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Environmental perceptions and sustainable consumption behavior. The disparity among South Africans.

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Abstract

South Africa has the highest level of inequality globally and has been labeled a country of two nations. With a small share of highly affluent people and a mass at the bottom of society struggling to escape poverty, these two vastly different socioeconomic status groups have also been characterized by race, gender, and geographical location. However, very little evidence exists of the varying environmental perceptions among people in these different economic and social positions in South Africa. By using the International Social Survey Programme (ISSP) Environment III dataset for 2010, the study assessed the impact of sociodemographic factors on the environmental perceptions and sustainable consumption behavior of South Africans. The results show that environmental concerns are highest among those with low socioeconomic status and Africans. Since these individuals make up the majority of the most vulnerable in society, it supports the exposure to degradation hypothesis in a South African context. Contrastingly sustainable consumption behavior is highest among those with high socioeconomic status suggesting a strong post-materialist effect on pro-environmental consumption. From a policy perspective, environmental policymakers in South Africa could take note of the strong environmental concerns among those more vulnerable to daily environmental degradation and provide further incentives and support their transition to sustainable consumption behavior changes that would assist in environmental protection.

Keywords: Sustainable consumption behavior, Behavioral intention, Environmental concern, Environmental risk perception, Environmental knowledge, South Africa.

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1. Introduction

Sustainable consumption behavior can often be associated with pro-environmental consumption behavior, an aspect of individuals' behavior that helps reduce individuals' negative environmental impact (Dhandra, 2019). While sustainable consumption behavior has received much research attention, the concept still points to multidimensionality in its societal determination. Studies have repeatedly attempted to shed some light on the sustainable consumption behavior in a cognitive decision-making process related to environmental perceptions like environmental knowledge (Kim et al., 2014; Urban and Hoban, 1997), environmental risk perceptions (Dunlap and York, 2008; Franzen and Meyer, 2010; Hadler and Haller, 2013) and environmental concern (Fraj-Andres and Martínez-Salinas, 2007; Wakefield et al., 2006). Specifically, individuals' perceptions of environmental issues like risk, concern, and knowledge have been strong predictors of sustainable consumption behavior (Saari et al., 2021), and studies show that these environmental perceptions can greatly influence behavioral intention or willingness to sacrifice for the sake of the environment (Aldrich et al., 2007; Kotchen and Reiling, 2000). However, studies also find that sustainable consumption behavior and environmental perceptions depend on different cultural contexts, socioeconomic status, and demographics (Yang et al., 2015; Sharma and Jda, 2017; Song et al., 2020).

It is no surprise that there is firm heterogeneity among environmental perceptions and sustainable consumption behavior for those from different social and economic groups. Extensive literature has explored how individuals perceive environmental issues based on their demographics and economic position in society. In comparison, some support the popular affluence argument, where individuals with high social and economic standings have a post-materialist pro-environmental view about environmental issues (Inglehart, 1995; Diekman and Franzen, 1999). Others, however, have shown that those at the lower end of society and the disadvantaged are more vulnerable to climate change and environmental events daily and therefore have a strong and sometimes greater pro-environmental view than those at the higher end of society (Lowe & Pinhey, 1982; Dunlap and Mertig, 1997; Jones & Carter, 1994; Lazri & Konisky, 2019; Song et al. 2020).

However, African countries have been heavily underrepresented in this rich literature on environmental perceptions among different social groups (Dunlap & York, 2008). Because of global differences in environmental degradation, environmental awareness, and environmental policy types, we focus on South Africa, a country that is regarded as the most unequal society in the world (Sulla et al., 2022). Since the end of colonialism and apartheid, the legacies of these discriminating regimes are still lingering in the social stratification of the country where a small share of individuals, still hold most of the resources, while there is a mass at the bottom, mainly made up from Africans, that are struggling to meet the minimum requirement for sustainability (Burger et al. 2015; Schotte et al. 2018). Whereas Africans and female-headed households still dominate the share of those vulnerable in society, poverty is also dominated by Africans, females, and those in rural locations (World Bank, 2018). Furthermore, the increase in income polarisation and the struggling middle class has further increased the gap between those on top and those at the bottom of society (World Bank, 2022). With two groups that are so economically and socially different, South Africa has been labeled a country of two nations (Nattrass and Seekings, 2001), and the highly unequal setting presents an opportunity to assess the varying views of those at the higher end and lower end of society have in terms of environmental concerns, environmental knowledge, risk perceptions, behavioral intentions, and sustainable consumption behavior. We use the International Social Survey Programme (ISSP) Environment 2010 module dataset to assess

the varying environmental perceptions and pro-environmental consumption behavior of South Africans in different social groups and socioeconomic characteristics. Being the most unequal society, this study presents a unique insight for policymakers into the environmental perceptions and pro-environmental consumption behavior individuals holds in an African society with vastly different social groups.

2. Literature Review

While there is an extensive background in the theoretical and empirical dynamics behind environmental perceptions and sustainable consumption behavior (Saari et al. 2021), there is still growing literature on how these environmental perceptions and sustainable consumption actions might differ among different population groups and individuals with different socioeconomic conditions. Based on the value-belief-norm (VBN) theory, individuals' values, beliefs, and norms are fundamental drivers of pro-environmental behavior (Stern et al. 1999). A large body of literature has proven the notion of a strong relationship between environmental perceptions like that of environmental knowledge, environmental concerns, and risk perceptions, to influence the behavior intentions and sustainable consumption behavior of individuals (Franzen and Meyer, 2010; Tam and Chan, 2018; Gkargkavouzi et al., 2019). However, these environmental perceptions and consumption behavior patterns differ by demographic and economic position.

Popularly explained by Inglehart (1995), either one of the affluence or exposure to degradation approaches can usually explain how individuals perceive environmental issues. From an affluence or post-materialist view (Inglehart, 1995, and 1997), as economies grow and become affluent, citizens no longer have to deal with materialist priorities such as economic struggles, high crime, or inflation fighting. In line with Maslow's (1954) theory of the hierarchy of needs, people, instead, are concerned with post-materialist values such as self-fulfillment, self-expression, political freedom, and environmental protection. Therefore, individuals with high economic positions tend to have more pro-environmental views that translate into sustainable consumption behavior that is pro-environmental.

However, Inglehart also empirically found strong pro-environmental views among developing countries, weakening the post-materialist views. Inglehart therefore introduced the objective problems subjective values problem (OPSV) theory. Stating that people in developing countries are much more exposed to environmental issues on a day-to-day basis, and because of their heightened experience with environmental issues such as air and water pollution, they have strong pro-environmental perceptions. This is also in line with the environmental deprivation theory (Lowe & Pinhey, 1982; Van Liere & Dunlap, 1980; Whittaker et al., 2005). Furthermore, individuals within minority populations and low socioeconomic status are more sensitive to environmental issues due to their daily experience with environmental issues in their surroundings supporting the OPSV theory.

Given this strong theoretical underpinning, many studies have shown that individuals have varying perceptions about environmental issues based on their population groups and socioeconomic characteristics (Flynn et al., 1994; Sulemana et al., 2016; Balzekiene and Telesiene, 2017; Lazri and Konisky, 2019). For example, Balzekiene and Telesiene (2017) showed that individuals have different risk perceptions about environmental issues based on rapid societal transformations and exposure to environmental degradation. In contrast, a study by Yang et al. (2015) found that Hispanics, one of the minority groups in the U.S., have more severe environmental concerns than Whites. Supportively, Song et al. (2020) show that non-

whites, females, and those with low-income positions tend to view human-based issues more through an environmental lens than advantaged groups. Furthermore, Lazri and Konisky (2019) discovered more significant concern about environmental justice issues among U.S. minority and lower-SES respondents, compared to Whites and higher-SES respondents, even after controlling for demographic variables like gender and political ideology. In terms of gender and location differences, Hunter et al. (2004) showed that women have a stronger sense of environmental concerns compared to males. At the same time, Sulemana et al. (2016) showed that among developed and some African nations, environmental concerns vary by perceived socioeconomic status.

However, these studies have mainly focused on developed nations, and little is known about these varying environmental perceptions and sustainable consumption behavior among South Africans, a country with some of the highest inequality levels in the world. Since the end of apartheid in 1994, income inequality has also increased among South Africans. Furthermore, while inequality is heavily racialized, the gap between those living in deep poverty and those living above comfortable lifestyles has been dubbed a nation of two countries. However, little is still known about the environmental perceptions and sustainable consumption behavior of South Africans, especially among different demographics and socioeconomic status groups. This study aims to expand the current literature on environmental perceptions and sustainable consumption behavior and link it with different social groups in this highly unequal society.

3. Methodology

We make use of the ISSP Environment III open data set. Between 2009 and 2013, the Environment III module was collected with a mixed-method approach and included 36 countries. The dataset includes South Africa, which we used in this study (N=3,112). The dataset includes vital questions about individuals' attitudes towards environmental issues, environmental knowledge, and consumption behavior, making it possible to assess the pro-environment attitudes and pro-environment consumption behavior for multiple countries across different social groups (Oreg and Katz-Gerro, 2006 Franzen and Meyer, 2010; Franzen and Vogl, 2013; Saari et al. 2021). This current study complements previous studies by analyzing the impact of socioeconomic and population group status on environmental perceptions and sustainable consumption behavior for South Africans. A summary of the demographic variables can be found in table 1.

TABLE 1. DEMOGRAPHIC DATA

Variable	Number of observations	Percentage of the total sample
African	1,781	57.25
Coloured	564	18.13
Indian/Asian	365	11.73
White	401	12.89
Low status[1]	1,230	55.88
High status	971	44.12

[1] Low and high socioeconomic status are derived from the income position of households. Where those who belong to a household with an income below R4000 per month are classified as low socioeconomic status individuals and those above 4000 are high-status individuals. The R4000 separation line is based on the lower poverty bound in South Africa, which is R945 (StatsSA, 2019), times the average household size in South Africa of 4 household members.

Male	1,268	40.75
Female	1,844	59.25
Urban	2,246	72.17
Rural	866	27.83

The dataset enabled us to construct various indices measures of environmental perceptions. Since there are multidimensional dynamics behind environmental perceptions, we followed a similar measurement approach to Vainio and Paloniemi (2014), Marquart-Pyatt (2015), Wang (2017), and Saari et al. (2021). Environmental issues were divided into five environmental measures: knowledge, environmental concerns, environmental risk perceptions, behavioral intentions, and sustainable consumption behavior. According to Saari et al. (2021), there is a strong intercorrelation between these environmental perceptions and consumption behavior. In order to construct these five environmental measures, 17 questions[2] are drawn from the ISSP Environment survey that relates to each component. These 17 questions are then grouped into five environmental perceptions measures (refer to table 2).

TABLE 2: MEASURES OF ENVIRONMENTAL PERCEPTIONS AND SUSTAINABLE CONSUMPTION BEHAVIOR

ISSP code	**Description**
Environmental Knowledge	
V18	How much do you feel you know about the causes of these sorts of environmental problems?
V19	How much do you feel you know about solutions to these sorts of environmental problems?
V37	(How much do you agree or disagree with…) I find it hard to know whether the way I live is helpful or harmful to the environment?
Environmental Concern	
V15	V15: Generally speaking, how concerned are you about environmental issues?
V23	How much do you agree or disagree with this statement? We worry too much about the future of the environment and not enough about
V25	How much do you agree or disagree with this statement? People worry too much about human progress harming the environment.
V36	And how much do you agree or disagree with this statement? Many of the claims about environmental threats are exaggerated.
Environmental risk perception (In general, do you think that … is…?)	
V39	Air pollution caused by cars.
v40	Air pollution caused by industry.
V43	Rise in the world's temperature caused by climate change.
Behavior intention (How willing would you be to…to protect the environment?)	
V29	Pay much higher prices
V30	Pay much higher taxes.
V31	Accept cuts in your standard of living.
Sustainable consumption behavior (How often do you… (for environmental reasons))	
V56	Make a special effort to buy fruit and vegetables grown without pesticides or

[2] Except for the items on sustainable consumption behaviour, which were measured on a 4-point scale, all items were measured on a 5-point Likert scale. While the environmental concern questions were reverse-coded, so all measures rank from 1 (lowest response) to 5 (highest response).

	chemicals
V58	Reduce the energy or fuel you use at home
V59	Choose to save or re-use water.
V60	Avoid buying certain products

Thereafter table 3 reports the reliability and validity of these groupings. The Bartlett test of sphericity, Kaiser-Meyer-Olkin (KMO) test, and Cronbach Alpha were conducted for each of these groupings (results in table 3). The Bartlett test is significant for all measures and confirms significant intercorrelations among items to conduct factors analysis. The KMO test also reports enough overlap between items to conduct factor analysis since all the KMO estimated values exceed the rule of thumb of 0.5. Lastly, Cronbach Alpha shows that all the environmental perceptions and consumption behavior measures are reliable with a high Cronbach Alpha score. After the reliability and validity of each measure were confirmed, an exploratory factor analysis was used to determine indices for each one of these five environmental perception measures in order to assess the impact varying socioeconomic and population group statuses have on these environmental views in South Africa (refer to table A.1. in the appendix for factor loadings).

TABLE 3. TEST OF RELIABILITY AND VALIDITY

	Bartlett	KMO test	Cronbach alpha
Environmental knowledge	0.000	0.528	0.630
Environmental concern	0.000	0.527	0.358
Environment risk perceptions	0.000	0.652	0.648
Behavior intention	0.000	0.736	0.896
Sustainable consumption behavior	0.000	0.771	0.777

4. Descriptive analysis

To test if the mean of the environmental perception items is statistically different among different social groups, we used a one-way Analysis of Variance (ANOVA) with race, socioeconomic status, gender, and location predicting the average level of agreement across the 17 questions. The results in the appendix confirm that most mean levels are statistically different among social groups. Upon closer observation, the heterogenous mean values provide helpful insight into the environmental perceptions among individuals in different social groups. For example, Whites, high-status individuals, males, and those residing in urban areas perceive higher environmental knowledge than those from previously disadvantaged population groups, low-status individuals, females, and people located in rural areas. This is not surprising since environmental knowledge usually is higher for individuals in higher social standings (Susanty et al. 2021). However, these results should be taken into context that the environmental knowledge measure is limited by a few standardized questions. There might be other excluded environmental knowledge components that are more relatable in a South African context, which might yield different results. Similarly, risk perceptions are highest among Whites, high-status individuals, and urban dwellers. However, females tend to have slightly higher environmental risk perceptions compared to males in South Africa.

Observing environmental concerns show that those from previously disadvantaged population groups tend to have higher environmental concerns compared to Whites. At the same time, those with low socioeconomic status levels also tend to have higher levels of environmental concerns, supporting the exposure to degradation argument that individuals that are more exposed to environmental degradation have a stronger sense of environmental concern compared to high socioeconomic status individuals (Inglehart, 1995; Worsley and Skrzypiec, 1998). However, behavioral intentions are higher among those with high socioeconomic status. Likewise, for race, gender, and location, Whites, males, and those in urban areas have the most robust sense of behavioral intentions toward pro-environmentalism. Indicating that the strong environmental concerns among those more vulnerable in society do not necessarily lead to higher behavior intentions in South Africa. Numerous factors could break this relationship between environmental concern and behaviour intentions. Although we do not further delve into this, the affordability of sustainable consumption behaviour could be one of the reasons. While the questions used to measure behavioural intentions might not capture all the pro-environmental components of a South African population heterogenous from the developed North.

Lastly, observing the sustainable consumption behavior of individuals from different social groups shows that Indians/Asians have the highest mean for sustainable consumption behavior, while high socioeconomic status individuals and urban dwellers have the highest tendency for sustainable consumption behavior. This should be of no surprise since sustainable consumption behavior is usually seen as a post-materialist choice strongly associated with individuals' affluence. Since a large South African population is either vulnerable to poverty or living below the poverty (Schotte et al. 2018), most South Africans do not have the finances to make sustainable consumption changes. Therefore, their strong environmental concerns do not translate into pro-environmental behavioral action.

TABLE 4: MEASUREMENT ITEMS AND MEAN VALUES BY SOCIAL GROUP (SOUTH AFRICA).

	Race				**Socioeconomic status**		**Gender**		**Location**	
	A	C	I	W	Low status	High status	Male	Female	Urban	Rural
Environmental knowledge										
How much do you feel you know about the causes of these sorts of environmental problems?	2.61	2.71	3.25	3.34	2.51	3.09	2.92	2.72	2.93	2.46
How much do you feel you know about solutions to these sorts of environmental problems?	2.5	2.54	2.92	3.18	2.37	2.92	2.77	2.57	2.77	2.34
How much do you agree or disagree with…: I find it hard to know whether the way I live is helpful or harmful to the environment?	2.51	2.68	2.42	2.96	2.49	2.56	2.56	2.59	2.63	2.5
Average	**2.54**	**2.64**	**2.86**	**3.16**	**2.46**	**2.86**	**2.75**	**2.63**	**2.78**	**2.43**
Environmental Risk Perception (In general, do you think that … is ... ?)										
Air pollution caused by cars.	3.8	3.96	4.06	4.04	3.76	4.01	3.85	3.92	3.92	3.81
Air pollution caused by industry.	4.17	4.09	4.46	4.27	4.1	4.31	4.22	4.2	4.24	4.11

Rise in the world's temperature caused by climate change.	3.77	3.8	4.3	4.04	3.72	4.07	3.9	3.9	3.91	3.8
Average	**3.91**	**3.95**	**4.27**	**4.12**	**3.86**	**4.13**	**3.99**	**4.01**	**4.02**	**3.91**
Environmental Concern										
Generally speaking, how concerned are you about environmental issues?	3.02	3.01	3.63	3.55	2.91	3.45	3.21	3.13	3.27	2.88
And how much do you agree or disagree with each of these statements? We worry too much about the future of the environment and not enough about prices and jobs.	3.43	3.47	3.19	3.13	3.45	3.31	3.34	3.39	3.39	3.31
People worry too much about human progress harming the environment.	3.42	3.33	3.34	3.09	3.45	3.29	3.33	3.36	3.35	3.33
Many of the claims about environmental threats are exaggerated.	3.07	2.97	2.86	2.89	3.07	2.92	3.05	2.96	2.99	3.02
Average	**3.24**	**3.20**	**3.26**	**3.17**	**3.22**	**3.24**	**3.23**	**3.21**	**3.25**	**3.14**
Behavioral Intention (How willing would you be to … to protect the environment?)										
Pay much higher prices.	2.39	2.42	2.57	2.88	2.25	2.7	2.56	2.43	2.58	2.22
Pay much higher taxes	2.28	2.28	2.45	2.64	2.14	2.53	2.4	2.31	2.42	2.15
Accept cuts in your standard of living	2.29	2.32	2.5	2.83	2.19	2.61	2.44	2.36	2.47	2.18
Average	**2.32**	**2.34**	**2.51**	**2.78**	**2.19**	**2.61**	**2.47**	**2.37**	**2.49**	**2.18**
Sustainable Consumption Behaviour (How often do you … (for environmental reasons))?										
Make a special effort to buy fruit and vegetables grown without pesticides or chemicals.	1.88	1.54	1.89	1.94	1.78	1.97	1.81	1.84	1.82	1.87
Reduce the energy or fuel you use at home.	1.74	1.63	2.34	2.14	1.71	2.07	1.89	1.82	1.9	1.7
Choose to save or re-use water	2.03	1.77	2.27	2.06	1.98	2.19	2	2.03	2	2.06
Avoid buying certain products	1.65	1.49	1.86	1.94	1.6	1.79	1.67	1.68	1.71	1.6
Average	**1.83**	**1.61**	**2.09**	**2.02**	**1.77**	**2.01**	**1.84**	**1.84**	**1.86**	**1.81**

5. Empirical results

To determine whether coming from different social groups influences environmental perceptions and consumption behavior, we ran separate ordinary least square regression analyses with race, socioeconomic status, gender, and location as predictors of each factor (Table 5).

TABLE 5: OLS REGRESSION ANALYSIS PREDICTING ENVIRONMENTAL PERCEPTIONS

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Environmental knowledge	Environmental concern	Environment risk behavior	Behavioural intention	Sustainable consumption behavior

Coloured	-0.0892*	-0.0699	-0.0249	-0.0486	-0.214***
	(0.0533)	(0.0435)	(0.0490)	(0.0591)	(0.0600)
Indian	0.159**	-0.132***	0.263***	-0.0630	0.199***
	(0.0622)	(0.0494)	(0.0567)	(0.0697)	(0.0697)
White	0.369***	-0.259***	0.0271	0.116	0.126
	(0.0704)	(0.0560)	(0.0646)	(0.0797)	(0.0770)
High status	0.284***	-0.102***	0.190***	0.253***	0.215***
	(0.0408)	(0.0330)	(0.0374)	(0.0459)	(0.0465)
Females	-0.104***	-0.0223	0.0376	-0.0602	-0.00179
	(0.0368)	(0.0299)	(0.0338)	(0.0415)	(0.0421)
Urban	0.182***	0.171***	0.0373	0.180***	0.00437
	(0.0436)	(0.0360)	(0.0406)	(0.0494)	(0.0512)
Constant	-0.252***	0.00721	-0.177***	-0.214***	-0.0699
	(0.0402)	(0.0330)	(0.0373)	(0.0456)	(0.0470)
Observations	2,077	1,889	2,001	2,033	1,684
R-squared	0.097	0.028	0.041	0.038	0.042

The results in table 5 confirm the impact different social groups and socioeconomic status have on environmental perceptions and consumer behavior. For example, Whites, males, individuals with high socioeconomic status, and urban dwellers all perceive higher environmental knowledge than Africans, females, low-status individuals, and rural dwellers. In contrast, Africans and those with low socioeconomic status tend to have deeper environmental concerns than Whites and high socioeconomic status individuals. These results support the exposure to degradation hypothesis that individuals at the lower end of the social stratum tend to be vulnerable to climate change shocks and, therefore, have a more substantial concern about environmental issues (Inglehart, 1995). Surprisingly the same is not found for environmental risk perceptions, where individuals with high socioeconomic status perceive environmental risk compared to lower socioeconomic status individuals. This points to individuals' varying environmental perceptions about environmental issues in South Africa.

Furthermore, observing the impact of socioeconomic status and population group status on consumer behavior shows that those with high socioeconomic status have higher sustainable consumption behaviour compared to those in low social standings. These findings supports the affluence hypothesis that affluent individuals have the luxury to focus on a post-materialist agenda more so than those at the lower end of the social distribution who are still struggling to meet minimum material requirements for survival of whom Africans still make up the largest share.

6. Conclusion

This study aimed to assess the sociodemographic impact factors have on environmental perceptions and sustainable consumption behavior in South Africa, a country with the highest record of inequality in the world. The extreme levels of inequality in South Africa make South Africa a country of two nations. Where a large share of the population is struggling in deep poverty, while a small share is on the top having abundantly affluent lifestyles, this divide also depends on different social characteristics like race, gender and location, all which should impact how individuals perceive environmental issues and their sustainable consumption behavior. The study finds that those at the lower end of society have deeper

environmental concerns than those higher up the social standings. This support the theory of environmental deprivation within a South African setting. However, observing consumption behavior supports the affluence argument that individuals with high socioeconomic status positions tend to have higher sustainable consumption behaviour. There are some limitations to this study. Firstly, South Africa is only included in the 2010 ISSP module, meaning it is impossible to assess temporal changes in environmental perceptions or have a more updated assessment of environmental perceptions in the country. Secondly, the measures on environmental perceptions and sustainable consumption behaviour are derived from related literature that is most dominant in developed nations. There is a possibility that these measures do not completely fit the South African population that is heterogenous from the developed north.

However, this study's findings still provide vital insight into the environmental perceptions and sustainable consumption behaviour of individuals in a developing African nation. Overall, the results suggests that the strong environmental concerns among those at the lower end of the social stratum, possibly due to their high exposure to environmental degradation, do not have the financial resources to put environmental concerns into action through sustainable consumption behavior. From a policy perspective, environmental policymakers in South Africa could take note of the serious environmental concerns among those more vulnerable to environmental degradation daily and provide further incentives and support for sustainable consumption behavior changes that would assist in environmental protection.

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Appendix A

TABLE A.1. FACTOR LOADINGS

Construct	Item	Loading
Environmental knowledge	V18	0.7749
	V19	0.7772
	V37	0.2157
Environment risk perception	V39	0.5773
	V40	0.6169
	V43	0.5429
Environmental concern	V15	0.0558
	V23	0.5292
	V25	0.5154
	V36	0.2628
Behaviour intention	V29	0.8708
	V30	0.8795
	V31	0.7840
Sustainable consumption behaviour	V56	0.5496
	V58	0.6536
	V59	0.6934
	V60	0.7203

TABLE A.2. ANALYSIS OF VARIANCE (F-STATISTICS)

	Race	Socioeconomic status	Gender	Location
Environmental Knowledge				
How much do you feel you know about the causes of these sorts of environmental problems?	64.40***	133.64***	20.87***	98.87***
How much do you feel you know about solutions to these sorts of environmental problems?	45.12***	120.08***	20.80***	82.41***
How much do you agree or disagree with…: I find it hard to know whether the way I live is helpful or harmful to the environment.	23.50***	2.46	0.02	8.14***
Environmental risk perception				
Air pollution caused by cars.	10.46***	26.68***	3.01*	6.51*
Air pollution caused by industry.	13.25***	27.46***	0.31	13.02***
Rise in the world's temperature caused by climate change.	27.62***	53.90***	1.15	6.19*
Environmental concern				
Generally speaking, how concerned are you about environmental issues?	39.99***	100.43***	2.89*	60.05***
And how much do you agree or disagree with each of these statements?	10.17***	6.12*	1.23	2.55

We worry too much about the future of the environment and not enough about prices and jobs.				
People worry too much about human progress harming the environment.	9.48***	10.28**	0.39	0.17
Many of the claims about environmental threats are exaggerated.	5.52***	8.37**	3.27*	0.40
Behavioural Intention (How willing would you be to … to protect the environment?)				
Pay much higher prices.	15.63***	59.28***	6.33*	44.87***
Pay much higher taxes	8.52***	48.76***	3.55*	26.46***
Accept cuts in your standard of living	20.12***	51.68***	2.48	29.90***
Sustainable Consumption Behaviour (How often do you … (for environmental reasons))?				
Make a special effort to buy fruit and vegetables grown without pesticides or chemicals.	16.18***	15.77***	0.86	1.45
Reduce the energy or fuel you use at home.	57.69***	68.23***	3.63*	24.26***
Choose to save or re-use water	16.44***	19.44***	0.43	1.94
Avoid buying certain products	25.09***	23.34***	0.03	10.18

*Note. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.*