%		
Gender	Male	83	46.1	97	53.9	1.707	0.191
	Female	81	39.5	124	60.5		
Generation	<23 Gen Z	33	63.5	19	36.5	26.589	0.000
	24-38 Gen Y	77	49.0	80	51.0		
	39-53 Gen X	39	37.1	66	62.9		
	54+ Baby Boomers & The Silent Generation[1]	15	21.1	56	78.9		
Education	Primary school	20	30.8	45	69.2	8.588	0.035
	High school	35	36.5	61	63.5		
	Undergraduate	96	48.5	102	51.5		
	Graduate	13	50.0	13	50.0		
Marital status	Single	77	51.3	73	48.7	12.444	0.002
	Married	82	39.6	125	60.4		
	Divorced/widowed	5	17.9	23	82.1		
Income (Turkish Liras/month)	<3000	51	39.5	78	60.5	1.936	0.586
	3000-4499	61	46.1	69	53.1		
	4500-5999	26	38.8	41	61.2		
	6000<	26	44.1	33	55.9		
BMI[2]	<24.99 (Normal)	87	45.3	105	54.7	1.204	0.548
	25-29.99 (Overweight)	58	39.5	89	60.5		
	30< (Obese)	19	41.3	27	58.7		

[1] Since the number of respondents in the silent generation was not sufficient for the test, it was combined with baby boomers; [2] Body Mass Index (BMI) is defined as the weight in kilograms divided by the square of the height in meters (kg/m^2). An individual is overweight if their BMI is greater than 25 and obese if their BMI exceeds 30 (WHO).

5. CONCLUSION

This study examined which leading food values drive consumers' food consumption behaviors. The result obtained from multivariate analysis revealed that a unidimensional structure composed of fairness, environmental impact, origin and nutrition was adequate to capture an understanding of food values. These values, called social food values, shape food consumption behaviors representing shopping, cooking and eating habits in the study area. The outcome was then served to create a new composite variable that was utilized to group consumers into segments based on the perception of food values. The segmentation produced two groups: 57.4% of the consumers with a positive perception, and 43.6% of consumers with a negative perception of food values. The segments are then entitled ethical consumers and apathetic consumers respectively.

When the two segments were compared statistically, it was confirmed that ethical consumers had healthier food consumption behaviors than apathetic consumers.

The results reveal the necessity of food policy interventions that increase the importance given on social food values, which results in higher healthy shopping, cooking and eating behaviors.

Policy recommendations

The study may provide policy makers insights to develop interventions to improve public health. An intervention comprises a mixture of policy tools. In this regard, for instance, policy tools are evaluated in four main categories to encourage sustainable consumption (Sonigo et al., 2012): Economic (i.e. taxes, charges, incentives), information-provision (i.e. campaign, labeling), regulatory (i.e. administrative burdens), and behavioral tools (i.e. commitments, community participations). Another alternative policy tool we offer can be a mixed

approach that implements information-provision tools along with behavioral tools when required.

At this point, we propose to apply insights from behavioral economics, called nudges that provide simple implementations to change consumer perceptions and priorities for food values in preventing unhealthy nutritional habits. Behavioral economics, combines insights from economics and psychology unlike the mainstream economics (Mullainathan and Thaler, 2000), provides a framework to understand how people make decisions. Behavioral economics assumes that people are irrational (Kahneman, 2003; Kahneman, 2011), but predictably irrational, and tend to make predictable decision-making errors that would be normally avoidable (Ariely, 2008). Nudge is a concept in behavioral economics that alters consumer's behavior in a predictable way (Thaler and Sunstein, 2008). In this framework, consumers can be encouraged to change their behaviors by public policy makers or health professionals as a choice architect using libertarian paternalistic approach without forbidding any alternative that currently exists in the decision-making environment.

Considering the results mentioned so far, the target group that behavioral insights and information-provision will focus on should be composed of the apathetic consumers. As stated above, decision-making environments affect consumers' food-related behaviors. The findings on consumers' self-reported frequency of shopping, cooking, and eating behaviors indicate that 80% of consumers shop at a supermarket and almost 41% of consumers have lunch at a restaurant at least one or two times in a week. Therefore, supermarkets and restaurants can be considered as decision-making environments for implementing policy interventions in the study area. Instead of the generic "one size fits all" interventions, customized policy interventions considering particularly generational characteristics of consumers should be developed by altering these environments in a way that nudges consumers toward making healthier choices.

As an information-provision tool, value-based education should be tailored to strengthen social food values through active or participatory learning. This need for policy may shed light on public health professionals to improve a health promotion campaign aimed at gaining consumers food values. Increasing awareness of consumers on fairness, environmental impact, origin and nutrition will raise consumers' health consciousness, which, in turn, lead consumers towards ethical and environmentally friendly foods that can make more likely to eat healthy foods in the long term. Frame, as a phenomenon from behavioral economics (Tversky and Kahneman, 1981), meaning that consumers dislike losses than they like related gains (Sunstein, 2017), can also be used as an instrument for the mentioned campaign. In other words, consumers are loss aversive and more sensitive to losses than gains (Kahneman, 2011). To put consumers into action, the campaign can send a message about what they will lose instead of what they will gain in the future if they do not adopt eating habits based on social food values.

When developing health and food policy tools using behavioral insight, different frameworks have been proposed to change consumer choice and behavior. In this context, the EAST framework outlined by BIT (2014), can guide on how to promote a behavior through four principles: Make it Easy, Attractive, Social and Timely. Wansink (2015) suggested CAN approach to promote healthy eating. In this approach, healthy food options should be Convenient, Attractive and Normative. Another intervention framework abbreviated TIPPME (Typology of Interventions in Proximal Physical Micro-Environment) was designed and applied to food choice, purchase and consumption (Hollands et al., 2017). TIPPME focused on changing health-related behavior by altering the placement and the properties of food products (such as labeling, sizing, availability, priming etc.) in the physical environment, where consumer makes food choices. Differently, Sunstein (2014) contributed to this field along with the list of ten important nudges with a wide range of applications.

The examined frameworks are similar in many aspects. The ultimate goal in all of this is to change consumer's food-related behavior by altering the decision-making environment. As for this study, we attempt to recommend policy interventions to change consumers' perceptions under the guidance of the nudges that commonly applied in these frameworks explained above.

Make it easy:

As with Cadario and Chandon (2020) classification, convenience enhancements (default option) from behavioral oriented interventions will help perceive social food values positively by consumers. More specifically, status quo bias means that consumers are prone to not change their behavior unless there is a strong incentive (Samuelson and Zeckhauser, 1988). In other words,

consumers tend to go with a default or pre-set option when they don't make any choice (Thaler and Sunstain, 2008; Goldstain et al., 2008). Therefore, the default option can be exploited as a powerful nudge and primary tool for policy makers in changing consumer behavior. Furthermore, it is proposed that every policy must have a non-action default (Johnson and Goldstein, 2003). The healthiest food options can be designed as the defaults to take advantage of the default options to promote healthy nutrition (Liu et al., 2014). The default menu having ethical foods (i.e. fairly traded, environmentally friendly, locally produced and nutritious) can be served to government officers in the government-run restaurants in the agencies. Since the target audience is the younger generation in making the perception of food values positive, the same policy intervention can be applied especially to university dining halls and cafeterias in Turkey.

In cases where we can't utilize the default, it is still possible to provide a hassle-free decision-making environment for consumers who attempt to reach food products with the specified values. An application that performs the task, the same as used in commercial advertisements, can be developed to guide consumers. A notification message can be sent to consumers about ethical foods in supermarkets or restaurants near their location. We know that similar products have been developed in practice. For instance, Fokkinga and Desmet (2013) propose to use a product design to increase consumers' awareness of nutritional information. Researchers design a digital nutrition assistant for smartphones that responds directly to consumers' purchasing decisions. When the consumer is shopping in a supermarket, a normal cartoon character is displayed. This character changes shape and expression according to the type of product that the consumer places in the shopping cart. When the consumer chooses only fatty foods the character looks obese, for foods rich in protein and mineral, the character gets a more muscular shape, and choosing low-calorie foods makes it look slimmer. Likewise, Kallahave et al., (2011) developed a persuasive shopping trolley to help consumers make healthier food choice in a supermarket. The trolley was used to reduce unhealthy options, and also to make suggestions for others options considering classified product groups labeled "eat more", "eat less", "eat least". This device partially affected consumer behavior towards reducing the choice of unhealthy food products. In another nudging tool, grocery carts were partitioned into different proportions such as 35:65 and 50:50 for fruit & vegetables and meat & treats respectively in each. The dollars spent on fruits and vegetables increased significantly as their proportion in the shopping cart rose up in the grocery store, which means the size of partition influenced healthy food sales (Wansink et al., 2017). In sum, the effective nudges will increase the awareness of the food values in food consumption over time. These policy implementations will indirectly contribute to the increase in the rate of consumers who are health conscious and healthy nutrition. Ultimately, status quo bias will help consumers gain a habit of having social food values.

Make it attractive:

Cognitively oriented interventions such as visibility enhancements that make socially valued food products more visible, and evaluative nutritional labeling that produce color-coding and special symbols to help consumers better understand food values (Cadario and Chandon, 2020) can be utilized to attract consumer's attention to social food values. Firstly, three priming nudges pointed out sub-conscious cues such as physical, verbal and sensational (Wilson et al., 2016) can be used as a set of nudge interventions: visibility, accessibility and availability. Since positional changes of food products have a positive effect on food choices (Bucher et al., 2016), ethical food products can be positioned to make more visible, accessible and available on supermarket shelves and restaurant menus in Turkey. Shortly, these products should be convenient to see, pick up and consume (Wansink, 2015). As an example of visibility, Wansink and Hanks (2013) stated that placing healthy foods first encourages consumers to eat better by influencing their choices. To see the effect of availability, van Kleef et al. (2012) found that increasing the assortment of healthy options led consumers to choose healthy snacks. In another research studies, researchers investigated whether food repositioning influenced healthy food choice, concluding that placing healthy foods at the cash register and unhealthy foods at anywhere increased healthy products sales, and repositioning that made healthy food products visible and accessible was an effective nudge (Kroese et al., 2016; Van Gestel et al. 2018).

To adjust food arrangements in Turkey, socially valued food products can be strategically positioned, so consumers first encounter these options and easy to access them in the supermarkets and restaurants. Placing socially valued food products at eye level shelf in the supermarket, and give these products a place on the first page of restaurant menus will increase

food values visibility. Also low price and attractive product design can be utilized as alternative ways to improve the appeal of these food products in the supermarkets. The government can sell ethical grain products bought from the producers through Turkish Grain Board in supermarkets. Farmers can sell their own ethical products, especially fresh fruits-vegetables and dairy products, in agricultural cooperative markets without dealers or in other supermarkets through the cooperatives. Removing marketing intermediaries from the food chain will enable consumers to buy these products cheaper. The government and farmers can develop more attractive product designs for their socially valued products than other options in the market. Thus, the conditions, visibility and accessibility, will be met and consumers' attention will be directed to the food values.

Secondly, it is argued that descriptive nutritional labeling, implemented as an information-provision policy, has not much impact on food consumption (Liu et al., 2013). Instead, visual designs can enable consumers to understand overloaded information on labels easier. Different colored labeling on packaged food products (green if socially valued; red: if not) in the supermarkets can contribute to increasing consumer health consciousness and improving food choice decisions. A similar nudge-intervention that combined three priming nudges reported that colored-coded labeling intervention called traffic-light labeling (red: unhealthy, yellow: less healthy, green: healthy) increased healthy food purchases and resulted in sustained healthier choices (Thorndike et al., 2012; Thorndike et al., 2014). For a more effective intervention in the study area, behavioral insight and information-provision tools can be combined, as used in cigarette packets. Photos expressing social food values and information messages can be placed on food packages together in the supermarkets. In the same manner, as a hedonic enhancement, attractive photos that lure consumer to choose dishes associated with social food values can be used in the restaurant menu.

The nudge-interventions, recommended as visual, available, accessible, color-coding sign and symbols for food values, will provide effective tools for designing food and health policies to attract young consumers attention to social food values. Thus, on the one hand, the consumption of young people from these foods will increase; on the other hand, their perceptions of social food values will be changed to positive. Because consumers often prefer popular foods, meaning that their food purchase and eating behaviors are shaped by what is normal, the easiest and effective way to change consumer behavior is to affect normal behavior (Wansink, 2015), as in this study.

Make it social:

Social norms are a common and forceful intervention used to nudge consumers, which is likely to be descriptive such as framing message in a positive way (Vandenbroele et al., 2020). Social support and role models can be presented to leverage social norms. To show that consumers with health consciousness and healthier behavior are prevalent, and bringing these consumers more into view can affect the behavior of consumers with unhealthy eating habits. In policy implication, segmenting consumers based on social food values as clustered in the present study provide leverage point for targeting and addressing unhealthy food choices, cooking and eating habits. Since the health conscious consumers entitled positive perceivers tend to attach more importance to reading food labels, eating fresh fruit, and buying ecological food products etc., health professionals should strengthen this inclination and make these consumers a reference to the negative perceivers as a motivate sample. In this way, consumers who have unhealthy behavior with the idea of "others do so" may be persuaded to change eating habits. Similarly, providing information about the perceptions and behavior of other consumers can be successful in promoting pro-environmental behavior (Steg and Vlek, 2009). Also, researchers suggest that increasing social peer pressure can stimulate sustainable or ethical-environmental concerned consumers (Grunert et al., 2014). An effective nudge intervention can be one that informs the negative perceivers about what the positive perceivers do in the study area. For example, in the case of the negative perceivers, a message such as “57.4% of consumers in your community are engaged in consuming socially valued foods” may be more powerful than in changing negative value perception and unhealthy eating habits than messages such as merely “eat healthy.”

Make it timely:

Determining when consumers are most receptive to health and food policies targeting behavioral changes enables policy makers to design more effective nudge-interventions (BIT, 2014). Timely nudges can be more persuasive to change consumers’ food choices and eating behaviors in favor of ethical, environmental and nutritious food products.

The reliability of information spread through mass media and social media is discussed, particularly in health and nutrition issues for the prevention of diseases in Turkey. Especially in order to protect from the colds and flu, consumers are in search of alternative remedies in winter. Therefore, the confused consumers' tendency to purchase medicinal plants, herbs and their grinded mixtures increases unconsciously due to information pollution. For this reason, winter is the time that the daily routines of consumer behaviors are almost broken, and food purchase and eating habits are open to change in Turkey. Thus, we recommend that all the nudging tools and interventions proposed earlier, if applicable, should take the winter season as a starting point to be applied to making them more effective in encouraging consumers to consume socially valued food products. If socially valued food products are framed by increased health consciousness and healthy nutrition, as found in this study, consumers might think to take immediate benefit by consuming these products, which provide resistance to disease.

Although it is thought that it is the right starting point for effective intervention when consumers celebrate important moments, it is known that the meals eaten with crowded family members are higher than the amount of food eaten in normal times by 96% (Wansink, 2006), especially during holy month and moments that have a positive effect on people's lives. For this reason, it is inevitable that the interventions applied in these month and days will have a low impact in Turkey where family reunions are so crowded. Instead, it would be a good idea to alter the menus of the organizations that provide food service in public hospitals. Consumers will be open to changing their habits during their stay in hospitals for treatment and after major surgical interventions. Serving food products with the signs that show the product are locally produced, not harmful for the environment, nutritious and contributing individual's health condition will trigger food values.

Finally, the common view among researchers and policy makers is that consumers' habits are difficult to change. However, policy interventions may be more effective if the policy design involves determining the food values that underlie food purchasing and eating behavior. Then, behavioral insights (nudges) applied in the appropriate places and times can achieve the goal to establish more sustainable and healthier society. It may be more powerful by altering the environment where consumers make decision on food purchasing and eating, considering the factors that lead consumers to healthy nutrition habits.

From an application point of view, the goal of future research studies should be the implementation of the proposed nudge-interventions and discussion of results in Turkey. Future research should also aim to determine whether food values of consumers change during pandemic periods where it seems recently that as the health risk increases, consumers are likely to panic about health and healthy diet. Due to this reason, it is required to monitor and analyze the food values in the pre and post period the pandemic. Because consumers may place an importance and priority on convenience, appearance, taste etc. attributes of food products rather than ethical and environmental values when purchasing food products online in the period of lockdown. This can prevent consumers from becoming health conscious consumers and consuming socially valued food products. This explanation comes up with another relevant and valuable research topic that should be conducted in the future. That is, food values in online shopping are worth investigating.

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