Araştırma Makalesi * Research Article

The Climate Crisis and Consumer Behavior: The Relationship between Climate Change Anxiety and Sustainable Consumption

İklim Krizi ve Tüketici Davranışı: İklim Değişikliği Anksiyetesi ve Sürdürülebilir Tüketim İlişkisi

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Abstract: Research on the psychological effects of climate change is increasing, and studies suggest that climate change anxiety (CCA) can positively contribute to sustainable production and consumption as a constructive concern. Studies conducted in various countries have particularly highlighted higher levels of CCA among young individuals due to concerns about a sustainable future in the face of climate change. This exploratory study aims to examine the relationship between CCA and sustainable consumption (SC) among young individuals in Turkey. Firstly, a conceptual framework is delineated for CCA and SC. Based on the assumption that individuals experiencing anxiety or concern due to the visible impacts of climate crisis will engage in climate change mitigation and adopt sustainable consumption behavior (SCB), the study found that participants had a low level of CCA. However, structural equation modeling (SEM) revealed a positive relationship between CCA and SC (β=0.295, p<0.001) among the participants. Considering the urgency of the climate crisis, this study contributes to the literature by providing exploratory insights into the role of CCA as a motivating factor for SC, highlighting the need for further detailed research in this area.

Keywords: Climate change, climate change anxiety, eco-anxiety, sustainable consumption, consumer behavior.

Öz: İklim değişikliğinin psikolojik etkileri üzerine yapılan araştırmalar her geçen gün artmaktadır ve yapılan çalışmalar iklim değişikliği anksiyetesinin yapıcı bir endişe olarak sürdürülebilir üretim ve tüketime olumlu katkı sağlayabileceğini öne sürmektedir. Farklı ülkelerde gerçekleştirilen çalışmalarda, iklim değişikliği ve sürdürülebilir bir gelecek konusundaki endişeler nedeniyle, genç bireyler arasında daha yüksek iklim değişikliği anksiyetesi bulunduğu iddia edilmektedir. Bu keşifsel çalışmada, Türkiye'deki genç bireyler arasında iklim değişikliği anksiyetesi ve sürdürülebilir tüketim davranışı arasındaki ilişkiyi incelemek amaçlanmaktadır. Çalışmada öncelikle iklim değişikliği anksiyetesi ve sürdürülebilir tüketim için kavramsal bir çerçeve

sunulmaktadır. İklim krizinin görünür etkileri nedeniyle kaygı veya anksiyete yaşayan bireylerin iklim değişikliği ile mücadeleye gireceği ve sürdürülebilir tüketim davranışını benimseyeceği varsayımına dayanan çalışmada, katılımcıların düşük bir iklim değişikliği anksiyete düzeyine sahip olduğu sonucuna ulaşılmıştır. Bununla birlikte, katılımcıların iklim değişikliği anksiyete düzeyleri ile sürdürülebilir tüketim davranışları arasındaki ilişkinin tespitine dair kurulan yapısal eşitlik modelinde; iklim değişikliği anksiyetesi ile sürdürülebilir tüketim davranışı arasında pozitif bir ilişki olduğu sonucuna ulaşılmıştır (β=0.295, p<0.001). İklim krizinin aciliyeti göz önüne alındığında; bu çalışma iklim değişikliği anksiyetesinin sürdürülebilir tüketim davranışı için motive edici bir faktör olduğunu öne sürerek ve bu alanda daha ayrıntılı araştırmalara olan ihtiyacı vurgulayarak literatüre katkı sağlamaktadır.

Anahtar Kelimeler: İklim değişikliği, iklim değişikliği anksiyetesi, eko-anksiyete, sürdürülebilir tüketim, tüketici davranışı.

INTRODUCTION

Our planet is increasingly confronted with the destructive effects of anthropogenic climate change. The consequences of climate change, such as increasing extreme weather events, droughts, rising sea levels, and declining biodiversity, pose one of the greatest threats to our planet (IPCC, 2022). These disasters contribute to the growing concern caused by climate change (UN, 2015). To mitigate this crisis, it is necessary to achieve essential global targets, such as limiting warming to 1.5 °C by 2030 (IPCC, 2018).

The climate crisis has become a serious threat to individuals' well-being and survival, and research indicates that humans are responsible for climate change and its adverse consequences (Friedlingstein et al., 2019). Acceptance of the climate crisis can lead to emotional effects on individuals, in addition to encouraging aggressive efforts to mitigate climate change (Ripple et al., 2020). Due to its impact on both the environment and human health, climate change is considered the greatest challenge of the century by the scientific community (Costello et al., 2009; Myers & Patz, 2009). Human activities have significantly increased the concentration of pollutants in the atmosphere, leading to the greenhouse effect and global warming. Climate change is a concern for the entire scientific community as it negatively affects all forms of life on our planet and can directly and indirectly result in physical and mental pathologies (Cianconi et al., 2020).

To give an example, Searle and Gow (2010) observed that there is a correlation between climate change-related concerns and symptoms of stress, anxiety. Furthermore, some studies concurred that trauma, anxiety, fear, and depression can accompany the short- or long-term effects of climate change (Cianconi et al., 2020; Doherty & Clayton, 2011).

However, the structure of emotional disturbances related to climate change has not been clearly defined, and hence several terms have been coined to describe the emotional and mental health impacts of climate change (Clayton & Karazsia, 2020). Some of these terms are eco-grief, eco-shame (Pihkala, 2020b), eco-anxiety (Cordial et al., 2012), ecological distress (Cunsolo & Ellis, 2018), environmental discomfort (Higgins et al., 2014), and CCA (Reser et al., 2011). However, CCA and eco-anxiety are generally used interchangeably (Pihkala, 2020b). In this study, the term CCA is preferred.

The climate crisis has emerged as a disruption to ecological balance due to the unsustainable nature of human activities. Factors such as post-industrial revolution, technological advancement, and automation establish a close relationship between climate change and economic decisions, leading to ecological imbalance and social inequality (Ray & Nayak, 2023). Considering the seriousness of the climate crisis, climate change worry and CCA are largely considered rational reactions (Hogg et al., 2021). A study conducted in 32 countries found that CCA was negatively related to mental well-being in 31 countries and positively related to sustainable behaviors in 24 countries (Ogunbode et al., 2022). There is increasing evidence that CCA is particularly prevalent among young people and young adults (Clayton & Karazsia, 2020; Crandon et al., 2022). While some sources define the youth population as individuals aged 18-24 (UN, 2023b), other sources consider the age range of 18-29 as the youth population due to the extended average lifespan (Eurostat, 2023). In this study, to reach a wider audience, individuals aged 18-29 are considered as young, and the survey is conducted within this age range.

Values related to environmental concern can influence individuals' participation in climate change mitigation actions or their support for government policies (Pickering & Dale, 2023). For instance, individuals experiencing climate change worry or CCA may prefer to purchase environmentally conscious products over others, showing sensitivity towards the environment and the planet (Cornel, 2018). Furthermore, some studies suggest that CCA motivates SCB (Ogunbode et al., 2022; Sjöstrand & Hansen, 2020; Stanley et al., 2021). Drawing inspiration from these studies, this research aims to examine the relationship between CCA and SC for the first time in Turkey.

In this study, a literature review was conducted on CCA and SC. Additionally, the relationship between CCA and SC is analyzed using SEM with data obtained from a survey conducted among the target age group.

LITERATURE REWIEW

Climate Change Anxiety

There are generally two predominant definitions of CCA in the literature. The first definition is the "chronic environmental disaster fear" as stated in a report prepared by the American Psychological Association (Clayton et al., 2017). The second definition is a general sense of existential or ecological doomsday fear that the ecological foundations of existence are collapsing (Albrecht, 2012; Doherty & Clayton, 2011). Additionally, CCA also encompasses the anxiety associated with deteriorating environmental conditions related to climate change (Usher et al., 2019). Previous studies have demonstrated a connection between CCA and psychological distress (Searle & Gow, 2010). Individuals exhibit diversity in terms of fundamental psychological processes and behaviors, and investigating these dynamics may be appropriate for the successful implementation of activities related to climate change (Ur Rahman et al., 2021). Studies on the psychological effects of climate change on individuals and their findings are presented in Table 1.

Table 1. *Studies on the psychological effects of climate change on individuals*

Author	Topic
(Albrecht et al., 2007)	Solastalgia and environmentally related anxiety
(Searle & Gow, 2010)	Climate change stress
(Verplanken & Roy, 2013)	Familiar ecological anxiety
(Bourque & Willox, 2014)	Climate change has both direct and indirect physical and psychological effects on health
(Eisenman et al., 2015)	Psychological anxiety and solastalgia
(Austin et al., 2018)	Anxiety related to climate change
(Helm et al., 2018)	Depressive symptoms and environmentally friendly behaviors
(Clayton, 2020)	Anxiety related to climate change in individuals who are not directly exposed to the impacts of climate change
(Clayton & Karazsia, 2020)	Anxiety regarding climate change
(Helm et al., 2021)	Hesitation in having children due to reasons related to climate change
(Hogg et al., 2021)	Climate change concern and anxiety
(Pihkala, 2020b)	Anxiety related to ecological crisis

CCA is described as an increasing emotional, mental, or somatic distress in response to dangerous changes in the climate system, which can result in symptoms such as panic attacks, loss of appetite, and insomnia. High levels of anxiety can also affect an individual's ability to work, sleep, and socialize (Clayton & Karazsia, 2020). While anxiety is often associated with negative or pathological psychological states, this may not be the case for CCA and worry related to the climate crisis. CCA can be seen as a constructive and powerful response to the climate crisis (Innocenti et al., 2021; Verplanken et al., 2020). Although CCA expresses a painful and distressing situation, it does not necessarily indicate a psychological disorder. Anxiety alerts individuals to the danger and motivates them to seek more information and find possible solutions (Pihkala, 2020a). In threatening and uncertain situations like the climate crisis, considering this response as constructive anxiety or constructive anxiety can help guide individuals to respond appropriately to climate issues and reevaluate their behaviors (Verplanken et al., 2020). However, considering the complexity of the climate crisis and the lack of clear solutions, anxiety can become overwhelming and intense (Clayton & Karazsia, 2020; Hogg et al., 2021; Ojala et al., 2021). Nonetheless, constructive anxiety involves engaging with the situation that triggers the concern and focusing on problem-solving (Watkins, 2008).

There may be differences in emotional and psychological responses to climate change among different generations (Hickman, 2020). Young people and young adults may be more sensitive to climate change and environmental issues because they anticipate feeling the future impacts more strongly, which creates a psychological burden (Sanson & Bellemo, 2021). Therefore, it is noted that there is a higher prevalence of CCA experiences among young people (Clayton & Karazsia, 2020; Crandon et al., 2022; J. Wu et al., 2020). The lack of scientific research measuring and understanding CCA among young people in Turkey indicates the need for increased awareness and further studies. Such studies can help understand the dimensions and effects of climate change-related anxieties in young people and develop appropriate support and solutions.

CCA can be triggered by fear of the negative impact of climate change on geography and daily life (Clayton, 2021). Therefore, it should not be considered that CCA is inherently pathological, but rather the potential for psychological distress should be emphasized (Clayton & Karazsia, 2020).

In the first stage of this study, the CCA levels of young people living in Turkey were identified using the Climate Change Anxiety Scale (CCAS) (Clayton & Karazsia, 2020), and the following hypotheses were formulated.

H_1: The level of CCA among young people in Turkey is high.

H_2: There are differences in the level of CCA among young people in Turkey based on gender.

H_3: There are differences in the level of CCA among young people in Turkey based on age.

H_4: There are differences in the level of CCA among young people in Turkey based on their educational status.

H_5: There are differences in the level of CCA among young people in Turkey based on their marital status.

Sustainable Consumption

Due to the unplanned development and irresponsible consumption habits of people, significant ecological problems have emerged in various regions of the world (P. Wang et al., 2014). The consequences of ecological damage include unnatural climate changes and pollution (Tseng & Hung, 2013). The concern and awareness arising from these effects have led to the emergence of the term sustainable development, which emphasizes supporting sustainable development that reduces negative impacts on nature. Sustainability has long been a concept discussed in scientific, economic, and political realms. The 2030 Sustainable Development Agenda, adopted by United Nations member states, is a program that includes rules and goals for respecting our planet. Member states are expected to achieve the 169 goals by 2030, which encompass economic growth, social inclusion, and environmental protection (Griggs et al., 2013). In order to achieve sustainability, not only states and producers but also consumers need to be educated and make choices in this regard (Lehner et al., 2016). This is because

consumers, via their preferences play a significant role in the production of goods that contribute to climate change (Cornel, 2018).

According to the United Nations, the concept of sustainability is defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs (UN, 2023a). In this respect, the United Nations Environment Programme has adopted a set of goals to rescue the planet from poverty, hunger, and similar issues. One of the goals presented by the UN is responsible consumption and production.

Since environmental economics is a relatively new field of study, there are numerous definitions of the concept of SC. SC can be redefined as a societal model that contributes to sustainability by changing consumers' behavior and societal models to reduce consumption (Alvarez-Suárez et al., 2013). SC also suggests that it is beneficial to reduce capital use while reducing waste and pollution, and promotes environmentally-friendly or green product consumption, as well as reducing capital use by the current generation (Bennett & Collins, 2009). It is believed that sustainable development cannot be achieved unless consumers embrace SC (Farr, 2018; Fuchs & Lorek, 2005; Hess, 2013).

Sustainable business models and practices are becoming essential to protect the interests of the planet, people, and producers. Traditional economic models perceive utility as a linear value exchange among a limited number of stakeholders, while sustainable business models aim to create sustainable value, particularly by targeting the direct and active participation of stakeholders, especially consumers (Freudenreich et al., 2020).

SC is often associated with concepts such as ethical consumption, green consumption, or responsible consumption. This type of consumption aims to minimize environmental impacts in the consumption process by emphasizing environmental and resource sustainability (Hong et al., 2023).

Although consumers express their environmental concerns and desires to prevent environmental degradation, they face challenges in establishing a connection between actual SC and green attitudes and intentions. This indicates the difficulties in transforming consumption patterns into sustainable ones (Joshi & Rahman, 2015; Kumar et al., 2017; Pengji Wang & Kuah, 2018).

In the first stage of this study, the SC levels of young people living in Turkey were determined using the Sustainable Consumption Behavior Scale (SCBS) (Doğan et al., 2015), which explains SC. The following hypothesis was formed.

H_6: The level of SC among young people in Turkey is high.

The Relationship between Climate Change Anxiety and Sustainable Consumption

Scientists agree that continuing with a linear economic model of production and consumption will lead to irreversible consequences of climate change (Smith & Joffe, 2009). The current state of resource, energy, and water consumption negatively affects waste generation, environmental pollution, and the entire planet (Meng & Leary, 2021; Nordin & Selke, 2010). SC can contribute to reducing resource consumption, addressing resource scarcity and climate change, as well as reducing carbon emissions and raw material usage (Tunn et al., 2019).

It is crucial to limit carbon emissions to 1.5-2 °C as targeted by the Paris Agreement (IPCC, 2018). Considering this target, climate experts express concerns that there is less than a decade of carbon budget remaining at the current rate of temperature increase (Carbon Brief, 2017). This situation calls for urgent and transformative actions from various stakeholders. While technology and regulatory pressure strategies are undoubtedly necessary to follow sustainable production and introduce eco-friendly products/services to the market, environmental behavior change lies at the core of a more sustainable future (Evans et al., 2020).

The level of awareness among consumers regarding climate and environmental issues, their concerns and anxieties about threats to a sustainable future, the impacts of such threats on the planet, and the lack of human action in preserving nature for future generations are important factors to consider (Dunlap & Jones, 2002; Shen, 2012). It is suggested that climate change-related concerns and anxieties can lead to sustainable behaviors (Higgins et al., 2014; Homburg & Stolberg, 2006). Individuals

who experience unpleasant emotions after gaining awareness of climate change or experiencing its consequences may adopt behaviors aimed at mitigating the impact of climate change on their daily lives (Cianconi et al., 2020).

Climate worry and CCA, ie., along with other environmental emotions such as eco-grief and eco-anger, have been found to be significant motivators (and sometimes inhibitors) of SCB. For instance, Sjöstrand and Hansen claim that individuals experiencing CCA are inclined towards environmentally friendly behaviors. Additionally, Stanley et al. (2021) believe that eco-anger has a more positive impact on both collective and personal environmentally friendly behaviors compared to CCA and eco-depression. Furthermore, a study conducted in 32 countries revealed that CCA is the main driving force behind individual sustainable behaviors (Ogunbode et al., 2022). Another study by Sangervo et al. (2022) found a positive relationship between CCA and climate-related actions. Moreover, another study suggests that higher climate concern leads to an increase in SCB such as energy conservation, second-hand purchases, borrowing, renting, and repurposing items (Ogunbode et al., 2022; Whitmarsh et al., 2022). This reflects the role of negative emotions as motivators of action (Weber, 2006).

CCA can be regarded as a beneficial type of concern that triggers individuals to search for information and reevaluate their lifestyles and behaviors (Pihkala, 2020a). Indeed, concern and anxiety related to climate change are associated with supporting climate change prevention policies and engaging in environmentally beneficial behaviors (Bouman et al., 2020; Stanley et al., 2021; Wullenkord et al., 2021). However, it is important to differentiate between different categories of sustainable behaviors. Environmentally significant behaviors are categorized into environmental activism, which includes actions such as participating in environmental protests or demonstrations; non-activist behaviors in the public sphere, which encompass actions like supporting recycling and SC choices; organizational behaviors, which involve engaging in environmental activities within organizations; and other sustainable behaviors (Stern, 2000). At this point, it should be noted that this study focuses on non-activist SCB in the public sphere.

While climate change evokes concerns and anxieties in individuals due to its current and unknown future impacts (Stewart, 2015), a moderate level of anxiety can increase individuals' awareness of climate change and shape their behaviors accordingly (Verplanken & Roy, 2013). Consumers' understanding of the adverse effects of climate change is an important factor in their sustainable behavior. Perceiving the risks associated with climate change also increases SCB (Perera & Hewege, 2013). A study conducted in the United Kingdom revealed that although global warming concern is associated with clinical anxiety, it is also strongly related to sustainability actions, suggesting that it can be considered as anxiety that promotes action related to climate change (Verplanken & Roy, 2013). Similarly, studies conducted in Germany, Australia, and New Zealand found a positive relationship between CCA and sustainability attitudes (Stanley et al., 2021; Wullenkord et al., 2021).

Based on inspiration from all these studies, the following hypothesis has been formulated to determine the relationship between CCA levels and SC among young people in Turkey.

H_7: There is a positive relationship between the CCA levels and SC levels of young people in Turkey.

METHODS

Human research ethics approval was obtained from Uskudar University, ensuring compliance with the Helsinki Declaration. An online questionnaire was conducted at the first stage of the study. The questionnaire was designed with Google Forms in Turkish. In the study, a sociodemographic form was used to determine participants' gender, educational status, marital status, and age. Data were analyzed using IBM SPSS V23 and IBM AMOS V24. The assumption of normal distribution was examined using Kolmogorov-Smirnov and Shapiro-Wilk tests for multicollinearity. The reliability of the scales was examined using Cronbach's alpha coefficient. The construct validity of the scales was examined using confirmatory factor analysis. In SEM, the Bootstrap Maximum Likelihood (ML) method was used for non-normally distributed data, and ML was used for normally distributed data. Spearman's rho correlation coefficient was used to examine the relationship between non-normally distributed scale scores. The Kruskal-Wallis test was used to compare non-normally distributed data among three or

more groups, and multiple comparisons were conducted using the Dunn test. Independent two-sample t-tests were used to compare normally distributed data between two groups, and the Mann-Whitney U test was used to compare non-normally distributed data. The analysis results were presented as mean ± standard deviation and median (minimum-maximum) for quantitative data, and a significance level of $p < 0.050$ was considered.

Convenience sampling was used in this study, and the survey link was shared online. In total, 450 individuals were reached. The survey link was shared with people through text messages and email, and the data obtained from those who completed the survey through this link were analyzed. The CCAS and SCBS were used to collect data in the study.

The CCAS used in the study was developed by Clayton and Karazsia (2020) and adapted into Turkish by Uzun et al. (2022). This scale consists of 13 items measured on a 5-point Likert scale. It has two subscales: Cognitive impairment and Functional impairment. The Cronbach's reliability coefficient for the Cognitive impairment subscale was found to be 0.907, and for the Functional impairment subscale, it was 0.900. The Cognitive impairment subscale assesses whether individuals think about climate change in an unhealthy way, while the Functional impairment subscale examines whether the emotions related to climate change affect individuals' functioning ability (Clayton & Karazsia, 2020).

SCBS was developed by Doğan et al. to measure individuals' SCB (2015). The scale consists of 17 items and four subscales: Environmental sensitivity, non-essential purchasing, savings, and reusability. It was found that there is a positive relationship among Environmental sensitivity, savings, and reusability, while there is a negative relationship between non-essential purchasing and the other dimensions. The Cronbach's Alpha reliability coefficients for the subscales are as follows: 0.753 for Environmental sensitivity, 0.758 for non-essential purchasing, 0.774 for savings, and 0.721 for reusability.

RESULTS

The data and details regarding the demographic information of the participants who completed the online questionnaire and met the participation criteria are presented in Table 2. Of the participants, 68.4% were female and 31.6% were male. The average age of the participants was 23.52, with a minimum value of 18 and a maximum value of 29. Regarding educational status, 77.6% of the participants were university graduates, and 86.2% were unmarried.

Table 2. *Demographic data*

	N / Mean±sd	(%) / Median (min. - max.)
Gender		
Female	308	68.4
Male	142	31.6
Age	23.52±3.01	23 (18 - 29)
Education		
High School	31	6.9
Graduate	349	77.6
Postgraduate	70	15.6
Marital Status		
Married	62	13.8
Single	388	86.2

Before starting confirmatory factor analysis, all issues related to the data should be addressed, such as outliers, flattened and skewed values, missing data, etc. In order for maximum likelihood estimation to be used, the data should be suitable for a normal distribution. In the conducted multivariate normality test, the critical value was determined to be 135.863. While a value below 10 indicates an excellent result, it has been shown in previous studies that values up to 20 generally do not pose a problem (Gürbüz, 2010). Since the assumption of multivariate normality was not met, the

Bootstrap ML method was used as the calculation method, and a preference of 5000 resampling was chosen for the Bootstrap analysis.

Table 3. *Factor analysis results for the scales*

Items		Factors	β1 (%95 CI)*	β2 (%95 CI)*	SE*	P
			CCAS			
Item_8	<---	Cognitive impairment	0.787 (0.716 - 0.844)	1.226 (1.019 - 1.457)	0.112	**<0.001**
Item_1	<---	Cognitive impairment	0.621 (0.555 - 0.681)	1 (1 - 1)		
Item_2	<---	Cognitive impairment	0.665 (0.573 - 0.749)	1.009 (0.885 - 1.141)	0.065	**<0.001**
Item_3	<---	Cognitive impairment	0.868 (0.8 - 0.92)	1.146 (0.932 - 1.382)	0.115	**<0.001**
Item_4	<---	Cognitive impairment	0.791 (0.722 - 0.849)	1.049 (0.856 - 1.258)	0.101	**<0.001**
Item_5	<---	Cognitive impairment	0.702 (0.637 - 0.756)	1.263 (1.098 - 1.453)	0.091	**<0.001**
Item_6	<---	Cognitive impairment	0.852 (0.806 - 0.889)	1.326 (1.158 - 1.528)	0.095	**<0.001**
Item_7	<---	Cognitive impairment	0.656 (0.55 - 0.757)	0.912 (0.73 - 1.12)	0.098	**<0.001**
Item_9	<---	Functional impairment	0.739 (0.649 - 0.816)	1 (1 - 1)		
Item_13	<---	Functional impairment	0.777 (0.712 - 0.836)	1.121 (0.897 - 1.421)	0.134	**<0.001**
Item_11	<---	Functional impairment	0.778 (0.713 - 0.842)	1.091 (0.895 - 1.364)	0.119	**<0.001**
Item_10	<---	Functional impairment	0.769 (0.694 - 0.83)	1.063 (0.873 - 1.293)	0.109	**<0.001**
Item_12	<---	Functional impairment	0.869 (0.825 - 0.907)	1.212 (1.032 - 1.452)	0.107	**<0.001**
			SCB			
Item_1	<---	Environmental sensitivity	0.841 (0.798 - 0.878)	1 (1 - 1)		
Item_5	<---	Environmental sensitivity	0.728 (0.667 - 0.783)	0.934 (0.837 - 1.031)	0.049	**<0.001**
Item_2	<---	Environmental sensitivity	0.722 (0.657 - 0.778)	0.831 (0.739 - 0.919)	0.046	**<0.001**
Item_3	<---	Environmental sensitivity	0.882 (0.852 - 0.91)	0.989 (0.921 - 1.067)	0.037	**<0.001**
Item_4	<---	Environmental sensitivity	0.876 (0.845 - 0.904)	0.972 (0.899 - 1.053)	0.039	**<0.001**
Item_6	<---	Non-essential purchasing	0.609 (0.525 - 0.684)	1 (1 - 1)		
Item_10	<---	Non-essential purchasing	0.636 (0.558 - 0.706)	0.979 (0.823 - 1.175)	0.091	**<0.001**
Item_7	<---	Non-essential purchasing	0.825 (0.777 - 0.869)	1.429 (1.217 - 1.724)	0.128	**<0.001**
Item_8	<---	Non-essential purchasing	0.82 (0.744 - 0.887)	1.296 (1.078 - 1.593)	0.129	**<0.001**
Item_9	<---	Non-essential purchasing	0.829 (0.783 - 0.868)	1.317 (1.145 - 1.556)	0.104	**<0.001**
Item_11	<---	Saving	0.788 (0.728 - 0.842)	1 (1 - 1)		
Item_12	<---	Saving	0.915 (0.881 - 0.945)	1.127 (1.048 - 1.223)	0.045	**<0.001**
Item_13	<---	Saving	0.89 (0.854 - 0.921)	1.187 (1.085 - 1.311)	0.057	**<0.001**
Item_14	<---	Saving	0.74 (0.684 - 0.792)	0.91 (0.797 - 1.029)	0.059	**<0.001**
Item_15	<---	Reusability	0.767 (0.69 - 0.838)	1 (1 - 1)		
Item_17	<---	Reusability	0.658 (0.573 - 0.737)	0.893 (0.747 - 1.057)	0.079	**<0.001**
Item_16	<---	Reusability	0.702 (0.63 - 0.769)	0.918 (0.79 - 1.066)	0.070	**<0.001**

β1: Standardized beta coefficient, β2: Unstandardized beta coefficient, * Bootstrap 95% confidence interval (CI), SE (Standard error).

The results of the confirmatory factor analysis for CCAS, consisting of a total of 13 items and 2 factors, underwent 4 different modification processes. When examining the fit indices, the following values were obtained: CMIN/DF=4.939, GFI=0.917, CFI=0.948, NFI=0.935, RMSEA=0.094, SRMR=0.036. Additionally, all path coefficients for the items were found to be statistically significant (p<0.001).

For SCBS, a multivariate normality test was conducted, and the critical value was determined to be 25.556. The confirmatory factor analysis for SCBS, consisting of a total of 17 items and 4 factors, underwent 1 modification process. The fit indices obtained were as follows: CMIN/DF=3.488, GFI=0.911, CFI=0.939, NFI=0.917, RMSEA=0.074, SRMR=0.045. Similarly, all path coefficients for the items were found to be statistically significant (p<0.001).

Table 4. *Reliability results for the scales*

Subscale	Item	Mean	SD	Item-total correlation	Cronbach's alfa
			CCA		
Cognitive impairment	CCAS_1	2.01	0.95	0.645	0.907
	CCAS_2	1.62	0.90	0.662	

Subscale	Item	Mean	SD	Item-total correlation	Cronbach's alfa
	CCAS_3	1.37	0.78	0.772	
	CCAS_4	1.33	0.78	0.726	
	CCAS_5	1.83	1.06	0.705	
	CCAS_6	1.53	0.92	0.836	
	CCAS_7	1.40	0.82	0.596	
	CCAS_8	1.60	0.92	0.715	
Functional impairment	CCAS_9	1.42	0.81	0.697	
	CCAS_10	1.52	0.83	0.720	
	CCAS_11	1.46	0.84	0.804	0.900
	CCAS_12	1.46	0.84	0.847	
	CCAS_13	1.42	0.87	0.692	

SCB					
Subscale	Item	Mean	SD	Item-total correlation	Cronbach's alfa
Enviromental sensivity	SCBS_1	3.13	1.11	0.801	0.904
	SCBS_2	2.90	1.08	0.696	
	SCBS_3	3.22	1.05	0.813	
	SCBS_4	3.24	1.04	0.802	
	SCBS_5	2.84	1.20	0.698	
Non-essential purchasing	SCBS_7	3.31	1.23	0.733	0.859
	SCBS_8	3.20	1.12	0.748	
	SCBS_9	3.77	1.13	0.747	
	SCBS_10	3.25	1.09	0.596	
Saving	SCBS_11	3.57	1.32	0.750	0.900
	SCBS_12	3.46	1.28	0.852	
	SCBS_13	3.36	1.39	0.807	
	SCBS_14	3.76	1.28	0.704	
Reusability	SCBS_15	3.09	1.27	0.599	0.751
	SCBS_16	2.56	1.27	0.592	
	SCBS_17	3.48	1.32	0.547	

The Cronbach's alpha coefficients for the Cognitive Impairment and Functional Impairment subscales of the CCAS were found to be 0.907 and 0.900, respectively, indicating high reliability. Additionally, the item-total correlation coefficients were obtained above 0.2.

For the SCBS, the Cronbach's alpha coefficients for the Environmental Sensitivity, Non-essential Purchasing, Savings, and Reusability subscales were 0.904, 0.859, 0.900, and 0.751, respectively, indicating a high level of reliability. Furthermore, the item-total correlation coefficients were obtained above 0.2.

Table 5. *Descriptive statistics of the scale scores*

Scale	N	Mean	SD	Median	Min.	Max.
Cognitive impairment	450	1.59	0.70	1.38	1.00	4.38
Functional impairment	450	1.46	0.71	1.00	1.00	4.00
CCAS	450	1.54	0.68	1.23	1.00	4.15
Enviromental sensivity	450	3.07	0.93	3.00	1.00	5.00
Non-essential purchasing	450	3.51	0.91	3.60	1.00	5.00
Saving	450	3.53	1.15	3.75	1.00	5.00
Reusability	450	3.05	1.05	3.00	1.00	5.00
SCBS	450	3.30	0.70	3.35	1.29	5.00

The mean score for cognitive impairment is 1.59, with a minimum score of 1 and a maximum score of 4.38. The mean score for functional impairment is 1.46, with a minimum score of 1 and a maximum score of 4. The overall mean score for CCAS is 1.54, with a minimum score of 1 and a maximum score of 4.15. Based on these results, participants' levels of CCAS are found to be low, and H_1 is rejected. The mean score for environmental sensitivity is 3.07, with a minimum score of 1 and a maximum score of 5. The mean score for non-essential purchasing is 3.51, with a minimum score of 1 and a maximum score of 5. The mean score for saving is 3.53, with a minimum score of 1 and a maximum score of 5. The mean score for reusability is 3.05, with a minimum score of 1 and a maximum score of 5. The mean score for SCBS is 3.3, with a minimum score of 1.29 and a maximum score of 5. Based on these results, participants' levels of SCBS are found to be above average, indicating high levels, and H_6 is accepted.

Table 6. *Model results*

			β^1	β^2	SE	Test st.	P	R^2
CCA	<---	Gender (Man)	0.036	0.049	0.065	0.760	0.447	
CCA	<---	Age	-0.185	-0.040	0.014	-2.983	**0.003**	
CCA	<---	Education (Graduate)	0.125	0.190	0.120	1.590	0.112	0.048
CCA	<---	Education (PG)	0.072	0.131	0.153	0.855	0.393	
CCA	<---	Marital Status (Single)	-0.206	-0.382	0.106	-3.618	**<0.001**	
Cognitive impairment	<---	CCA	0.912	1.000				0.832
Functional impairment	<---	CCA	0.962	1.072	0.082	13.008	**<0.001**	0.926
SCB	<---	CCA	0.273	0.295	0.059	5.035	**<0.001**	
SCB	<---	Gender (Man)	-0.133	-0.198	0.074	-2.671	**0.008**	
SCB	<---	Age	0.167	0.039	0.015	2.571	**0.010**	
SCB	<---	Education (Graduate)	0.078	0.129	0.135	0.958	0.338	0.167
SCB	<---	Education (PG)	0.031	0.061	0.173	0.353	0.724	
SCB	<---	Marital Status (Single)	-0.132	-0.263	0.119	-2.206	**0.027**	
Enviromental sensivity	<---	SCB	0.738	1.000				0.544
Non-essential purchasing	<---	SCB	0.130	0.171	0.069	2.471	**0.013**	0.017
Saving	<---	SCB	0.794	1.332	0.102	13.048	**<0.001**	0.630
Reusability	<---	SCB	0.699	1.068	0.085	12.522	**<0.001**	0.489

β^1: Standardized beta coefficient, β^2: Unstandardized beta coefficient

Age has a statistically significant negative effect on CCA ($\beta = -0.040$; p = 0.003). An increase in age by one unit decreases CCA by 0.040 units, supporting H_2. Individuals who are unmarried have 0.206 units lower CCA compared to married individuals ($\beta = -0.206$; p < 0.001), supporting H_5. Gender and education do not have a statistically significant effect on CCA (p > 0.050), therefore H_2 and H_4 are rejected. The independent variables in the model explain 4.8% of the variance in CCA. CCA has a positive effect on SCB ($\beta = 0.295$; p < 0.001). A one-unit increase in CCA leads to a 0.295 unit increase in SCB. Hence, H_7 is accepted. Men have 0.198 units lower SCB compared to women ($\beta = -0.198$; p = 0.008). Age has a positive effect on SCB ($\beta = 0.039$; p = 0.010). An increase in age by one-unit results in a 0.039 unit increase in SCB. Unmarried individuals have 0.263 units lower SCB score than married individuals ($\beta = -0.263$; p = 0.027). The path coefficient between education and SCB is not statistically significant (p > 0.050). The independent variables explain 16.7% of the variance in SCB. The path coefficients between CCA and functional impairment, and between SCB and unnecessary purchasing, saving, and reusability are statistically significant (p < 0.050). The model fit indices are as follows: CMIN/DF = 4.292, GFI = 0.946, CFI = 0.944, NFI = 0.929, RMSEA = 0.086, SRMR = 0.073.
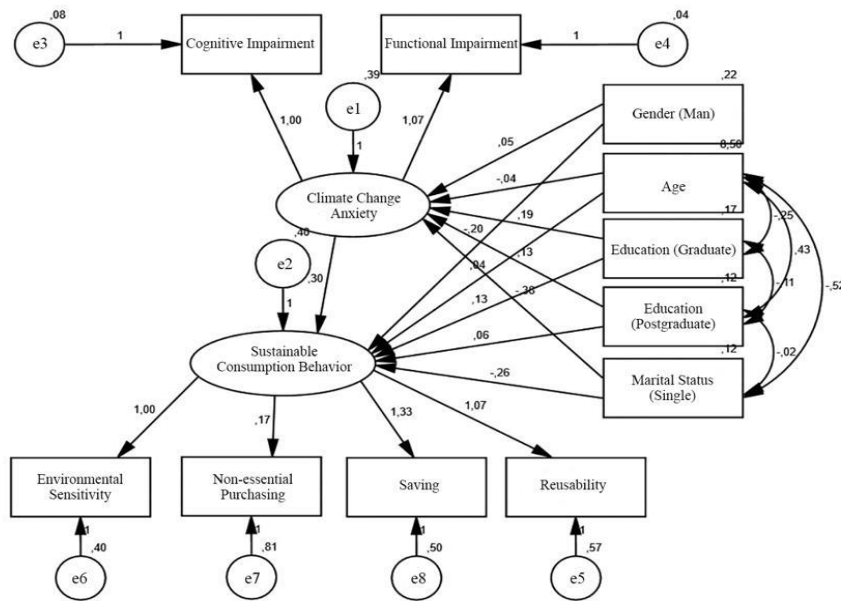
Figure 1. *Path analysis of the model*

DISCUSSION

In this study, using the CCAS and SCBS scales, the relationship between the level of CCA and SCB among young people in Turkey was examined. Although an increase in the number of individuals experiencing psychological distress related to climate change has been observed as the effects of climate change become more apparent (Ogunbode et al., 2022; Ojala et al., 2021; Pihkala, 2020a), it was found that the participants in this study had low levels of climate change awareness, leading to the rejection of hypothesis H₁. CCA is considered a strong response to the climate crisis (Verplanken et al., 2020). Emotions shape how we process information and determine appropriate actions. Therefore, they are an integral part of how we address climate change (Davidson & Kecinski, 2022), and based on the obtained data, it can be said that the level of awareness of the climate crisis is low among young people in Turkey. The finding that young participants had high levels of CCAS, as reported in other studies (Coffey et al., 2021; Sanson & Bellemo, 2021; Wu & Dunn, 1995), could not be confirmed in this research. However, as the ages of the participants increased, CCAS also increased, confirming Clayton's finding (2020) and accepting hypothesis H₃. Similar to other studies (Hickman, 2020), a comparison of young people's CCAS levels with other age groups was not made in this study. Research indicates that demographic factors predict CCAS (Clayton & Karazsia, 2020; Verplanken & Roy, 2013; Wullenkord et al., 2021). Contrary to the study by Searle and Gow (2010), which found that women had significantly higher scores in pathological anxiety and an ecologically oriented worldview. Gender and education level did not have a statistically significant effect on CCAS (p>0.050), leading to the rejection of hypotheses H₂ and H₄. However, based on the analysis of differences according to marital status, it was found that unmarried individuals had 0.206 units lower CCAS levels than married individuals (β=-0.206; p<0.001), leading to the acceptance of hypothesis H₅.

The participants had high levels of SC, confirming previous studies that found higher SC orientations among young people (Yatish Joshi et al., 2019; Kadic-Maglajlic et al., 2019). However, since focus of the study was the relationship between CCAS and SC, other findings related to SC were not emphasized as they could be the subject of another study.

Given that CCAS is considered a constructive concern, it is believed to encourage individuals to contribute to an environmentally sensitive and sustainable future (Pihkala, 2020a; Verplanken et al., 2020), and CCA is seen as an incentive to focus on solving the climate crisis (Watkins, 2008). Despite the low level of CCAS among the participants, a positive effect of CCAS on SC was observed (β=0.295; p<0.001), leading to the acceptance of hypothesis H₇. Therefore, the prevalent view in the literature that CCAS as a constructive concern increases SC (Cianconi et al., 2020; Higgins et al., 2014; Homburg &

Stolberg, 2006) was confirmed. As anxiety and concern related to climate are generally positively associated with SCB (Ogunbode et al., 2022), the positive relationship between CCAS and SC suggests that constructive concern can be used as a type of motivation in preventing climate change and promoting sustainability. A moderate level of anxiety can increase individuals' awareness of climate change and shape their behaviors accordingly (Hogg et al., 2021; Stanley et al., 2021; Verplanken & Roy, 2013). Individuals reported that CCAS was reflected in their behaviors and actively guided them towards being more sustainable (Pihkala, 2020a, 2020b). A study conducted on individuals under the age of 30 suggested that CCAS is one of the driving forces behind changes in SCB (Kohl, 2022). Although this study confirmed the positive relationship between CCAS and SC among young people aged 18-29, it is limited in terms of reaching a comprehensive conclusion since only SC was considered as the dependent variable in the model. As a result, this exploratory study on CCA among individuals, particularly young people in Turkey, concluded that while CCA levels were low, there was a positive relationship between CCAS and SC.

CONCLUSION

In this study, initially, the CCA levels of young people aged 18-29 in Turkey were examined, and the differences in these levels according to demographic variables were investigated. Then, the relationship between CCA and SC was established. It was observed that the CCA levels of young people in Turkey were lower compared to studies conducted in other countries in the literature. While the CCA level of the participants decreased with increasing age, no difference was found based on gender and education level. Additionally, married young people had a higher CCA level compared to singles.

This study aimed to investigate whether CCA has a positive effect on both combating climate change and changing consumer behaviors for a sustainable future. It was found that there is a positive relationship between CCA and SC, confirming previous studies in the literature. Although the participants had high SC levels, this study focused on the relationship between CCA and SC, so a detailed analysis and conclusion regarding SC could not be reached. However, future research can be conducted by including other factors influencing SC in the model.

It is important to conduct such studies to increase awareness of climate change and promote SCB. Since no study has been conducted on the relationship between CCA levels and SC in Turkey, this study should be evaluated as an exploratory study. It is expected that this study will inspire new research with a broader sample and the inclusion of various independent variables to model the psychological effects of climate change and consumer behaviors.

The high level of SC and the positive relationship between CCA and SC have provided hope for a sustainable future in Turkey. However, the low CCA level indicates the need to investigate the level of climate crisis awareness. Although the sample size of this survey study was sufficient, future studies with larger sample sizes can be developed to provide more generalizability.

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