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Investigation of Generations' Attitudes, Awareness, and Behaviors Toward Water Consumption in Türkiye

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Research Article

ABSTRACT

Water is an essential resource that underpins prosperity and wealth. However, the dual threat of increasing pollution levels and rising consumption, primarily driven by rapid population growth, has led to a critical water scarcity situation. Water consumption and supply challenges have become a major environmental issue requiring coordinated global management. Estimates emphasize the urgency of our ongoing environmental crisis by projecting that the world population will face severe water shortages by 2050. This study investigates whether attitudes, awareness levels, social norms, and habits related to water consumption vary between Generations Y and Z, as well as across genders, in the context of Türkiye. For this purpose, data were collected from 261 individuals through online and face-to-face surveys. The findings reveal notable differences between Generations Y and Z regarding their attitudes toward water conservation, water consumption habits, and the frequency with which they pay attention to water waste. Additionally, the study shows differences between men and women in their attitudes, water consumption habits, and conservation efforts. The analysis indicates that Generation Y tends to be more careful and committed to water consumption, often demonstrating more consistent behavior in translating their attitudes into action. These findings highlight the importance of recognizing generational and gender differences, especially when formulating public policies for water conservation and promoting more conscious water consumption in the future. They also underscore the need to design practices that lead to lasting behavioral changes as part of a comprehensive social marketing plan.

Keywords: Generations, water consumption, water conservation, sustainability, social marketing

Türkiye'de Kuşakların Su Tüketimine Yönelik Tutum, Farkındalık ve Davranışlarının Araştırılması

ÖZET

Su, refah ve zenginliğin temelini oluşturan vazgeçilmez bir kaynaktır ancak, büyük ölçüde hızlı nüfus artışının neden olduğu artan kirlilik seviyeleri ve artan tüketimin ikili tehdidi, kritik bir su kıtlığı durumuyla sonuçlanmıştır. Günümüzde, su tüketimi ve su arzını çevreleyen zorluklar, koordineli küresel yönetim gerektiren başlıca çevresel sorunlardan biri haline gelmiştir. Tahminler 2050 yılına gelindiğinde küresel nüfusun ciddi bir su kıtlığıyla karşı karşıya kalacağını öngörerek mevcut çevresel krizimizin aciliyetinin altını çizmektedir. Bu çalışma Türkiye 'de su tüketimine ilişkin tutumların, su tüketimine ilişkin farkındalık düzeyinin, normların ve su tüketimine ilişkin alışkanlıklarla ilgili Y ve Z kuşaklarına göre ve cinsiyete göre farklılık sergileyip sergilemediğini ortaya koymaktadır. Bu amaçla 261 kişiden çevrimiçi ve yüz yüze anket yöntemi ile veri toplanmıştır. Araştırma bulguları bireylerin suyun korunmasına ilişkin tutumlarının, su tüketimine ilişkin alışkanlıklarının, su israfına dikkat etme sıklıklarının Y ve Z jenerasyonları arasındaki farklılıkları ortaya koymuştur. Ayrıca çalışma tutumların, su tüketimine ilişkin alışkanlıkların ve su tasarrufuna ilişkin çabanın erkek ve kadınlar arasındaki farklılıklarını ortaya koymuştur. Analiz sonuçları Y jenerasyonunun su tüketimi konusunda daha dikkatli ve özverili olduğu ve sahip olduğu tutumların davranışa dönüşmesi konusunda daha tutarlı davranış gösterme eğiliminde olduğunu göstermektedir. Bu bulgular, özellikle su tasarrufu için kamu politikaları oluştururken ve gelecekte daha bilinçli su tüketimini teşvik ederken, kuşak ve cinsiyet farklılıklarını tanımanın önemini vurgulamaktadır. Ayrıca kapsamlı bir sosyal pazarlama planının parçası olarak kalıcı davranış değişikliklerine yol açan uygulamalar tasarlamanın gerekliliğini de vurgulamaktadır.

Anahtar Kelimeler: Jenerasyonlar, su tüketimi, suyun korunması, sürdürülebilirlik, sosyal pazarlama

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Introduction

Since water has been regarded as one of the essential building blocks of prosperity and wealth from the past to the present, it has become one of the most significant natural resources (Arbués *et al.*, 2003:81). However, water pollution and increased water consumption with the growing population have caused water to be consumed faster than it can reproduce, making it one of the major environmental problems the world must manage (Corral-Verdugo & Frías-Armenta, 2006: 407). According to the United Nations report (UN), the current global water supply is expected to decrease by 40% by 2030. On the contrary, whereas about half of the world's population experiences a severe water shortage during a part of the year, one-fourth of the population faces high water stress by using more than 80% of the annual renewable freshwater resources. Additionally, the increase in the frequency of meteorological water droughts and the amount of excessive precipitation due to climate change is expected to adversely impact the usability of existing resources (Milano *et al.*, 2013: 499-500). Türkiye is among the countries expected to be affected by these future scenarios (Milano *et al.*, 2013: 510). In recent years, changes in how we consume resources, a growing population, and climate change have started to impact water usage. As a result, water consumption and resources have become vital environmental issues that need to be addressed. Whereas the usable annual water amount per capita in Türkiye was 1.652 m^3 in 2000, it decreased to 1.544 m^3 in 2009 and 1.346 m^3 in 2020, and it is predicted to decrease to 1.120 m^3 under the effect of the population in 2030 (DSI, 2020). While the average daily water amount per capita was 224 liters in 2018, this quantity was 228 liters in 2022 (TÜİK, 2018-2022). Considering the distribution of daily water consumption per capita by province, metropolises, such as Ankara (242 lt), İzmir (210 lt), and İstanbul (190 lt), rank first (TÜİK, 2022). Upon evaluating these data within the scope of the Falkenmark index, Türkiye is a country with water shortage and at risk of becoming one of the countries with water scarcity in the not-too-distant future (Muluk et al., 2013:24). Sustainable water use at the individual level is one of the most effective ways to address freshwater scarcity, which is identified as a key environmental problem (Willis et al., 2011: 2005-2008). Water conservation is also accepted as a pro-environmental behavior and is among the elements considered in evaluating pro-environmental activities (Aprile & Fiorillo, 2017: 119).

Steg and Vlek (2009: 309) define pro-environmental behaviors as "behaviors that damage the environment as little as possible and benefit the environment." In this respect, researchers have conducted studies on alternative transportation use (Muñoz *et al.*, 2016: 4), green purchasing behavior (Yadav & Pathak, 2016:732), reuse of plastic bags (Dursun, 2019:432; Martinho *et al.*, 2017: 3), waste recycling (Tonglet et al., 2004:199), water conservation (Aprile & Fiorillo, 2017: 122-125; Dean *et al.*, 2021: 1-8), energy conservation (Gao *et al.*, 2017:109), low carbon consumption (Ding *et al.*, 2018: 4-8; Jiang *et al.*, 2019: 160-165), and other pro-environmental behaviors (Gkargkavouzi *et al.*, 2019: 149-151) and the factors affecting these behaviors.

The concept of water consumption involves the practices, actions, and resource use of individual consumers, farmers from an agricultural perspective, or companies responsible for various production activities from an industrial perspective (Patsiaouras, 2024: 63). Individuals have a notable impact on water consumption through their domestic habits and brand selections. Many may not fully recognize how their actions affect water resources. Understanding this relationship is essential for fostering more sustainable consumption practices. (Kang *et al.*, 2017: 22-29; Randolph & Troy, 2008: 452-453; Zehnder *et al.*, 2003: 3-5). Hence, it should be remembered that paying attention to water consumption in households and exerting efforts for water conservation are valuable, especially in terms of sustainability. Based on this point, the current study will first present the conceptual framework for water conservation and consumption. The study aims to answer whether individuals' attitudes, awareness, norms, and habits regarding water consumption differ according to generations and gender. In this sense, unlike the studies in the literature revealing the relationships between various demographic variables and various pro-environmental attitudes, intentions, and behaviors, it is thought that addressing generation and including all variables in the study will contribute to the literature.

Conceptual Framework

There is no consensus on the definitions of water conservation in the literature, and some studies have conceptualized and addressed it as water demand management, water protection, and water consumption (Rodríguez Sánchez & Sarabia Sánchez, 2020: 2). The definition of water conservation made by the U.S. Water Resources Council has been frequently adopted, especially by institutions with responsibilities in this field. According to the aforementioned definition, water conservation refers to all activities that reduce water demand, increase usage efficiency, prevent water losses and waste, and encourage practices for water protection (Alliance for Water Efficiency, 2010). Additionally, studies in the literature on the measurement of water conservation behavior differ. Accordingly, some researchers address actual water consumption rates (e.g. Barnett *et al.*, 2020:3). Some studies divide water consumption into efficiency and restriction (Fielding *et al.*, 2010: 33; Savari *et al.*, 2022: 2). Efficiency behavior is the provision of the necessary tools for water conservation (e.g. solar hot water, energy-saving appliances, etc.), whereas

water restriction behaviors depend on the level of households' awareness of how to conserve water in their homes (e.g. using cold water in the dishwasher, turning off computers and electronic equipment when not in use, etc.) (Corral Verdugo *et al*., 2003; Fielding *et al*., 2010: 33; Savari *et al*., 2022: 2-5).

The review of studies on domestic water consumption shows that certain elements widely used by researchers come to the forefront. These can be listed as *attitude* (Fielding *et al*., 2010; Jorgensen *et al*., 2014; Kurz *et al*., 2005: 1282-1284; Kang *et al*., 2017: 3-9; Russell & Knoeri, 2020: 3-4); *perceived effectiveness* (Sarabia-Sánchez *et al*., 2014: 207-209); *beliefs* (Fielding *et al*., 2010: 30; Kang *et al*., 2017: 3-9; Russell & Knoeri, 2020: 3-5); *environmental concern* (Aprile & Fiorillo, 2017: 122-125; Akpinar *et al*., 2018: 341-342); *perceived behavioral control* (Fielding et al., 2012:30; Kang *et al*., 2017: 3-9; Russell & Knoeri, 2020: 3-5); *norms* (Russell & Knoeri, 2020: 3-5); *credibility of the problem* (Sarabia-Sánchez *et al*., 2014: 207-209; Rodríguez Sánchez & Sarabia Sánchez, 2020:8); *involvement* (Gregory & Di Leo, 2003:1264; Sarabia-Sánchez *et al*., 2014: 207-209; Rodríguez Sánchez & Sarabia Sánchez, 2020: 8); *environmental awareness* (Akpinar *et al*., 2018: 341-342).

Researchers have usually employed theoretical models to determine and measure various factors affecting water consumption behavior. Accordingly, the theory of planned behavior (Ajzen, 1991: 181) and value belief theory (Stern *et al.,* 1999: 328) can be listed as the two theoretical frameworks most frequently adopted by researchers. Attitudes are the leading elements among the internal factors that stand out in water consumption/water conservation behavior in studies (see Fielding *et al*., 2010: 1; Jorgensen *et al*., 2014: 229-230; Kang *et al*., 2017: 3-9; Kurz *et al*., 2005: 1282-1284; Russell & Knoeri, 2020: 3). Accordingly, particularly the theory of planned behavior positions attitudes as antecedents of intentions and discusses their impacts in explaining individuals' behaviors. While many studies support attitudes as antecedents of intentions, they often provide a limited explanation for the formation of actual behavior (Attari, 2014; Barnett *et al*., 2020: 2-4; Fielding *et al*., 2012: 3). Furthermore, attempts have been made to explain the determinants of behavior with various factors added with norms and perceived control variables (Fielding *et al*., 2010: 16) in line with the theoretical framework. Some researchers have tried to explain water consumption behavior by using both of these theoretical frameworks together and including different elements in their research models. For instance, Russell and Knoeri (2020: 2) researched the determinants of household water conservation behavior in the UK by addressing environmental behavior with two theoretical frameworks within the scope of the Comprehensive Action Determination Model. The results showed that individuals' attitudes, norms, habits, and intentions regarding water conservation were among the significant determinants. The results demonstrate that water conservation intentions are formed more strongly where there is a positive attitude toward water protection and conservation, where social pressure prevails, and where there is a high level of individual moral responsibility. On the contrary, researchers also frequently address norms (Corral-Verdugo & Frías-Armenta, 2006: 412; Russell & Knoeri, 2020: 3-5). Normative beliefs can be described as the sum of beliefs that individuals internalize about how they should behave in particular situations. These beliefs are shaped according to personal values, moral standards, and social expectations. Additionally, social norms depend on external references and what others should do. They are based on society's general behaviors, habits, and accepted norms (Schwartz, 1977: 232-240; Schultz, 2002: 67-80). Studies have shown that individual norms have significant effects on explaining various pro-environmental behaviors, including water behavior (Landon *et al*., 2017: 903; Pradhananga *et al*., 2022: 15; Warner *et al*., 2016: 858-860; Russell & Knoeri, 2020: 3-5).

Awareness of water use is one of the elements addressed by many researchers, although not in most studies (Akpinar *et al*., 2018; Gregory & Leo, 2003: 1282-1287; Ham *et al*., 2016: 161-172; Kollmuss & Agyeman, 2002: 240-257). Awareness, one of the first stages of obtaining and interpreting information, can be defined as the mental state reached as a result of accepting information cues (Gregory & Leo, 2003: 1263). Environmental awareness can be explained as the state of being informed and aware of the environment impacting people and the environmental consequences of human behavior (Ham *et al*., 2016: 161; Kollmuss & Agyeman, 2002: 253). Individuals are expected to be aware of the environmental consequences of their consumption habits, and this awareness is expected to lead to the adoption of more environmentally friendly behaviors such as reducing water usage, recycling waste, and minimizing waste generation. Additionally, individuals with a high level of environmental awareness are likely to possess greater knowledge and skills related to practicing pro-environmental behaviors, making it easier to motivate and encourage them to take such actions (Si *et al*., 2022). However, similar to the relationship between attitude and behavior, the results are controversial, and the fact that people know the consequences of their behaviors and a high level of awareness of environmental problems are not always reflected in behavior (Clark & Finley, 2007: 623). Studies showing that a large percentage of environmentally friendly behaviors are related to an individual's internal states and environmental conditions support this conclusion (Kollmuss & Agyeman, 2002: 239,256-258).

Environmental behavior literature frequently examines the roles of situational factors, including socio-economic, demographic, and physical environment variables, in conservation behavior. Accordingly, it has been attempted to determine whether situational factors affect people's water consumption and water conservation intentions and behaviors. These factors can be listed as *the number of people in the household* (Gregory & Di Leo, 2003: 1267), *the type of house (detached/apartment)*(Gilg & Barr, 2006: 408), *features such as having a garden, pool* (Jorgensen *et al*., 2009: 228; Randolph & Troy, 2008: 446; Syme *et al*., 1991: 160), *being a homeowner or renter* (Aprile & Fiorillo, 2017: 123; Fielding *et al*., 2010: 24), *education* (Gregory & Di Leo, 2003: 1270), *income level* (Gregory & Di Leo, 2003: 1270), *gender*

(Corral-Verdugo *et al*., 2003: 249; Espejo *et al*., 2021:2), and *age* (Clark & Finley, 2007: 616; Gilg & Barr, 2006: 408; Gregory & Di Leo, 2003: 1270).

Research on demographic variables related to water conservation reveals conflicting results in the literature. For instance, when examining studies on gender, some research indicates that women tend to conserve water more than men and are more likely to engage in pro-environmental activities (Espejo *et al*., 2021: 6-7). In contrast, other studies suggest the opposite, showing that men exhibit higher water conservation behavior (Corral-Verdugo *et al*., 2003: 255). For example, the research conducted by Mohamad *et al*. (2024: 8) reveals that men are more aware of water conservation. On the other hand, studies demonstrate that households with more people consume more water (Fielding *et al*., 2012: 10-11; Gregory & Di Leo, 2003: 1282-1287). Although studies indicate that people with higher education levels have stronger intentions toward water conservation or that individuals with higher income levels make more attempts to conserve water (e.g. trying and using water-saving devices, etc.), these results are controversial in terms of actual water consumption results. When evaluated in terms of actual water consumption data, it can be said that individuals who tend to consume less water and conserve more water are those with lower education levels and lower incomes (Gregory & Di Leo, 2003: 1282-1287; Fielding *et al*., 2012: 8-12). Age can also be expressed as one of the controversial factors. Whereas some studies demonstrate that older adults have more intentions and tendencies toward more pro-environmental behaviors, some report similar findings for younger individuals. For instance, studies on general environmental concerns have shown that younger individuals have more attitudinal concerns about environmental problems (Van Liere & Dunlap, 1980), households with older adults consume less water due to higher environmental awareness (Clark & Finley, 2007: 634-624; Gilg & Barr, 2006: 408; Gregory & Di Leo, 2003: 1282-1287), and households with younger members consume more water (Dang et al., 2024: 9-10; Lyman, 1992: 2166). In their study investigating the determinants of household water conservation behaviors and intentions, Russel and Knoeri (2020: 11) reported that households with younger members had higher intentions to conserve water. The study by Espejo et al. (2021: 6-7) revealed that individuals' frequencies of water conservation and their levels of commitment to the environment were not affected by the age variable.

When reviewing the variables and conclusions related to water consumption in the literature, it is clear that various research have documented equally consistent and contradictory results regarding water conservation behavior. In this sense, it would not be wrong to say that water consumption may differ depending on the country's location, its cultural characteristics, the country's water policy, public awareness initiatives, and any imposed restrictions or regulations. On the contrary, the lack of a consensus on the measurement of water conservation behavior, researchers' different conceptualizations in this sense, or addressing the relationships between variables such as attitude, awareness, involvement, age, gender, and education, etc. using the shared water consumption averages/actual water consumption data may have caused differences in terms of generalizing the results obtained. Few studies have examined the factors affecting water consumption by generation in Türkiye (e.g. Simsek, 2023: 1292-1293). On the other hand, the review of similar studies in national and international literature shows that different studies have examined the impacts of water consumption and few studies have addressed different variables such as attitude, normative beliefs, awareness, water consumption habits, and water conservation intentions together. The novelty and originality of the present study arise from the desire to eliminate the above-mentioned deficiencies. Accordingly, the study will first evaluate individuals' attitudes and awareness regarding water consumption and conservation, norms expressing their thoughts on the steps to be taken by the state regarding water consumption, and water consumption habits. In this respect, it is aimed to answer the research question of whether individuals' attitudes and awareness levels regarding water consumption and conservation, habits, and norms concerning water consumption differ between generations. In this sense, it is thought that evaluating the attitudes, awareness, habits, and norms of Generations Y and Z, differently from the age variable particularly addressed in studies in the literature, will contribute to obtaining significant results. Additionally, testing whether the attitudes, awareness, habits, and norms of women and men differ is our second research question. Accordingly, the hypotheses:

H1: Individuals' attitudes towards water consumption differ according to generations Y and Z.
H2: Individuals' awareness levels regarding water consumption differ according to generations Y and Z.
H3: Individuals' habits regarding water consumption differ according to generations Y and Z.
H4: Individuals' norms differ according to generations Y and Z.
H5: Individuals' frequency of avoiding water waste differs according to generations Y and Z.
H6: Individuals' conservation importance differs according to generations Y and Z.
H7: Individuals' willingness to save water differs according to generations Y and Z.
H8: Individuals' attitudes towards water consumption differ according to gender.
H9: Individuals' awareness levels regarding water consumption differ according to gender.
H10: Individuals' habits regarding water consumption differ according to gender.
H11: Individuals' norms differ according to gender.
H12: Individuals' frequency of avoiding water waste differs according to gender.
H13: Individuals' water conservation importance differs according to gender.

H14: Individuals' general awareness levels regarding water consumption (awareness_2) differ according to generations Y and Z.

H15: Individuals' general awareness levels regarding water consumption (awareness_2) differ according to gender.

The study will investigate whether individuals' behaviors and attitudes regarding water conservation differ by generation and gender. It is thought that determining these will shed light on the establishment of relevant policies, particularly within the scope of social marketing practices and sustainable water consumption.

Method

The study applied a survey to participants reached via e-mail and face-to-face interview methods between July 2023 and October 2023.[1] The study sample consists of individuals over the age of 18. The survey form prepared for the study was shared over www.surveey.com, one of the platforms enabling the dissemination of surveys in an electronic environment. The study adopted the convenience sampling method, and the participants were 261 individuals who responded to the survey questions voluntarily. A total of 268 individuals participated in the study; however, the forms of two participants under the age of 18 were excluded from the analysis, along with any forms found to be incomplete or incorrectly filled out. Determining the appropriate sample size for an independent sample t-test is essential to ensure statistical power and the reliability of results. While a minimum of 30 participants per group is generally recommended, larger samples can yield more trustworthy findings. According to Altunısık et al. (2012: 137), a sample size ranging from 30 to 500 is sufficient for social science research. Additionally, studies have highlighted that for factor analysis, the sample size should be at least five times the number of items on the survey. For more reliable results, it is advised that the sample size should be at least 200, and again, no less than five times the number of items (Akbulut & Capık, 2022: 114; Dogan & Basokçu, 2010: 67; Gürbüz & Sahin, 2016: 130). It is also noted that approximately 200 observations are necessary for multivariate statistics (Hair et al., 2010: 11). Therefore, it can be concluded that the sample size achieved in this study is adequate. The survey form consists of three sections and 50 questions in total. The first section contains 8 questions about general attitudes, evaluations, and behaviors regarding water consumption. The second section of the survey includes questions about attitudes, awareness, and habits regarding water consumption. The last section of the study contains questions about gender, age, and other demographic information. All data were analyzed using the SPSS software. Additionally, the program Microsoft Excel was used to draw graphs.

The first section of this study attempted to determine the participants' expectations regarding water shortage in the world and Türkiye by asking dichotomous questions (e.g. Do you think there is a water shortage in our country?). In the continuation of the first section, the importance the participants attached to water conservation, the frequency of water conservation, and their levels of willingness to do this were measured using a 5-point Likert scale. The second section used the scale of Gregory & Di Leo (2003: 1292-1294) to measure the participants' attitudes and awareness regarding water consumption and the scale of Corral-Verdugo & Frías-Armenta (2006: 414-415) to measure the normative beliefs representing the steps the state will take regarding water consumption and water consumption habits by adapting them to the study's scope. A 5-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree) was used to determine the participants' attitudes, awareness, and water consumption habits.

Data Analysis and Results

The current section will present the analyses conducted using the SPSS program.

Evaluation of the Participants' Demographic Characteristics

Table 1 lists the participants' socio-demographic information. Accordingly, 63.6% (n=166) of the participants were female, and 36.4% (n=95) were male. Moreover, the participants were asked about the total number of people living with them in the household. Accordingly, 36% (n=94) of the participants stated that they lived with 4 people in the household, 21.8% (n=57) lived with 3 people, 18.4% (n=48) lived with 4 people and above, whereas 8% (n=21) of the participants lived alone.

Çizelge 1. Katılımcıların cinsiyet, jenerasyon, eğitim düzeyi, meslek ve hanede yaşayan kişi sayısına göre dağılımı
Table 1. Distribution of Participants by Gender, Generation, Education Level, Occupation, and Number of People Living in the Household

Demographic	Frequency (n)	Percentage (%)
Gender		
Female	166	63.6
Male	95	36.4

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[1] On July 10, 2023, the Academic Research and Publication Ethics Committee of İstanbul Topkapı University decided that the study complies with scientific research and publication ethics rules.

Demographic	Frequency (n)	Percentage (%)
Total number of people living with you in the household		
1	21	8.0
2	34	13.0
3	57	21.8
4	94	36.0
4 and above	48	18.4
Last graduation school		
High school	155	59.4
University	38	14.6
Postgraduate	67	25.7
Occupation		
Student	184	70.5
Public employee	33	12.6
Private sector employee	28	10.7
Worker	2	0.8
Other	14	5.4
Generation		
Z Generation	165	63.2
Y Generation	96	36.8

The participants were also asked about the city where they lived. Graph 1 is based on the responses to this question. Participants from 32 different cities in total took part in the research. While the number of participants from 17 cities was limited to 1, the distribution of cities with 1 or more participants is shown in the graph. Of the participants, 67% reside in İstanbul, 5% in Ankara, 3% in Kocaeli, 3% in Kayseri, and 2% reside in Konya and Bursa.
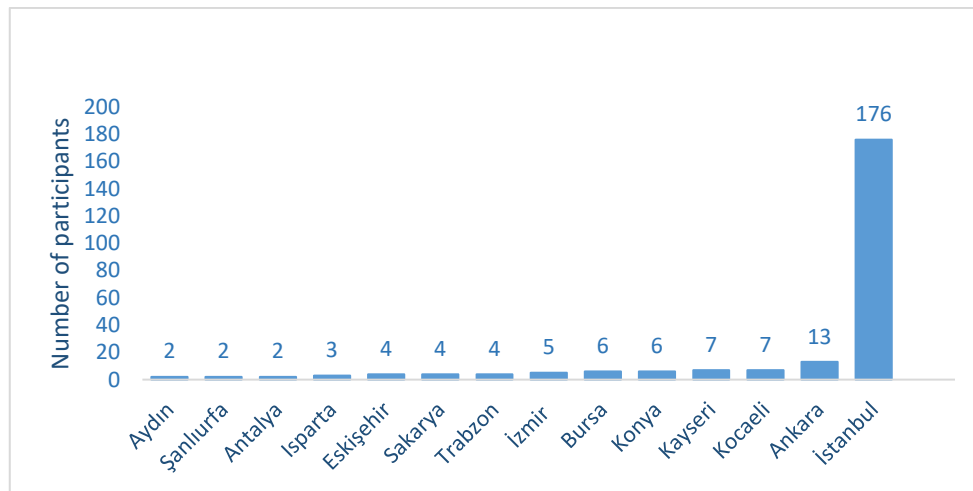
Grafik 1. Katılımcıların şehirlere göre dağılımı
Graph 1. Distribution of Participants by Cities

Another question asked to the participants in the first section is about their expectations and views regarding water shortage in Türkiye and the world in the future. Thus, Table 2 presents the participants' expectations regarding the water shortage in Türkiye according to their responses. Of the participants, 81.6% (n=213) thought that Türkiye was experiencing a water shortage, and 98.5% (n=257) thought that it would also experience a water shortage in the future. In addition to the participants' assessments regarding Türkiye, their current assessments regarding water shortages in the world and their thoughts on future projections were also evaluated. Accordingly, about 88.5% (n=231) of the participants thought that there was a water shortage in the world, while 98.5% (n=257) thought that there would be water problems in the world in the future. In line with these assessments, it can be said that the participants had negative assessments regarding the future, and they thought that water-related problems would be felt more. Finally, the participants were asked about their efforts to conserve water. Accordingly, 80.5% (n=210) of the participants thought that "they made an effort to conserve water," whereas 19.5% (n=51) stated that they exerted no effort. Overall, it can be stated that the participants were aware of the possible water shortage in Türkiye and around the world and expressed their views that they made an effort for this.

Çizelge 2. Türkiye'de su sıkıntısı değerlendirmelerine verilen yanıtlar
Table 2. Responses to Assessments of Water Shortage in Türkiye

Statement	Participants' Responses	
	Yes	No
Do you think there is a water shortage in our country?	213	48
Do you think our country will experience a water shortage in the future?	257	4

Çizelge 3. Responses to water shortage assessments around the world
Table 3. Responses to Water Shortage Assessments Around the World

Statement	Participants' Responses	
	Yes	No
Do you think there is a water shortage in the world?	231	30
Do you think there will be a water shortage in the world in the future?	257	4

Descriptive statistics regarding the participants' attitudes, awareness, water consumption habits, and norms

The attitude scale included in our study contains statements covering consumers' economic motives regarding water consumption and their assessments regarding lifestyle and comfort. Table 4 contains descriptive statistics for these statements.

Considering the participants' attitudes in Table 4, item 10 on the attitude scale had the highest mean. Accordingly, 65.5% (M=4.494) of the participants thought that "water conservation was their responsibility" by responding "strongly agree." According to the participants' responses, the statement "If I have to use less water, my lifestyle will change for the worse." defined as attitude_2 had the second highest mean (M=3.027). Only 14.6% of the participants responded to this statement "strongly agree," and 24.5% responded "agree." Accordingly, it can be said that 14.6% of the participants thought that water conservation would adversely affect their lives. The statement "I don't plan to conserve water." (M= 1.494), coded as attitude_7, had the lowest mean. In line with this, it can be stated that 51% and 31.4% of the participants had positive attitudes toward water conservation, with the responses "strongly disagree" and "agree," respectively. The statement "I could conserve more water, but I don't see any reason to do so." was the item with the second lowest mean on the attitude scale. Of the participants, 35.6% responded "strongly disagree" to this statement, and 25.3% responded "disagree. Considering all of these, it can be said that the participants were aware of the necessity of water protection and water conservation.

Çizelge 4. Katılımcıların su tüketimine ilişkin tutumlarının ortalama ve standart sapma değerleri
Table 4. Mean and Standard Deviation Values for the Participants' Attitudes Toward Water Consumption

	Statements	Mean	Sd
attitude_1	Water conservation requires more effort than necessary.	2.395	1.3450
attitude_2	If I have to use less water, my lifestyle will change for the worse.	3.027	1.2782
attitude_3	I could conserve more water, but I don't see any reason to do so.	1.762	1.0290
attitude_4	My comfort is more important than conserving a few liters of water.	1.824	1.1057
attitude_5	I don't want to change my lifestyle to conserve more water.	2.184	1.1388
attitude_6	The only limit to how much water you can use should be how much you are ready to pay for it.	1.920	1.1186
attitude_7	I don't plan to conserve water.	1.494	0.9266
attitude_8	Everyone should be able to use as much water as they want.	1.843	1.1173
attitude_9	I would only try to conserve water during droughts.	1.782	1.0999
attitude_10	It is my duty to conserve water as a responsible citizen.	4.494	0.8885

The awareness scale used in the study evaluates the participants' general awareness levels regarding water conservation and protection, awareness of the country's future water consumption, and awareness of water consumption and problems in the country. Accordingly, Table 5 lists descriptive statistics regarding the participants' awareness.

Upon evaluating the statements related to awareness, the statement "Water provides a habitat for wildlife and vegetation, and care should be taken to protect it" was the item with the highest mean (M=4.720), indicating that most participants were aware that water is one of the vital and indispensable resources. Additionally, the participants thought that "Citizens should be encouraged to conserve water" (M=4.705). The statement "I don't think that it is really important to be careful about water use" was the item with the lowest mean (M=2.077). It can be said that this result

is related to the participants' belief that sensitivity regarding water consumption is necessary due to their awareness of water. An opposite level of awareness could have been formed in line with the participants' responses, which would support the idea that attention and care regarding water use are unnecessary.

Çizelge 5. Katılımcıların su tüketimi farkındalığına ilişkin ortalama ve standart sapma değerleri
Table 5. Mean and Standard Deviation Values Regarding the Participants' Awareness of Water Consumption

	Statements	Mean	Sd
awa_cons_1	There is a need for water conservation in Türkiye.	4.605	0.6632
awa_cons_2	The current water resources will not be sufficient to meet the country's needs.	4.272	0.8675
awa_cons_3	Citizens should be encouraged to conserve water.	4.705	0.5761
awa_cons_4	I think that water is a scarce resource that should be carefully protected.	4.575	0.7065
awa_cons_5	Water provides a habitat for wildlife and vegetation, and care should be taken to protect it.	4.720	0.6095
awa_fut_1	I am concerned about future water resources.	4.590	0.6712
awa_fut_2	I am concerned that households in Türkiye use too much water.	4.425	0.7691
awa_fut_3	I don't think that it is really important to be careful about water use.	2.077	1.5197
awa_fut_4	Nature will find a way to solve water supply problems before they become serious.	2.490	1.2728
awa_fut_5	If every household will not reduce the amount of water consumed, Türkiye will face serious environmental problems.	4.429	0.7794
awa_fut_6	Water conservation is necessary to protect natural resources.	4.621	0.6488
awa_local_1	Water demand in Türkiye is considerably higher than the available water resources.	4.080	0.8578
awa_local_2	Water shortage is a potentially major problem for Türkiye.	4.375	0.7726
awa_local_3	If water usage habits do not change, there will not be sufficient water to meet the country's future needs.	4.548	0.6464
awa_local_4	Water conservation is necessary to prevent the need for dams in the country.	4.192	0.9291

Table 6 presents the descriptive statistics regarding the participants' water consumption habits in the questions directed to them.

Concerning the participants' water conservation habits, "I turn off the tap while washing dishes." was the habit with the highest mean (M=4.268). The statement "I keep the tap closed while soaping my hands." was the habit with the second highest mean (M=3.977). The statement "I take a shower in less than five minutes." was the habit with the lowest mean (M=2.330). The results can be interpreted as the fact that awareness-raising activities and public service announcements made recently for water consumption, such as turning off the tap while washing hands, or washing dishes in dishwashers not with hands and hand washing, have been beneficial. Nevertheless, it can be stated that individuals have not yet fully understood the negative effects of not paying attention to shower time or the amount of water spent during the water heating period on water consumption.

Çizelge 6. Katılımcıların su tüketim alışkanlıklarına ilişkin ortalama ve standart sapma değerleri
Table 6. Mean and Standard Deviation Values for the Participants' Water Consumption Habits

	Statements	Mean	Sd
habits_1	I turn off the tap while washing dishes.	4.268	0.8115
habits_2	I take a shower in less than five minutes.	2.330	1.1924
habits_3	I water plants at night.	2.736	1.3655
habits_4	I use a single glass of water while brushing my teeth.	3.602	1.3338
habits_5	I keep the tap closed while soaping my hands.	3.977	1.1699
habits_6	I separate the running water in the bathroom until it becomes warm for different purposes (watering flowers, cleaning, toilet, etc.).	2.908	1.5112

Finally, the questions asked to the participants attempted to determine their perceptions of the steps to be taken by the state regarding water consumption. Accordingly, Table 7 contains the descriptive statistics regarding the participants' norms. The statements on the norms scale are actually a sum of individuals' assessments for the question of how much responsibility the state should have in the steps to be taken regarding water consumption.

Çizelge 7. Katılımcıların normlarına ilişkin ortalama ve standart sapma değerleri
Table 7. Mean and Standard Deviation Values for the Participants' Norms

	Statements	Mean	Sd
Nb_1	The state should enact laws prohibiting the establishment of industries around dams, rivers, lakes, and underground water resources.	4.517	0.7625
Nb_2	The state should impose fines on individuals who waste water.	4.057	1.0003
Nb_3	The state should impose higher taxes on industries/companies polluting water.	4.693	0.6947
Nb_4	The more water people consume, the more they have to pay for this consumption.	4.184	0.9750

According to the results, the participants thought that the state should impose higher taxes on industries and companies causing water pollution (M=4,693). Furthermore, the participants indicated that the state should enact laws and regulations prohibiting the establishment of such companies and industries, especially near ware resources (M=4.517).

Reliability and Validity Analyses of the Scales

To test the scales' validity and reliability, "exploratory factor analysis" (EFA) was conducted within the scope of the construct validity test, and Cronbach's alpha test was performed to determine internal consistency (Table 8).

Çizelge 8. Faktör yükleri, açıklanan ortalama varyans ve güvenilirlik katsayısı
Table 8. Factor Loadings, Average Variance Explained, and Reliability Coefficient

Scale Items	Factor Loadings
Awareness of water consumption (Awareness dimension_1)　　*Cronbach's Alpha= 0.854*	
Water shortage is a potentially major problem for Türkiye.	0.761
If water usage habits do not change, there will not be sufficient water to meet the country's future needs.	0.748
Water demand in Türkiye is considerably higher than the available water resources.	0.718
If every household will not reduce the amount of water consumed, Türkiye will face serious environmental problems.	0.716
I am concerned that households in Türkiye use too much water.	0.611
The current water resources will not be sufficient to meet the country's needs.	0.577
I am concerned about future water resources.	0.514
Water conservation is necessary to protect natural resources.	0.484
Attitude toward water consumption　　　　　　*Cronbach's Alpha=0.821*	
I would only try to conserve water during droughts.	0.733
I don't want to change my lifestyle to conserve more water.	0.719
Everyone should be able to use as much water as they want.	0.701
I don't plan to conserve water.	0.658
My comfort is more important than conserving a few liters of water.	0.657
I could conserve more water, but I don't see any reason to do so.	0.652
The only limit to how much water you can use should be how much you are ready to pay for it.	0.586
Awareness of water consumption (Awareness dimension_2)　*Cronbach's Alpha= 0.783*	
Water provides a habitat for wildlife and vegetation, and care should be taken to protect it.	0.783
Citizens should be encouraged to conserve water.	0.700
I think that water is a scarce resource that should be carefully protected.	0.583
Water consumption habits　　　　　　*Cronbach's Alpha=0.688*	
I use a single glass of water while brushing my teeth.	0.725
I take a shower in less than five minutes.	0.631
I separate the running water in the bathroom until it becomes warm for different purposes (watering flowers, cleaning, toilet, etc.).	0.610
I keep the tap closed while soaping my hands.	0.606
I turn off the tap while washing dishes.	0.589
I water plants at night.	0.562
Norms　　　　　　*Cronbach's Alpha=0.630*	
The state should impose higher taxes on industries/companies polluting water.	0.755
The state should enact laws prohibiting the establishment of industries around dams, rivers, lakes, and underground water resources.	0.709
The state should impose fines on individuals who waste water.	0.624

The EFA conducted on 35 questions using the principal components method and Varimax rotation revealed a 9-factor structure explaining 59% of the total variance. Upon examining the factor loadings, the analysis determined 8 problematic items. Six questions were eliminated one by one due to loading on different factors, cross-loading, loading with factor loadings less than 0.40, and loading on a separate factor alone, and EFA was repeated. According to the analysis results, the calculated KMO value of 0.863 indicates that the data set is adequate for exploratory factor analysis. The chi-square value of 2422.251, the degree of freedom of 351, and the significance level of 0.000 reported in Bartlett's test of sphericity results show that the data set is suitable for applying exploratory factor analysis. The repeated factor analysis revealed a 5-factor structure explaining 53% of the total variance. Cronbach's alpha coefficients of each factor were calculated after the factor analysis; accordingly, a factor consisting of two items with Cronbach's alpha coefficient below 0.50 was identified. After deleting these items one by one due to a low reliability level, the coefficient calculations

related to the final factor analysis and reliability analysis are given in Table 8. The minimum reliability criterion is set at 0.60 or higher. A Cronbach's alpha coefficient between 0.61 and 0.80 indicates that the measurement tool has moderate reliability, while a coefficient between 0.81 and 1.00 signifies high reliability (Kılıç, 2016: 47-48). Therefore, the scales used in this study are considered reliable. After the validity and reliability tests, the means of the variables included in the factor analysis and to be used in all analyses were taken to obtain composite scores. The independent sample t-test was conducted to determine whether individuals' attitudes, awareness, and water consumption habits differed by generation and gender. First, the normality assumption was evaluated by calculating the kurtosis and skewness values of each dimension (See Table 9). In addition to the criterion that the kurtosis and skewness values should be between +1 and -1 for the normality assumption, Jondeau and Rockinger (2003) indicated that the values should vary between +3 and -3 to be suitable for the normality assumption. Accordingly, except for the awareness_2 dimension related to water conservation, the awareness_1 dimension related to future and local concerns and the water consumption habits dimension have values in the range of +1 to -1, and the other dimensions have values in the range of +3 to -3. Accordingly, the independent sample t-test, one of the parametric tests, will be conducted in the analysis of variables meeting the normal distribution condition, and the Mann-Whitney U will be performed for awareness_2, determined not to be suitable for normal distribution.

Çizelge 9. Değişkenlerin basıklık ve çarpıklık değerleri
Table 9. Kurtosis and Skewness Coefficients of the Variables

	Awareness_1		Attitude		Awareness_2		water consumption habits		Norms		Do you think you are making an effort to save water?		How often do you ensure that you do not waste water at home?		How important is water conservation to you?		I am very keen on conserving water.	
	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
Skewness	-0.77	0.15	1.45	0.15	-2.27	0.15	-0.15	0.15	-1.42	0.15	1.54	0.15	-0.67	0.15	-0.64	0.15	-1.55	0.15
Kurtosis	-0.10	0.3	3.05	0.3	7.64	0.3	-0.45	0.3	3.24	0.3	0.39	0.3	0.56	0.3	-0.12	0.3	2.68	0.3

Evaluation of individuals' attitudes, awareness, and consumption habits by generation

At the first stage, to respond to the research questions, awareness, attitudes, and habits regarding water consumption, and norms including perceptions of the steps to be taken by the state concerning water consumption were investigated based on generations. In our study, in the classification of generations, individuals born between 1980-1999 were named Generation Y, and individuals born after 2000 were named Generation Z. Table 10 shows the independent sample t-test analysis results for the differences related to all these variables.

Çizelge 10. Jenerasyonlara ilişkin bağımsız örneklem t-test sonuçları
Table 10. Independent Sample T-test Results Regarding Generations

	Generation Z		Generation Y				
	Mean	Std. Deviation	Mean	Std. Deviation	df	t	p
Attitude	1.9325	0.81297	1.6533	0.58581	247.308	3.207	0.002
Awareness_1	4.4061	0.52153	4.4375	0.55072	259	-0.460	0.646
Habit	3.1838	0.76457	3.5087	0.77057	259	-3.300	0.001
Norms	4.3394	0.69109	4.5660	0.47417	251.978	-3.131	0.002
How often do you ensure that you do not waste water at home?	3.75	0.860	4.09	0.809	259	-3.224	0.001
How important is water conservation to you?	4.19	0.754	4.32	0.703	259	-1.430	0.154
I am very keen on conserving water.	4.20	0.925	4.26	0.965	259	-.501	0.617

The results showed that the participants' attitudes toward water consumption, water consumption habits, and norms differed significantly by generation. Accordingly, hypotheses H1, H3, and H4 were supported. Accordingly, the participants' attitudes toward water consumption differed significantly between Generation Z (M=1.9325, sd=0.81297)

and Generation Y (M= 1.6533; sd=0.58581), (t-value= 3.207; p<.002). Upon evaluating the participants' awareness levels by generation, no significant difference was identified between Generation Z and Generation Y (p<0.646). However, there were significant differences in the participants' water consumption habits between generations. Accordingly, H2 could not be supported. In this context, it can be said Generation Y (M= 3.5087, sd=0.77057) tends to conserve more in their water consumption habits at home than Generation Z (M=3.1838; sd=0.76457), (t-value= -3.300; p<0.001). In support of these results, the frequency of paying attention to the waste of water at home differed between Generation Z (M=3.75, sd=0.860) and Generation Y (M=4.09; sd=0.809), (t-value = -3.224; p<0.001). These results showed that the frequency of paying attention to the waste of water in households by Generation Y was more intense compared to Generation Z. In this sense, it can be concluded that the behaviors of Generation Y regarding water consumption are more in the direction of water conservation. Consequently, the H5 hypothesis was supported. It was also tested whether the norms differed by generation. Accordingly, Generation Y (M=4.5660; sd=0.47417) and Generation Z (M=4.3394; sd=0.69109) (t-value = -3.131; p<0.002) were found to have different norms containing the perceptions of the steps to be taken by the state concerning water consumption. Hence, it can be said that Generation Y thinks that the state should increase its effectiveness and take more responsibility in controlling water consumption. Finally, the importance of water conservation (p<0.154) and the willingness to conserve water (p<0.617) did not differ significantly between generations. Accordingly, H6 and H7 hypotheses could not be supported.

In the second stage, the study aimed to determine whether there were differences between women and men in terms of their attitudes toward water consumption, awareness, consumption habits, social norms, and their tendencies and preferences related to water conservation behaviors. The analysis results in Table 11 demonstrate that the participants' attitudes toward water consumption and water consumption habits in the household differed between women and men. Accordingly, H8 and H10 hypotheses were supported. In line with this, attitudes differed significantly between women (M=1.7065, sd=0.67507) and men (M=2.0451, sd=0.82257) (t-value=-3.408, p<0.001). Women's attitudes toward water consumption were found to be lower than those of men. However, as specified in the section where the means of the statements related to the attitude variable were presented in the descriptive statistics section, the attitude questions used in the current study included both lifestyle and economic motives. Therefore, they include statements assessing how much participants regard water-conservation steps as an intervention in their lifestyle, how challenging they find them, and the economic motivations prompting them to conserve. Hence the low mean here indicates that women have more positive assessments about water conservation than men and are more prone to behavior.

Çizelge 11. Cinsiyete ilişkin bağımsız örneklem t –testi sonuçları
Table 11. Independent Sample T-test Results Regarding Gender

	Female		Male				
	Mean	Std. Deviation	Mean	Std. Deviation	df	t	p
Attitude	1.7065	0.67507	2.0451	0.82257	166.350	-3.408	0.001
Awareness_1	4.4383	0.52001	4.3816	0.55225	259	0.828	0.408
Habit	3.4217	0.77257	3.0965	0.75660	259	3.296	0.001
Norms	4.4337	0.59001	4.4035	0.69428	259	0.373	0.709
How often do you ensure that you do not waste water at home?	3.95	0.833	3.75	0.887	259	1.808	0.072
How important is water conservation to you?	4.28	0.695	4.16	0.803	259	1.323	0.187

Women's water consumption habits at home (M=3.4217; sd=0.77257) differed more significantly compared to men (M=3.0965; sd=0.75660) (t-value=3.296; p<0.001). Concerning behavioral tendencies, no significant difference was identified between female and male participants in terms of the frequency of wasting (p<0.072), importance attached to water conservation (p<0.187), and willingness to conserve water (p<0.128). For this reason, H9, H11, H12, and H13 hypotheses were not supported.

The Mann-Whitney U test was performed to determine whether the participants' assessments regarding the awareness_2 dimension differed by generation and gender. Accordingly, Table 12 summarizes the results. The results showed that the awareness_2 dimension did not differ significantly by generation (p=0.05) and participants' gender (p=0.051). Accordingly, the H14 hypothesis was not supported. In line with this, no significant difference was detected in the awareness_2 dimension between Generations Z and Y and between female and male participants. Therefore, the H15 hypothesis was not supported.

Çizelge 12. Mann-Whitney U Testi sonuçları
Table 12. Mann-Whitney U Test Results

	Y Generation		Z Generation					
	N	Mean rank	N	Mean rank	Mann-Whitney U	Stand. Error	Stand. Test statistics	p
Awareness_2	96	141.26	165	125.03	8.904.500	521.216	1.889	0.05
	Male		Female					
Awareness_2	95	120.32	166	137.11	6.870.500	520.063	-1.951	0.051

Furthermore, the study examined whether the participants' assessments of water shortage in Türkiye and the world and their efforts to conserve water differed by generation and gender. When all variables were categorical, the chi-square test, one of the non-parametric tests, was applied instead of comparisons focusing on means (Field, 2009). Table 13 summarizes the analysis results. The results indicate that the effort spent by the participants on water conservation differed by gender ($\chi2$=4.362; p=0.037). Thus, female participants exerted more effort on water conservation than males. This finding may result from women feeling more responsible for conserving, particularly in Türkiye, one of the countries where women are thought to have more roles and influence in many water consumption-related parameters. However, no significant relationship was identified between the other variables and generation and gender.

Çizelge 13. Ki-kare Testi Sonuçları
Table 13. Chi-square Test Results

	Generation		Pearson Chi-square	df	p	Gender		Pearson Chi-square	df	p
	Z	Y				Female	Male			
Do you think there is a water shortage in our country?										
Yes	80.6%	83.3%	.301[a]	1	0.583	83.7%	77.9%	1.373[a]	1	0.241
No	19.4%	16.7%				16.3%	22.1%			
Do you think there is a water shortage in the world?										
Yes	87.9%	89.6%	.173[a]	1	0.677	90.4%	85.3%	1.544[a]	1	0.214
No	12.1%	10.4%				9.6%	14.7%			
Do you think you are making an effort to conserve water?										
Yes	77.6%	85.4%	2.373[a]	1	0.123	84.3%	73.7%	4.362[a]	1	0.037
No	63.2%	36.8%				15.7%	26.3%			

Discussion

Water, one of the basic life needs, is used for diverse purposes, especially production and consumption (Zehnder *et al.*, 2003: 1-2). Particularly in recent years, understanding that water is a limited resource and its impact on the future becoming clear have drawn attention to the tendency to conserve water and raise awareness of water consumption. On the contrary, in addition to the data presented within the scope of the Earth Overshoot Day calculations (WWF Türkiye, 2024)[2], increasing pollution, growing population, and an increase in water consumption reveal that water is consumed faster than it renews itself. In this sense, problems related to water consumption and water supply have become one of the major environmental problems that should be managed at the global level (Corral-Verdugo & Frías-Armenta, 2006: 407; Zehnder *et al.*, 2003: 1-2). On the other hand, the increase in drought and excessive precipitation due to the increased impacts of climate change is expected to adversely affect the usability of existing resources. Türkiye is one of the countries expected to be affected by the foreseen negativities at this point (Milano et al., 2013: 510). Human behavior constitutes the basis for problems, such as water shortage, water problems, global warming, air pollution, etc., threatening environmental sustainability (Steg & Vlek, 2009: 309). In this sense, changing human behavior is a significant step in eliminating these problems, and the need to determine the factors that may impact behavior or the sources of behavioral differences has come to the forefront. Following the leading countries, Türkiye supports the plans made within the scope of combating global climate change in line with the protocols signed at the international level (the Kyoto Protocol) by trying to control water consumption for different purposes (ÇŞB, n.d.). In this

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[2] According to the 2024 Global Footprint Network calculations, Earth Overshoot Day 2024 started as of August 1.

sense, steps are taken to raise individuals' awareness of water consumption, prevent excessive consumption, and provide the efficient use of existing resources. The fact that studies on water consumption, waste of water, and water scarcity find a full response in society, in other words, ensure behavioral change among individuals, is not directly proportional to the awareness-raising campaigns conducted. Therefore, understanding individuals with different consumption tendencies in society, their thoughts, attitudes, and behavioral tendencies can be an essential step in ensuring and managing this behavioral change movement. The present study sought to examine whether individuals' attitudes toward water conservation and consumption, their awareness, consumption habits, and social norms differed between Generations Z and Y, as well as between women and men in our country. In the study, descriptive statistics were created first by assessing the participants' responses to these scales. The results related to this were evaluated. After the factor analysis performed at the second stage, differences in attitudes, awareness, water consumption habits, and norms whose composite scores were created by taking their means were examined by generation and gender. According to the results, the behavioral tendencies of Generations Y and Z generally differ from each other.

In line with the research findings, most participants thought that there was a water shortage in our country and our country would experience water-related problems in the future. Likewise, they also thought that water shortage would continue on a global scale. On the contrary, the majority of the participants thought that they exerted efforts to conserve water. Hence it is understood that the participants were generally aware of the water shortage in Türkiye and globally, they foresaw that there might be problems and threats related to this in the future, and they made efforts to conserve water. On the other hand, when compared with the results of studies demonstrating the awareness of water shortage in Türkiye, it can be said that awareness of water shortage has increased in comparison with previous years. The rate indicating that 81.6% of the participants in our study think that there is a water shortage in Türkiye is parallel to the studies by Camur et al. (2020: 175-177) and Gezer and Erdem (2018: 120). The high rate in our study may be related to the fact that the current research was performed in a dry winter season with little rainfall and a year with low dam levels (See Robins, 2023). On the contrary, awareness-raising activities of the state and relevant institutions concerning water consumption and the activities carried out by brands in this regard may have caused this rate to increase.

The participants' attitudes, awareness, water consumption habits, and assessments regarding norms were also addressed. According to the research findings, the participants thought that they were responsible for water conservation. However, it is understood that approximately 40% of the participants thought that using less water would adversely affect their lifestyle. The statement "I don't plan to conserve water" was the item with the lowest mean among the statements assessing the participants' attitudes. Therefore, upon evaluating the findings, it is understood that although the participants approved of water conservation, they considered that water conservation had adverse effects on lifestyle, contrary to the findings obtained by Simsek (2023: 1286). Upon evaluating the statements addressing the participants' awareness of water consumption, it can be concluded that they generally had high awareness levels. In particular, it can be said that the participants regarded water as a very valuable and indispensable resource and thought it was necessary to make incentives for water conservation. In this sense, in line with the responses to the questions asked initially and other studies conducted in Türkiye (Gezer & Erdem, 2018: 120; Simsek, 2023: 1290-1295), it is concluded that the awareness of water consumption and conservation has been raised both in general and at the country level. Considering the findings on the participants' water consumption habits, it is seen that they adopted measures for water conservation by "keeping the tap closed while washing dishes and hands," which is also consistent with studies in the literature (Gilg & Barr, 2006: 405; Keramitsoglou & Tsagarakis, 2011: 832-842). Finally, when individuals' assessments regarding the state's responsibilities in the steps to be taken concerning water consumption are considered, the participants think that the state should set limits and restrictions and make regulations regarding water consumption.

On the other hand, the research findings showed that the participants' attitudes toward water consumption differed between Generations Y and Z. The means were low because the statements on the attitude scale in the study include individuals' assessments regarding water consumption, especially when it comes to giving up on their comfort and convenience. At this point, it is understood that both generations made an effort to give up their comfort in terms of resource consumption. Nevertheless, it can be stated that Generation Y is more devoted in this respect. The aforementioned result is similar to the study by Mammadl (2023: 12-14), revealing differences in sustainable consumption between generations in Azerbaijan and demonstrating that the attitudes of Generation Y toward the waste of natural resources are more prominent. However, it was determined that the participants' awareness levels did not differ between Generations Y and Z. Additionally, the awareness_2 factor, addressing general awareness of water, did not differ by generation and gender. The lack of gender and generational differences in awareness regarding water consumption may be due to the increased level of societal awareness driven by global environmental movements, media, and digitalization (Chung *et al*., 2020: 262; Huang, 2016: 2210-2212; Robelia *et al*., 2011: 570-571). Awareness of water consumption has become a global issue (Corral-Verdugo & Frías-Armenta, 2006: 407), and educational and awareness-raising efforts aimed at protecting water resources and promoting sustainable use target all individuals in society indiscriminately. This may have led individuals to develop similar levels of awareness, transcending gender and generational differences. Furthermore, digital and social media platforms have played a significant role in rapidly

disseminating information about water-related issues and solutions. In this context, Generation Y, which easily adapts to technology and the use of technological tools, and Generation Z, which was born into a digital world, can access information about environmentally friendly activities and issues and follow similar content. This may have resulted in both generations demonstrating similar levels of awareness regarding water consumption. In addition, studies show that increased knowledge and awareness have little effect on individuals' behavior (McKenzie-Mohr, 2011: 2-5). Accordingly, the results indicate that it may be helpful to examine different factors that may be effective in forming behavioral differences.

It can be stated that Generation Y has more water conservation habits than Generation Z. In other words, Generation Y adopts more behaviors to conserve water and reduce water consumption than Generation Z. Furthermore, in line with these findings, it was concluded that the frequency of paying attention to the waste of water by Generation Y was higher and more consistent than that of Generation Z. The above-mentioned results are similar to the results obtained by Clark and Finley (2007: 621), Gilg and Barr, (2006: 412-413), Gregory and Di Leo (2003: 1282-1287), and Lyman (1992: 2166) and demonstrate that especially older individuals tend to conserve more and consume less water. In addition, the study by Dang et al. (2024: 9-10) shows differing perceptions and behaviors regarding household water consumption across various age groups. Results underscore the importance of effectively developing tailored strategies to promote water conservation among these groups.

The data obtained indicate that Generation Y thinks that the state should take measures to conserve water, make regulations restricting water consumption that causes the waste of water, and penalize activities threatening water resources more than Generation Z.

In addition to all these findings, the research results showed that the attitudes of women and men toward water conservation and the habits they adopted regarding water conservation differed. The results indicate that women regard water conservation as an activity that will not adversely change their lifestyles more than men, that they consider water conservation necessary, and that they believe in the necessity of careful water use independently of time. This finding was supported by the fact that women have more water conservation habits within the household. Additionally, women exert more effort to conserve water than men. The research results are similar to the results of the studies by Tong et al. (2017) showing that women exhibit more water conservation behaviors, Espejo et al. (2021: 6-7) revealing that women have more positive assessments, and Stern et al. (1993: 322) and Zelezny et al. (2002: 454-455) supporting that women are engaged in more pro-environmental activities. These results can be interpreted through gender socialization theory, which suggests that women are more responsible for acting more environmentally friendly than men. The basis of this difference lies in the different socialization processes that shape each gender. Accordingly, women's greater sensitivity to the feelings and needs of those around them may make women more sensitive to environmental issues than men (Granda *et al.*, 2024: 49-50; Palamuleni *et al.*,2022: 2). In Turkey, social perceptions of women's roles and responsibilities overlap with these different socialization processes. Considering that housework is predominantly done by women (TÜİK, 2022), the reason why women tend to save more water than men may be that individuals see efforts regarding water consumption and saving as one of their domestic responsibilities.

Conclusion

The results of the present study revealed differences between Generations Y and Z in individuals' attitudes toward water conservation, water consumption habits, and the frequency of paying attention to the waste of water. It also revealed differences between men and women in attitudes, water consumption habits, and efforts to conserve water. These differences are particularly important in terms of being used by relevant parties to develop public policies concerning water conservation and more careful use of water in the future and to promote and disseminate pro-environmental products because we know that just as the needs, desires, and expectations of individuals from different generations differ from each other, the adoption of environmental values, changing existing habits, and acquiring new behaviors will also differ. At this point, understanding different groups will be one of the most essential steps in designing behaviors toward this. Nevertheless, research has demonstrated that environmental calls can lead to behavioral changes in the short term (e.g. Tijs *et al.*, 2017: 75). However, it should be taken into account that activating environmental values and being compatible with people's value priorities will motivate the repetition of behavior to ensure the permanence of these behavioral changes. At this point, in addition to environmental calls, it is thought that it will be beneficial to know different generations' characteristics in building and prioritizing this value perception in society and encouraging behavior within the framework of a social marketing plan. According to Lee and Kotler (2019), social marketing is a systematic process that begins with analyzing the current situation and identifying the target audience. This process encompasses defining behavioral targets, understanding the factors that motivate or inhibit behavior, positioning, designing the social marketing intervention mix, monitoring and evaluation, and budgeting and implementation. The primary focus of these practices is to change behaviors rather than simply raising awareness or increasing knowledge. According to the social marketing plan, it is possible to segment and divide the audience whose behavior change is targeted. Consequently, different messages can be sent according to the different attitudes, awareness, and behaviors of the targeted audience, and the behavior can be maintained accordingly. The study offers

some important insights into understanding the target audience's characteristics. In this regard, a social marketing campaign with government agencies, non-governmental organizations, businesses, and key influencers can effectively transform household behaviors. For instance, the continuity of awareness-raising activities on water consumption can be ensured, and the scope and prevalence of training activities can be increased. Moreover, various incentive programs can be developed to reward individuals for adopting water savings habits and behaviors in conjunction with partnerships with influencers; social media can be leveraged to promote and communicate these incentive and education programs. The strength and uniqueness of this systematic approach lie in creating communication interventions tailored to individuals' diverse attitudes, intentions, and behaviors, addressing specific factors that can either motivate or deter behavior across different segments. Therefore, integrating water policies with social marketing campaigns will enhance the potential for effective results in the future. For instance, information obtained according to generations and socio-demographic differences can be utilized effectively in establishing communication and carrying out a practice that will nourish their positive attitudes or eliminate their negative beliefs and prejudices (Lee & Kotler, 2019: 304-334).

This study has several limitations. The study's primary limitation is a potential weakness of sample representativeness, as a significant portion of the participants were women (63.6%) and students (70.5%). Secondly, the study focuses exclusively on Generations Y and Z. Thirdly, it does not include dimensions that evaluate individuals' water-saving behaviors and environmentally friendly activities. Despite these limitations, the study enhances our understanding of water consumption by shedding light on the differences in attitudes and habits regarding water use and awareness of water conservation. Further research is needed to determine the importance of the factors included in this study and those yet to be discovered to deepen the existing knowledge of individuals' water consumption habits, attitudes, and awareness levels. In this context, future studies should consider adding convenience orientation, social norms, perceived effectiveness of water conservation efforts, and beliefs in law efficacy to enrich results. It would be highly recommended for future studies to test the current assessments on large sample sizes, including individuals of varying ages, professions, incomes, and educational levels. Research based on these recommendations may help to design targeted interventions and develop more effective strategies to promote sustainable water consumption and conservation practices.

The report by Deloitte (2022) revealed that Generations Z and Y believe that the activities of companies and employers are effective in combating climate change and that they expect more direct initiatives from the actors in the sector in this sense (e.g. banning single-use plastics). At this point, evaluations such as how companies' pro-environmental activities toward sustainability are perceived by generations and the credibility of these activities can be added to future research. This is thought to be valuable in terms of guiding the policies and regulations to be established, especially in societies believing that the state has considerable responsibility in carrying out pro-environmental activities such as water conservation.

Katkı Oranları ve Çıkar Çatışması / Contribution Rates and Conflicts of Interest

Etik Beyan	Bu çalışmanın hazırlanma sürecinde bilimsel ve etik ilkelere uyulduğu ve yararlanılan tüm çalışmaların kaynakçada belirtildiği beyan olunur.	**Ethical Statement**	It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited
Yazar Katkıları	Çalışmanın Tasarlanması: CGK (%100) Veri Toplanması: CGK (%100) Veri Analizi: CGK (%100) Makalenin Yazımı: CGK (%100) Makale Gönderimi ve Revizyonu: CGK (%100)	**Author Contributions**	Research Design: CGK (%100) Data Collection: CGK (%100) Data Analysis: CGK (%100) Writing the Article: CGK (%100) Article Submission and Revision: CGK (%100)
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Çıkar Çatışması	Çıkar çatışması beyan edilmemiştir.	**Conflicts of Interest**	The author(s) has no conflict of interest to declare.
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Telif Hakkı & Lisans	Yazarlar dergide yayınlanan çalışmalarının telif hakkına sahiptirler ve çalışmaları **CC BY-NC 4.0** lisansı altında yayımlanmaktadır.	**Copyright & License**	Authors publishing with the journal retain the copyright to their work licensed under the **CC BY-NC 4.0.**
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References

Ajzen, I. (1991). The Theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50(2),179-211.* https://doi.org/10.1016/0749-5978(91)90020-T

Akbulut, Ö., & Capık, C. (2022). Çok değişkenli istatistiksel analizler için örneklem büyüklüğü. *Journal of Nursology*, 25(2), 111-116. https://doi.org/10.5152/JANHS.2022.970637

Akpinar, M. G., Gul, M., Ceylan, R. F., & Gulcan, S. (2018). Evaluation of the factors affecting water-saving attitudes of urban life on the verge of the next century: A case study of the Mediterranean region of Turkey. *Journal of Water, Sanitation and hygiene for Development*, 8(2), 340-348.

Alliance for Water Efficiency. Glossary of Common Water Related Terms, Abbreviations, and Definitions 2010. http://www.allianceforwatere_ciency.org/Glossary.aspx#Def_

Altunısık, R., Coskun, R., Bayraktaroğlu, S., & Yıldırım, E. (2012). *Sosyal Bilimlerde Araştırma Yöntemleri*. Sakarya: Sakarya Yayıncılık.

Aprile, M. C., & Fiorillo, D. (2017). Water conservation behavior and environmental concerns: Evidence from a representative sample of Italian individuals. *Journal of Cleaner Production,* 159, 119-129. https://doi.org/10.1016/j.jclepro.2017.05.036

Arbués, F., Garcia-Valiñas, M. Á., & Martinez-Espiñeira, R. (2003). Estimation of residential water demand: a state-of-the-art review. *The Journal of Socio-Economics*, 32(1), 81-102. https://doi.org/10.1016/S1053-5357(03)00005-2

Attari, S. Z. (2014). Perceptions of water use. Proceedings of the National Academy of Sciences, 111(14), 5129-5134. https://doi.org/10.1073/pnas.1316402111

Barnett, M. J., Jackson-Smith, D., Endter-Wada, J., & Haeffner, M. (2020). A multilevel analysis of the drivers of household water consumption in a semi-arid region. *Science of the Total Environment*, 712, 136489. https://doi.org/10.1016/j.scitotenv.2019.136489

Carbon Disclosure Project (CDP), Water, https://www.cdp.net/en/water?cid=309699438&adgpid=50349551246&itemid=&targid=kwd298029027028&mt=b&loc= 9198920&ntwk=g&dev=c&dmod=&adp=&gad_source=1&gclid=CjwKCAjw1920BhA3EiwAJT3lSZffB5vdqBvlNn44p9BiOp7N s0a6AZObV9DmGZmb6k5jFjES6V6sCxoCwKcQAvD_BwE (July, 2024).

Chung, C. H., Chiu, D. K., Ho, K. K., & Au, C. H. (2020). Applying social media to environmental education: is it more impactful than traditional media?. *Information Discovery and Delivery*, 48(4), 255-266. https://doi.org/10.1108/idd-04-2020-0047

Clark, W. A., & Finley, J. C. (2007). Determinants of water conservation intention in Blagoevgrad, Bulgaria. *Society and natural resources*, 20(7), 613-627. https://doi.org/10.1080/08941920701216552

Corral-Verdugo, V., Bechtel, R. B., & Fraijo-Sing, B. (2003). Environmental beliefs and water conservation: An empirical study. *Journal of Environmental Psychology*, 23(3), 247-257. https://doi.org/10.1016/S0272-4944(02)00086-5

Corral-Verdugo, V., & Frías-Armenta, M. (2006). Personal normative beliefs, antisocial behavior, and residential water conservation. *Environment and Behavior*, 38(3), 406-421. https://doi.org/10.1177/0013916505282272

Camur, D., Konyalıoğlu, F. S., Ketrez, G., Güneş, İ. S., & Hasde, M. (2020). Bir üniversitesinin bazı fakültelerinde okuyan öğrencilerin su tüketimi konusundaki bilgi, tutum ve davranışları. *Türk Hijyen ve Deneysel Biyoloji Dergisi*, 77(EK-4), 165-178. https://doi.org/ 10.5505/TurkHijyen.2020.97992

Çevre Şehircilik Bakanlığı (ty) chrome-extension://efaidnb mnnnibpcajpcglclefindmkaj/https://webdosya.csb.gov.tr/ db/bolu/icerikler/su-201802220831 49.pdf

Dang, X., Li, A., Fan, L., & Cui, J. (2024). Resident water conservation behaviors among different age groups in rural areas of the Weibei arid belt, China. *Journal of Cleaner Production*, 456, 142389. https://doi.org/10.1016/j.jclepro.2024.142389

Dean, A. J., Kneebone, S., Tull, F., Lauren, N., & Smith, L. D. (2021). 'Stickiness' of water-saving behaviours: What factors influence whether behaviours are maintained or given up?. *Resources, Conservation and Recycling*, 169, 105531. https://doi.org/10.1016/j.resconrec.2021.105531

Deloitte. (2022). Striving for balance, advocating for change: The Deloitte Global 2022 Gen Z & Millennial survey.

Devlet Su İşleri (DSİ) (2019). Toprak Su kaynakları, Available online: https://dsi.gov.tr/Sayfa/Detay/754 (accessed on 17 Jul 2024).

Ding, Z., Jiang, X., Liu, Z., Long, R., Xu, Z., & Cao, Q. (2018). Factors affecting low-carbon consumption behavior of urban residents: A comprehensive review. *Resources, Conservation and Recycling*, 132, 3-15. https://doi.org/10.1016/j.resconrec.2018.01.013

Dogan, N., & Başökçu, T. O. (2010). İstatistik tutum ölçeği için uygulanan faktör analizi ve aşamalı kümeleme analizi sonuçlarının karşılaştırılması. *Journal of Measurement and Evaluation in Education and Psychology*, 1(2), 65-71.

Dursun, İ. (2019). Türkiye'de plastik poşetlerin ücretlendirilmesi uygulamasına yönelik tüketici tepkilerinin belirlenmesi. *İşletme Araştırmaları Dergisi*, 11(1), 427-446. https://doi.org/10.20491/isarder.2019.609

Espejo, J. M. A., Ontaneda, W. I. T., Padilla, N. I. A., & Ochoa-Moreno, W. S. (2021). Water saving practices conditioned by socioeconomic factors: A case study of Ecuadorian households. *Journal of Environmental Management*, 293, 112818. https://doi.org/10.1016/j.jenvman.2021.112818

Field, A. (2009). *Discovering Statistics Using IBM SPSS Statistics*. Sage.

Fielding, K.S., Thompson, A., Louis, W.R., Warren, C., 2010. Environmental Sustainability: Understanding the Attitudes and Behaviour of Australian Households, AHURI Final Report.

Fielding, K. S., Russell, S., Spinks, A., & Mankad, A. (2012). Determinants of household water conservation: The role of demographic, infrastructure, behavior, and psychosocial variables. *Water Resources Research*, 48(10). https://doi.org/10.1029/2012WR012398, 2012

Gao, L., Wang, S., Li, J., & Li, H. (2017). Application of the extended theory of planned behavior to understand individual's energy saving behavior in workplaces. *Resources, Conservation and Recycling*, 127, 107-113. https://doi.org/10.1016/j.resconrec.2017.08.030

Gezer, A., & Erdem, A. (2018). Su stresi, su kıtlığı ve su tasarrufu hakkında halkın farkındalığının belirlenmesi: Akdeniz Üniversitesi örnek çalışması, *Doğal Afetler ve Çevre Dergisi*, 4(2). https://doi.org/10.21324/dacd.408379

Gilg, A., & Barr, S. (2006). Behavioural attitudes towards water saving? Evidence from a study of environmental actions. *Ecological Economics*, 57(3), 400-414. https://doi.org/10.1016/j. ecolecon.2005.04.010.

Gkargkavouzi, A., Halkos, G., & Matsiori, S. (2019). Environmental behavior in a private-sphere context: Integrating theories of planned behavior and value belief norm, self-identity and habit. *Resources, Conservation and Recycling*, 148, 145-156. https://doi.org/10.1016/j.resconrec.2019.01.039

Granda, L., Moya-Fernández, P. J., Soriano-Miras, R. M., & González-Gómez, F. (2024). Pro-environmental behaviour in household water use. A gender perspective. *Sustainable Water Resources Management*, 10(2), 49. https://doi.org/10.1007/s40899-023-01027-6

Gregory, G. D., & Leo, M. D. (2003). Repeated behavior and environmental psychology: the role of personal involvement and habit formation in explaining water consumption 1. *Journal of Applied Social Psychology*, 33(6), 1261-1296. https://doi.org/10.1111/j.1559-1816.2003.tb01949.x

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (Global edition. Upper Saddle River, NJ: Prentice Hall.

Ham, M., Mrčela, D., & Horvat, M. (2016). Insights for measuring environmental awareness. Ekonomski vjesnik: Review of Contemporary Entrepreneurship, Business, and Economic Issues, 29(1), 159-176. Retrieved from https://hrcak.srce.hr/ojs/index.php/ekonomski-vjesnik/ article/view/3661

Huang, H. (2016). Media use, environmental beliefs, self-efficacy, and pro-environmental behavior. *Journal of Business Research*, 69(6), 2206-2212. https://doi.org/10.1016/j.jbusres.2015.12.031

Jiang, X., Ding, Z., & Liu, R. (2019). Can Chinese residential low-carbon consumption behavior intention be better explained? The role of cultural values. *Natural Hazards*, 95, 155-171. https://doi.org/10.1007/s11069-018-3461-2

Jondeau E., Rockinger M. (2003). Conditional volatility, skewness, and kurtosis: existence, persistence, and comovements. *Journal of Economic Dynamics & Control*, 27, 1699 – 1737. https://doi.org/10.1016/S0165-1889(02)00079-9

Jorgensen, B., Graymore, M., & O'Toole, K. (2009). Household water use behavior: An integrated model. Journal of *Environmental Management*, 91(1), 227-236. https://doi.org/10.1016/j.jenvman.2009.08.009

Kang, J., Grable, K., Hustvedt, G., & Ahn, M. (2017). Sustainable water consumption: The perspective of Hispanic consumers. *Journal of Environmental Psychology*, 50, 94-103. https://doi.org/10.1016/j.jenvp.2017.02.005

Keramitsoglou, K. M., & Tsagarakis, K. P. (2011). Raising effective awareness for domestic water saving: evidence from an environmental educational programme in Greece. *Water Policy*, 13(6), 828-844. https://doi.org/10.2166/wp.2011.103

Kılıç, S. (2016). Cronbach'ın alfa güvenirlik katsayısı. *Journal of Mood Disorders*, 6(1), 47-48. https://doi.org/10.5455/jmood.20160307122823

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental education research*, 8(3), 239-260. https://doi.org/10.1080/13504620220145401

Kurz, T., Donaghue, N., & Walker, I. (2005). Utilizing a Social-Ecological Framework to Promote Water and Energy Conservation: A Field Experiment 1. *Journal of Applied Social Psychology*, 35(6),1281-1300. https://doi.org/10.1111/j.1559-1816.2005.tb02171.x

Landon, A. C., Kyle, G. T., & Kaiser, R. A. (2017). An augmented norm activation model: The case of residential outdoor water use. *Society & Natural Resources*, 30(8), 903-918. https://doi.org/10.1080/08941920.2016.1239294

Lee, N. R., & Kotler, P. (2019*). Social Marketing: Behavior change for social good*. Sage Publications.

Lyman, R. A. (1992). Peak and off-peak residential water demand. *Water Resources Research*, 28(9), 2159-2167. https://doi.org/10.1029/92WR01082

Mammadli, M. (2023). Factors driving sustainable consumption in Azerbaijan: Comparison of generation X, generation Y and generation Z. *Sustainability*, 15(20), 15159. https://doi.org/10.3390/su152015159

Martinho, G., Balaia, N., & Pires, A. (2017). The Portuguese plastic carrier bag tax: The effects on consumers' behavior. *Waste management*, 61, 3-12. https://doi.org/10.1016/j.wasman.2017.01.023

McKenzie-Mohr, D. (2011). *Fostering Sustainable Behavior: An Introduction to Community-based Social Marketing*. New society publishers.

Milano, M., Ruelland, D., Fernandez, S., Dezetter, A., Fabre, J., Servat, E., ... & Thivet, G. (2013). Current state of Mediterranean water resources and future trends under climatic and anthropogenic changes. *Hydrological Sciences Journal*, 58(3), 498-518. https://doi.org/10.1080/02626667.2013.774458

Mohamed, H. I., Ali, N. A., & Abdel-Hafez, E. A. (2024). Egyptians Awareness towards Domestic Water Conservation and Reuse. *Desalination and Water Treatment*, 100422. https://doi.org/10.1016/j.dwt.2024.100422

Muluk, Ç. B., Kurt, B., Turak, A., Türker, A., Çalışkan, M. A., Balkız, Ö., ... & Zeydanlı, U. (2013). *Türkiye'de suyun durumu ve su yönetiminde yeni yaklaşımlar: Çevresel perspektif*. İş Dünyası ve Sürdürülebilir Kalkınma Derneği-Doğa Koruma Merkezi, 8(9).

Muñoz, B., Monzon, A., & López, E. (2016). Transition to a cyclable city: Latent variables affecting bicycle commuting. *Transportation Research Part A: Policy and Practice*, 84, 4-17. https://doi.org/10.1016/j.tra.2015.10.006

Palamuleni, L. G., Plessis, Y. D., & Bakuwa, R. C. (2022). Response to Water Scarcity: Gender Analysis of the Motivation Factors Toward Water Conservation Behavior in the Workplace. *Frontiers in Water,* 4, 930681. https://doi.org/10.3389/frwa.2022.930681

Patsiaouras, G. (2024). Turning the invisible into the visible: exploring consumers' perceptions towards sustainable water consumption. *Qualitative Market Research: An International Journal*, 27(1), 61-82. https://doi.org/10.1108/QMR-08-2022-0139

Pradhananga, A. K., & Davenport, M. A. (2022). I Believe I Can and Should": Self-efficacy, Normative Beliefs and Conservation Behavior. *Journal of Contemporary Water Research & Education*, 175(1), 15-32. https://doi.org/10.1111/j.1936-704X.2021.3370.x

Randolph, B., & Troy, P. (2008). Attitudes to conservation and water consumption. *Environmental Science & Policy*, 11(5), 441-455. https://doi.org/10.1016/j.envsci.2008.03.003

Robelia, B. A., Greenhow, C., & Burton, L. (2011). Environmental learning in online social networks: Adopting environmentally responsible behaviors. *Environmental Education Research*, 17(4),553-575. https://doi.org/10.1080/13504622.2011.565118

Robins, A. (2023). Son 10 yılın en düşük seviyesine düşen İstanbul'un su kaynakları bir gün tamamen tükenebilir mi?, (Retrieved from https://www.bbc.com/turkce/articles /czq0x9p3ywlo) (October 31, 2023).

Rodriguez-Sanchez, C., & Sarabia-Sanchez, F. J. (2020). Does water context matter in water conservation decision behaviour?. *Sustainability*, 12(7), 3026. https://doi.org/10.3390/su12073026

Russell, S. V., & Knoeri, C. (2019). Exploring the psychosocial and behavioural determinants of household water conservation and intention. *International Journal of Water Resources Development*, 36(6), 940–955. https://doi.org/10.1080/07900627.2019.1638230

Sarabia-Sánchez, F. J., Rodríguez-Sánchez, C., & Hyder, A. (2014). The role of personal involvement, credibility and efficacy of conduct in reported water conservation behaviour. *Journal of Environmental Psychology*, 38, 206-216. https://doi.org/10.1016/j.jenvp.2014.02.003

Savari, M., Mombeni, A. S., & Izadi, H. (2022). Socio-psychological determinants of Iranian rural households' adoption of water consumption curtailment behaviors. *Scientific Reports*, 12(1), 13077. https://doi.org/10.1038/s41598-022-17560-x

Schultz, P. W. (2002). Knowledge, information, and household recycling: Examining the knowledge-deficit model of behavior change. In T. Dietz & P. Stern (Eds*.), New tools for environmental protection: Education, information, and voluntary measures* (pp. 67-82). Washington, DC: National Academy Press.

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221-279). New York: Academic Press.

Si, W., Jiang, C., & Meng, L. (2022). The relationship between environmental awareness, habitat quality, and community residents' pro-environmental behavior—mediated effects model analysis based on social capital. *International Journal of Environmental Research and Public Health*, 19(20), 13253. https://doi.org/10.3390/ijerph192013253

Simsek, H. G. (2023). Manisa'daki Yetişkinlerin Su Tüketim Davranışları ve Etkileyen Faktörlerin İncelenmesi. *Afet ve Risk Dergisi*, 6(4), 1283-1298. https://doi.org/ 10.35341/afet.1302335

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29(3), 309-317. https://doi.org/10.1016/j.jenvp.2008.10.004

Stern, P. C., Dietz, T., & Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25(5), 322-348. https://doi.org/10.1177/0013916593255002

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 81-97. https://www.jstor.org/stable/24707060

Syme, G. J., Seligman, C., & Thomas, J. F. (1991). Predicting water consumption from homeowners' attitudes. *Journal of Environmental Systems*, 20(2), 157-168. https://doi.org/ 10.2190/FNV4-VCV2-L1T9-4R62

Tijs, M. S., Karremans, J. C., Veling, H., de Lange, M. A., van Meegeren, P., & Lion, R. (2017). Saving water to save the environment: contrasting the effectiveness of environmental and monetary appeals in a residential water saving intervention. *Social Influence*, 12(2–3), 69–79. https://doi.org/10.1080/15534510.2017.1333967

Tong, Y., Fan, L., & Niu, H. (2017). Water conservation awareness and practices in households receiving improved water supply: A gender-based analysis. *Journal of cleaner production*, *141*, 947-955. https://doi.org/10.1016/j.jclepro.2016.09.169

Tonglet, M., Phillips, P. S., & Read, A. D. (2004). Using the Theory of Planned Behaviour to investigate the determinants of recycling behaviour: a case study from Brixworth, UK. *Resources, Conservation and Recycling*, 41(3), 191-214. https://doi.org/10.1016/j.resconrec.2003.11.001

Turkish Statistical Institute (TÜİK) (2023). Su ve Atıksu İstatistikleri, 2022. https://data.tuik.gov.tr/Bulten/Index? p=Su-ve-Atiksu-Istatistikleri-2022-49607

Turkish Statistical Institute (TÜİK) (2022) Women in Statistics. Available online: https://data.tuik.gov.tr/Bulten /Index?p=Istatistiklerle-Kadin-2022-49668

Turkish Statistical Institute (TÜİK) (2019). Belediye Su İstatistikleri, 2018. https://data.tuik.gov.tr/Bulten/Index?p=Belediye-Su-Istatis tikleri-2018-30668

United Nations Educational, Scientific and Cultural Organisation (UNESCO) Programme 2024. The United Nations World Water Development Report 2024: water for prosperity and peace; facts, figures and action examples, France. https://unesdoc.unesco.org/ark:/48223/pf0000388950/

Warner, L. A., Chaudhary, A. K., & Galindo-Gonzalez, S. (2016). Extension participants and nonparticipants differ in water conservation normative beliefs, intentions, and behaviors. *HortTechnology*, 26(6), 852-861. https://doi.org/10.21273/HORTTECH03484-16

Willis, R. M., Stewart, R. A., Panuwatwanich, K., Williams, P. R., & Hollingsworth, A. L. (2011). Quantifying the influence of environmental and water conservation attitudes on household end use water consumption. *Journal of Environmental Management*, 92(8), 1996-2009. Https://Doi.Org/10.1016/J.Jenvman.2011.03.023

World Wide Fund for Nature (WWF) (2024). Bugün Dünya Limit Aşım Günü: Sürdürülebilir bir Dünya Mümkün. https://www.wwf.org.tr/?14920/limit-asim-gunu-2024

Yadav, R., & Pathak, G. S. (2016). Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behavior. *Journal of Cleaner Production*, 135, 732-739. https://doi.org/10.1016/j.jclepro.2016.06.120

Zehnder, A. J., Yang, H., & Schertenleib, R. (2003). Water issues: the need for action at different levels. *Aquatic sciences*, 65, 1-20. https://doi.org/10.1007/s000270300000

Zelezny, L. C., Chua, P. P., & Aldrich, C. (2000). New ways of thinking about environmentalism: Elaborating on gender differences in environmentalism. *Journal of Social issues*, 56(3), 443-457. https://doi.org/10.1111/0022-4537.00177