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Are Happier Nations More Responsible? Examining the Link Between Happiness and Sustainability

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Abstract

The paper uses aggregate data from 152 countries to analyze the association between happiness and sustainability. Our paper provides new evidence on happiness and sustainability. Taking a psychological approach, happiness is linked to hedonism and reflects individual perceptions of quality of life and life satisfaction. Sustainability reflects the extent of meeting the UN Sustainable Development Goals which includes responsible consumption. In order to elucidate the link, the analysis examines separately the association between happiness, consumption, sustainability and responsible behavior. The results document a positive and significant association between them, which remains broadly robust subject to various controls, sensitivity and endogeneity tests. The results contribute to the elucidation of the role of happiness and hedonism for sustainability and stress the complementarity between happy life and good life. While associated with higher consumption, happiness could also lead to more responsible behavior and higher adherence of sustainability considerations. Thus, happy nations may consume more but they also appear to be more responsible towards the society and the environment. Our results challenge the traditional notion that happiness and sustainability go separate ways. These findings signal a number of potential social and political implications including pointing on the importance of happiness to responsible behavior.

1. Introduction

The past decades witnessed an unprecedented increase in the materialistic standard of living and development in general. However, the environment and natural resource scholars and activists have criticized this development. They argue that it has led to an increase in the volume of production and consumption to such an extent that has caused an irreparable depletion of non-renewable resources and environmental deterioration. This view eventually led to the emergence of the notion of sustainable development (SD), which has become a key element in political agendas worldwide (Veenhoven, 2004). SD can be understood in terms of harmonizing economic, ecological and social objectives to maintain sustainability. It means meeting today*'s* development needs without sacrificing the future generations*'* development needs.

At the same time, the perpetual rise in the consumption levels worldwide has raised the psychological and normative question of whether consumption is associated with happiness. The latter, and specifically the notion of "hedonism" or "pleasurable life", has been criticized for its negative impact on the environment because it causes over-consumption and keeps a blind eye to the environmental degradation (Veenhoven, 2003; Brown & Cameron, 2000; Chancellor & Lyubomirsky, 2011; Zidanšek, 2007; Waston 2019).

While the link between happiness and consumption has been explored, the link between happiness and sustainability has not (Veenhoven, 2004; Fabio & Kenny, 2018). This is largely because of the difficulty in defining sustainability in a social context. The question of sustainability has always revolved around the well-being of nations. However, we cannot achieve sustainability without considering the actions and behaviors of individuals. This brought the attention of psychologists, who made an effort to address the sustainability question from a psychological perspective (Fabio & Kenny, 2018).

The psychological explanation of individual well-being and happiness rests on two distinct traditions: the hedonistic tradition and the eudemonic tradition (Deci & Ryan, 2006). The hedonistic tradition focuses on happiness, defined as the presence of a positive affect and the absence of a negative affect. Hedonism is about maximizing pleasure and minimizing pain, so happiness and hedonism both embrace affect and pleasure by maximizing positive emotions and minimizing negative ones. Hedonists value pleasure, enjoyment, absence of distress and comfort (Huta & Watermen, 2013), and see life as providing "*s*atisfaction" (Kashdan *et al.*, 2008). As a result, happiness has been often measured in terms of life satisfaction (Veenhoven, 2004). The eudemonic tradition focuses on living a life in a full and deeply fulfilling way. Such fulfilling values include meaning, growth, authenticity and excellence (Huta & Watermen, 2013). The sustainability implications of these two perspectives are that environmentally concerned individuals are more likely to adhere to the eudemonic tradition than to the hedonistic one for they may face challenges in trying to be responsible consumers. Altruistic and consumption-mindful individuals have the incentive of protecting both the natural environment and their fellow humans (Fabio & Kenny, 2018). This psychological view implies a direct link between happiness and not-so-sustainable consumption. Happy people are so because they can consume, travel, shop and live in ways that could eventually harm the environment (Lindenberg & Steg, 2007). While the link between materialism and happiness has been under debate, the link between happiness and consumption has been intuitively self-evident (Guillen-Royo, 2008; White *et al.*, 2014; Veenhoven, 2004; Huang & Rust, 2011; DeLeire & Kalil. 2010). Thus, sustainability-minded consumers may, in turn, become less unhappy (Veenhoven, 2004).

In this paper, we challenge this view. We argue that, while positively related to consumption, happiness is positively associated to sustainability too. This argument is corroborated by studies of the happiness-related notion of mindfulness that document an association between happiness and mindfulness, where mindfulness predicts pro-environmental behavior (Barbaro & Pickett, 2016; Hollis-Walker & Colosimo, 2011). There has has been studies that linked being responsible with being happy (see for example see Aman et al., 2019)In this paper, we analyze the link between the "happy life" and the "responsible life" (Deci & Ryan, 2006). Even though more consumption is associated with more happiness, we argue that happy people may also be consuming in a sustainability-responsible way; that "hedonic" consumption may also be "responsible" consumption. For example, people may choose to enjoy the driving of an electric car. We argue that happier nations could also be responsible and take care of the environment. The World Happiness Report (2019) notes that the happier nations tend to be at the top of the list of countries meeting the sustainable development goals (SDGs). This observation enthused our interest in analyzing the link between happiness and sustainability in more detail. We treat happiness as a key hedonic aspect of life and analyze its effect on consumption, sustainability and responsible behavior. Using cross-country aggregate data, our results document a positive and significant aggregate association

between our measure of happiness and the measures of consumption, sustainability and responsible consumption. They show that happy nations can be environmentally responsible, contribute to sustainability considerations and improve sustainable development. However, the happiness effect is mitigated by the influence of various institutional factors and does depend on how happiness is measured and understood.

Our paper contributes to the literature in several ways. First, it analyzes the determinants of sustainability, especially those that emphasize values, attitudes, and behaviors (Leiserowitz *et al.*, 2006). It shows that a psychological condition, e.g. happiness, can be a significant factor driving a society*'s* tendency to achieve its sustainability for the future. Using rich cross-country information it explores the sustainability effect of happiness under different conditions, measurements and estimation methods. Second, it contributes to the understanding of the interaction between institutions, society, development and sustainability. This interaction reflects the influence of social, psychological and political conditions in a country (Van den Brande et al., 2008; North, 1990). We document that countries that value hedonism as a source of happiness can exhibit strong sustainability-minded behavior. This calls for a reconsideration of the traditional dilemma between the *"greedy"* view and the *"green"* view of consumption (Veenhoven, 2004). Third, it contributes to the understanding of the contextualization and social effect of hedonism (Huta & Watermen, 2013; Kashdan *et al.*, 2008). For example, if the source of human pleasure and discomfort can be found in the sustainability-minded considerations of people rather than elsewhere (e.g. materialistic consumption), then different countries with different sustainability considerations will exhibit different degrees of happiness, sustainable consumption and responsible behavior. Overall, our findings can aid the design of effective sustainability-enhancement policy based on the psychological and social conditions in a country.

In what follows, section 2 provides an account of the relevant literature; section 3 describes the data and methodology used for the analysis; section 4 uses univariate and multivariate analysis to explore the association between happiness, consumption and sustainability; section 5 uses sensitivity and endogeneity tests of the robustness of the results; and section 6 discusses the results and offers conclusions.

2. Theoretical background
2.1. *Consumption and sustainability*

Consumption is an aspect of human behavior that involves acquisition of goods and services for use. Consumer choice theories have been developed to identify different personal and impersonal traits influencing consumer decision making. Sustainability was introduced to the international agenda by the Brundtland Report (WCED, 1987) and was defined as the development that "meets the needs of the present without compromising the ability of future generations to meet their own need*s'*. It involves achieving sustainable production and consumption at both the macro (societal) and micro (individual) levels (Moll *et al.*, 2008). However, the two levels interact with each other and they may be incompatible, giving rise to negative psychological consequences, such as discomfort and a feeling of sacrifice (Verdugo, 2012). Micro-level studies document a positive association between happiness and sustainable behavior (Bechtel & Corral-Verdugo, 2010).

Sustainable consumption is a consequence of SD considerations in the light of consumer choice ones (Veenhoven, 2004). Sustainable consumption is the Goal 12 of SDGs. The *"sustainability"* concept roots back to the history of growing attention to the environment and the depletion of natural resources in the context of the interaction between humans and the environment. Environmental concerns have influenced individual initiatives and practices through *"green consumption"* and *"green marketing"* (Prothero, 1996). Environmental studies beyond energy conservation, that focus on "green consumer*s'* (Granzin & Olsen, 1991; Schwepker & Cornwell, 1991), "green washing" (Kangun *et al.*, 1991), document significant associations between environmental organizations, government institutions and private business within an environmental corporate context (Apaiwongse, 1991; Milne *et al.*, 1996; Abbas et al., 2020a). Psychological studies analyze the impact of consumer psychology on sustainability behavior through values and attitudes. Some specific studies have highlighted the role of pro-environmental behavior on sustainable consumption, by reference to recycling attitudes (Biswas et al., 2008; Catlin & Wang, 2013).

Studies of the "voluntary simplicity" argue that reducing consumption is a personal voluntary action (Huneke, 2005), which goes against the marketing goals and the associated consumption ideology linked to happiness (Hetrick, 1989). The interpretive approach aims to increase knowledge that promotes responsible consumption.

Consumer behavior theories have tried to understand the characteristics and personality aspects of the "responsible consumer"[1] and explain their contribution to sustainable behavior (Gabriel & Lang, 1995; White & Simpson, 2013). The literature has highlighted three major and interconnected factors for "responsible consumer" behavior: awareness and knowledge (eco-literacy and environmental concern), social stimuli (national culture, peer effect, society value system, and advertisement) and personal traits (demographics, self-identity, beliefs, mindset, and happiness). A link between consumer behavior and happiness, especially its hedonistic aspect, is well documented.

2.2. Happiness and sustainability

The study of happiness is not new. Psychologists (Gilbert, 2006; Seligman & Csikszentmihalyi, 2000; Samuel, 2016), economists (Frank, 1985), and public policy theorists (White & Simpson, 2013) have always been interested in understanding the meaning and implications of happiness. The definition of happiness in the literature varies (Veenhoven, 2004). Most definitions include at least the concept of positive affect or "love of life". This concept, however, may not work well in explaining sustainability. For example, climate change is one of the greatest environmental problems, largely caused by natural and anthropogenic factors, such as human irresponsible activity regarding greenhouse emissions and misuse of land (ElMassah & Omran, 2014). Hedonism and happy life may cause such irresponsible activity by enjoying the driving of a fossil-fuel burning car, the decorating of a Christmas tree that is cut from the woods, or the frequent change of furniture by cutting down on forest wood, etc. This "hedonistic" aspect of happiness has long been criticized and treated as a harmful notion, not least with respect to sustainability (Han, 2015; Deci and Ryan, 2006).

Well-being from a psychology perspective has been tackled from two perspectives: the hedonistic tradition and the eudemonic tradition (Deci and Ryan, 2006). The hedonic perspective focuses on pleasure, enjoyment, happiness and satisfaction (i.e. "feeling good"). The eudemonic perspective focuses on meaning, purpose and personal growth (i.e. "functioning well"). Values that are relevant to eudemonia include meaning, growth, authenticity and excellence (Huta & Watermen, 2013). Happiness is usually labeled as subjective well-being in the literature (Diener, 1984). A large debate developed about the "happy life" versus the "good life". Critics for the "happy life" suggest that people focus on their joy only, and this may hurt the society and the environment (Han, 2015; Banicki, 2014; Seroczynski, 2015; Giesinger, 2012). More generally, the question of whether our today's happiness should be sacrificed for the sake of the future generations' happiness is still open (Veenhoven, 2004). The argument that happy people consume more or consume in a less responsible way has been debated for decades (Veenhoven, 2004). "Consumerism" and "consumption" reflect two aspects of "pleasurable life", which sit uncomfortably with sustainability. Moral philosophers and ethics researchers criticized the "positive psychology" movement for its excessive focus on "hedonism" raising questions of the moral nature of happiness (Banicki, 2014; Seroczynski, 2015; see also Abbas et al., 2020b). They questioned the three dimensions of happiness: the pleasurable life, the engaged life and the meaningful life. This led psychology researchers to nudge themselves away from "pleasure" and focused more on "meaning" and "purpose".

In this paper, we retain the focus on hedonism, defined as "maximizing pleasure and positive emotions." More specifically, we follow the approach taken by the World Happiness Report, which defines happiness as the extent to which a person is subjectively happy with his/her life as a whole (DeLeire and Kalil. 2010). We also adhere to the World Database of Happiness's definition of happiness as life satisfaction. Since hedonism has to do with maximizing one's own feelings of happiness or pleasure (Kashdan et al., 2008), it could lead to irresponsible consumption or consumption without weighing the impact on the environment in the long run, like smoking cigarettes (Samuel, 2016). Hedonists want to minimize discomfort; they choose to drive a car rather than walk. Hedonism values pleasure and joy, while eudemonism values growth, meaning and grit (Deci & Ryan, 2006; Kashdan et al., 2008). Hedonism has also been associated with materialism, where hedonic well-being reflects the positive feelings that spring from the possession of material goods that one wants or the opportunities one wishes (Waterman, 1993). However, on the other hand, happiness has been found to be linked to less consumption and more saving (Guven, 2012). So, from a sustainable consumption perspective, a person whose values are more eudemonic rather than hedonistic would be more responsible towards the environment.

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[1] The terms "green consumption", "responsible consumption" and "sustainable consumption" are often used loosely and interchangeably in the literature and practice (Kotler & Armstrong, 2004).

In this paper, we argue that a "balanced hedonistic" approach may not necessarily lead to waste or to irresponsible consumption (see Prinz & Bunger, 2012).. A balanced hedonistic approach incudes both hedonistic and eudemonic aspects. Even though they are different, these terms are not mutually exclusive. Contrary to previous research on consumption and happiness (Veenhoven, 2004), we argue that happiness and pleasure are positively associated not only with consumption in general but also with sustainable or responsible consumption. We argue that people can be "happy green" consumers and that they do not necessarily need to suffer in order to achieve the sustainability goals. We argue that prior research has not properly approached the association between happiness, consumption and sustainability. The current paper focuses on individual-level happiness vis-a-vis the requirement of responsibility towards sustainability. This rationale underlies the UN's formulation of SDG 12, which states: *'sustainable consumption and production are about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all'.*

Various theories of social psychology have emphasized the importance of social stimuli for responsible or green consumption (Aertsens *et al.*, 2009). More specifically, green consumer behavior can be explained by the norm activation theory (Schwartz, 1977), the theory of reasoned action (Fishbein & Ajzen, 1975), the planned behavior theory (Ajzen, 1991), the value-belief-norm theory (Stern *et al.*, 1999) and the attitude-behavior-context theory (Stern, 2000). Societies built around shared sustainability beliefs on the environmentally damaging effect of generalized consumption, may induce a sustainability-minded behavior (Bauman, 1992). We argue here that one can be happy and enjoy pleasure, which means enjoying life, without necessarily harming the environment. One could seek joy even in the consumption of luxury products and still care for the environment, in the sense that s/he, for example, purchases recycled products for example. The theory of planned behavior argues that these social stimuli are associated with subjective norms of behavior. These norms can affect wholly or partially the individuals' behavior to reinforce directly ecofriendly behavior or a way of living as well as fuel a consumer's pro-environmental emotion/passion and hence induce responsible consumer behavior. We argue that these behaviors can go hand in hand with happiness and pleasure.

The theory of planned behavior shows that personal traits reflect and interact with social beliefs in ways that can magnify the inducement towards making a specific choice (ElMassah, 2018). Therefore, irrational hedonism could lead to irresponsible behavior, whilst a balanced consumer, who is both hedonic and eudemonic would make responsible consumer choices.

To sum up, whether an increase in happiness can predict an increase in sustainability is still an open question. We challenge the argument that happiness in general and hedonism in particular are inversely related with sustainability (Veenhoven, 2004). We test the hypothesis that happiness based on hedonistic consumption can be compatible with sustainability considerations and responsible consumption, in contrast with received wisdom (Baudrillard, 1997; Bourdieu & trans, 1984; Woodruff, 1997; Elliott, 1994; Faber & Christenson, 1996). Happiness and sustainability, just like hedonia and eudemonia, can go together. Therefore, our study aims to fill the gap in literature by exploring the association between happiness and sustainability through responsible/sustainable consumption on the aggregate country level. We argue that happiness, while positively associated with consumption, can also be positively associated with sustainability and responsible environmental behavior. Thus, hedonism could be associated with positive effects on sustainability considerations.

3. Data and research methodology

The study uses country-level annual data for studying the effect of happiness on sustainability, responsible behavior, consumption. In order to test the hypothesis that "good happy life" can be "responsible life", we analyze the effect of happiness separately for each component. Thus, we use three outcome variables: consumption, sustainability and the recycling rate as a proxy for responsible behavior. For consumption, we use the data published in the World Development Indicators by the World Bank. For sustainability, we use the sustainability data from the SDGs index published in the UN's SDGs database. The SDGs Index score indicates the percentage of achievement in 17 sustainable development goals and shows a country's position between the worst (0) and the top or desired (100) outcomes. However, the SDGs Index score is available for only the 2016-2018 period. For responsible behavior, we use the data for the recycling rate published in the "What a Waste Global Database" by the World Bank.

Our key independent variable is happiness. We use two different measures for happiness to confirm the robustness of our results and to measure the different types of hedonic well-being. We obtain our key measure of happiness from the World Happiness Report (henceforth WHR). The WHR calculates

happiness ratings based on the average respondents' answer to the Cantril ladder question designed to evaluate the quality of their present lives on a scale of 0 to 10 for each country, averaged over the relevant period for each year. Six key dimensions have constituted the happiness construct in the WHR that explain each country's ladder score, which are GDP per capita, social support, healthy life expectancy, freedom to make life choices, generosity, and freedom from corruption. Our WHR measure of happiness includes 152 countries for the 2000-2018 period. Happiness in this case is theredore considered from an evaluative aspect, meaning, how people evaluate their own life. In our sensitivity tests, we use an alternative measure of happiness based on the life satisfaction scores published in Veenhoven's (2018) States of Nations. In the latter case, the measure of happiness is the answer to the question: "On the whole, how satisfied are you with life you lead? Are you very satisfied, fairly satisfied, not very satisfied, or not satisfied at all with life you lead?" Both measures of happiness value life experience and reflect more of a "positive affect". We acknowledge that the meaning of happiness may not always have a positive content, but we consider this a different research question. It is also important to note that the evaluative aspect of happiness could be seen as the cognitive component of life satisfaction (Veenhoven, 2018). The Appendix defines all the variables. Table 1 presents the country distribution of the key variables. The data show a considerable distribution of each variable among countries and a large variation of all variables within each country.

Table 1. Happiness, sustainability and consumption per country (mean values)

Country	SDG index	Happiness	Consum. per capita	Country	SDG index	Happiness	Consum. per capita	Country	SDG index	Happiness	Consum. per capita
Afghanistan	43.19	3.71	5.92	Georgia	67.51	4.17	13.77	Nigeria	44.06	5.03	10.23
Albania	66.19	4.99	25.43	Germany	81.49	6.79	45.22	North Macedonia	67.02	4.89	33.90
Algeria	64.93	5.48	21.53	Ghana	58.04	4.75	17.36	Norway	82.47	7.55	60.79
Angola	47.92	4.42	12.39	Greece	71.14	5.50	53.04	Oman	62.70	6.85	83.03
Argentina	69.85	6.36	29.39	Guatemala	55.52	6.25	14.35	Pakistan	52.07	5.30	12.29
Armenia	68.80	4.44	20.02	Guinea	45.61	4.03	13.37	Panama	63.18	6.73	21.35
Australia	74.43	7.30	112.32	Guyana	59.64	5.99	48.15	Paraguay	64.22	5.55	20.26
Austria	80.15	7.25	47.85	Haiti	42.55	3.95	3.50	Peru	64.27	5.56	32.04
Azerbaijan	67.65	4.92	21.37	Honduras	59.03	5.35	12.70	Philippines	61.63	5.14	11.59
Bahrain	65.25	5.86	85.74	Hungary	75.44	5.12	43.93	Poland	73.09	5.87	48.00
Bangladesh	53.32	4.69	6.76	Iceland	79.15	7.41	50.86	Portugal	73.70	5.35	41.10
Belarus	75.54	5.55	43.55	India	55.17	4.59	13.69	Qatar	63.26	6.57	151.42
Belgium	78.80	7.01	51.94	Indonesia	60.03	5.22	18.40	Romania	70.95	5.48	30.00
Belize	64.17	6.20	30.15	Iran	62.93	4.85	37.99	Russia	68.06	5.53	41.45
Benin	46.14	3.92	13.62	Iraq	53.75	4.65	15.49	Rwanda	51.70	3.69	7.20
Bhutan	63.02	5.20	29.25	Ireland	77.38	7.05	52.71	Saudi Arabia	61.21	6.53	62.47
Bolivia	63.41	5.75	22.16	Israel	71.43	7.21	41.63	Senegal	53.08	4.36	10.33
Bosnia & Herzeg	64.22	5.09	28.83	Italy	73.54	6.26	35.44	Serbia	71.34	5.08	30.42
Botswana	58.38	4.04	89.31	Jamaica	63.84	5.70	22.21	Sierra Leone	44.38	4.17	10.72
Brazil	67.88	6.67	32.20	Japan	77.89	6.02	32.05	Singapore	71.63	6.51	97.59
Bulgaria	72.48	4.42	45.09	Jordan	64.35	5.36	25.64	Slovakia	75.08	6.00	33.24
Burkina Faso	45.47	4.12	10.73	Kazakhstan	67.69	5.74	68.15	Slovenia	79.05	5.96	49.02
Burundi	47.88	3.55	5.78	Kenya	51.93	4.38	9.42	South Africa	58.62	4.85	36.21
Cambodia	54.31	4.18	11.02	Kuwait	58.69	6.29	89.58	South Korea	75.18	5.88	44.87
Cameroon	51.65	4.55	11.09	Kyrgyzstan	67.29	5.05	22.06	Spain	74.80	6.51	46.39
Canada	77.22	7.42	85.24	Lao PDR	57.31	4.94	17.25	Sri Lanka	61.76	4.31	11.82
Central Afr. Rep.	33.50	3.51	9.50	Latvia	74.15	5.32	36.74	Sudan	47.21	4.38	4.72
Chad	38.70	4.03	8.38	Lebanon	62.57	5.06	29.64	Suriname	65.43	6.27	33.26
Chile	70.51	6.40	87.59	Lesotho	50.14	4.17	21.68	Sweden	85.04	7.37	51.60
China	65.41	4.98	51.61	Liberia	40.54	3.91	8.46	Switzerland	80.72	7.53	38.60
Colombia	62.87	6.28	14.88	Lithuania	72.87	5.76	35.34	Syria	56.58	4.02	27.76
Congo	50.15	4.38	8.63	Luxembourg	75.92	7.01	86.58	Tajikistan	64.71	4.81	7.70
Congo, Dem. Rep.	39.11	4.35	7.32	Madagascar	41.77	3.94	7.22	Tanzania	50.08	3.69	8.46
Costa Rica	69.07	7.19	22.75	Malawi	45.92	4.07	8.58	Thailand	66.98	6.11	31.60
Cote d'Ivoire	50.67	4.40	8.58	Malaysia	67.11	5.83	50.71	Timor-Leste	61.36	6.28	15.80
Croatia	74.70	5.55	30.21	Mali	45.49	4.19	14.46	Tunisia	66.63	4.80	25.59
Cuba	73.44	5.42	20.02	Malta	74.39	6.38	53.29	Turkey	66.85	5.30	41.51
Cyprus	69.16	6.09	52.94	Mauritania	47.44	4.43	20.59	Turkmenistan	58.10	5.61	40.35
Czech Rep.	79.12	6.56	54.90	Mauritius	62.45	5.76	36.20	Uganda	50.47	4.23	9.57
Denmark	84.22	7.69	61.59	Mexico	65.90	6.77	23.34	Ukraine	70.49	4.73	32.20
Djibouti	50.11	4.82	6.64	Moldova	71.78	5.58	16.80	United Arab Emr.	66.27	6.84	84.58
Dominican Rep.	63.59	5.16	14.89	Mongolia	62.03	4.93	60.15	United Kingdom	78.36	6.91	31.48

Ecuador	66.84	5.76	20.99	Montenegro	65.80	5.27	31.15	United States	72.72	7.11	71.63
Egypt	63.09	4.55	20.91	Morocco	64.85	5.04	19.54	Uruguay	69.83	6.23	89.12
El Salvador	60.88	5.95	12.15	Mozambiqu	46.46	4.65	7.12	Uzbekistan	70.77	5.76	24.37
Estonia	77.12	5.53	86.65	Myanmar	54.36	4.40	9.06	Venezuela	63.88	6.20	21.89
Eswatini	50.26	4.54	30.22	Namibia	56.03	4.68	32.90	Vietnam	65.06	5.29	26.23
Ethiopia	49.93	4.42	7.73	Nepal	58.62	4.63	10.05	Yemen	44.26	3.89	7.04
Finland	82.67	7.55	80.90	Netherlands	79.45	7.47	48.41	Zambia	47.54	4.63	16.77
France	79.81	6.66	40.83	New Zealan	76.51	7.32	73.30	Zimbabwe	54.50	4.03	9.84
Gabon	61.39	4.38	17.41	Nicaragua	62.29	5.59	13.61				
Gambia	45.72	4.52	8.17	Niger	41.58	4.20	10.69	Total average	62.39	5.34	32.41

We carry out both univariate and multivariate analysis of the association between happiness and consumption, sustainability and recycling. Our sample is unbalanced and our analysis uses only non-missing observations based on existing data. The Shapiro-Wilk test shows that the data of the key variables is not normally distributed ($p < 0.05$). Therefore, we check for nonlinearities and perform several sensitivity checks for the robustness of our estimates. Figure 1 presents the pairwise correlation between happiness and consumption per capita in the sample countries for the whole period. The average correlation is positive (0.58) and significant at the 1% significance level. It appears that more happy countries consume more than less happy nations. For instance, happier countries in the scale, such as Canada, Finland and Australia, are also strong consumers, whilst unhappy South Sudan, Haiti and Togo are weak consumers. Happiness and consumption appear to be associated and the association depends on the degree of development. Figure 2 presents the results of the pairwise correlation between happiness and sustainability measured by the SDGs index. The correlation is also positive (0.792) and significant at the 1% significance level. Countries with higher scores in the World Happiness Report exhibit high achievement of the sustainability goals as measured by the SDG index. For example, happier countries like Denmark, Sweden and Norway are the ones that make more progress towards meeting the SDG goals. Less happy countries, such as Central African Republic, Chad and Liberia, are making the least progress towards meeting the SDG goals. It appears that countries with happy people, who appreciate and enjoy life, may also be the ones which are responsible towards the society or the environment. Figure 3 presents the pairwise correlation between happiness and waste recycling. The correlation is positive (0.503) and significant and positive at the 0.01 level. For example, happier countries, such Iceland, Australia and Singapore, are the ones adopting stronger recycling attitudes, whilst countries that are low in the happiness scale, such as Togo, Syria and Botswana, are also recycling less. Therefore, prima facie evidence shows that happy countries tend to consume more and can also be more mindful about sustainability and responsible behavior. Thus, the "hedonistic" approach to happiness may provide a robust predictor of sustainability and responsibility.

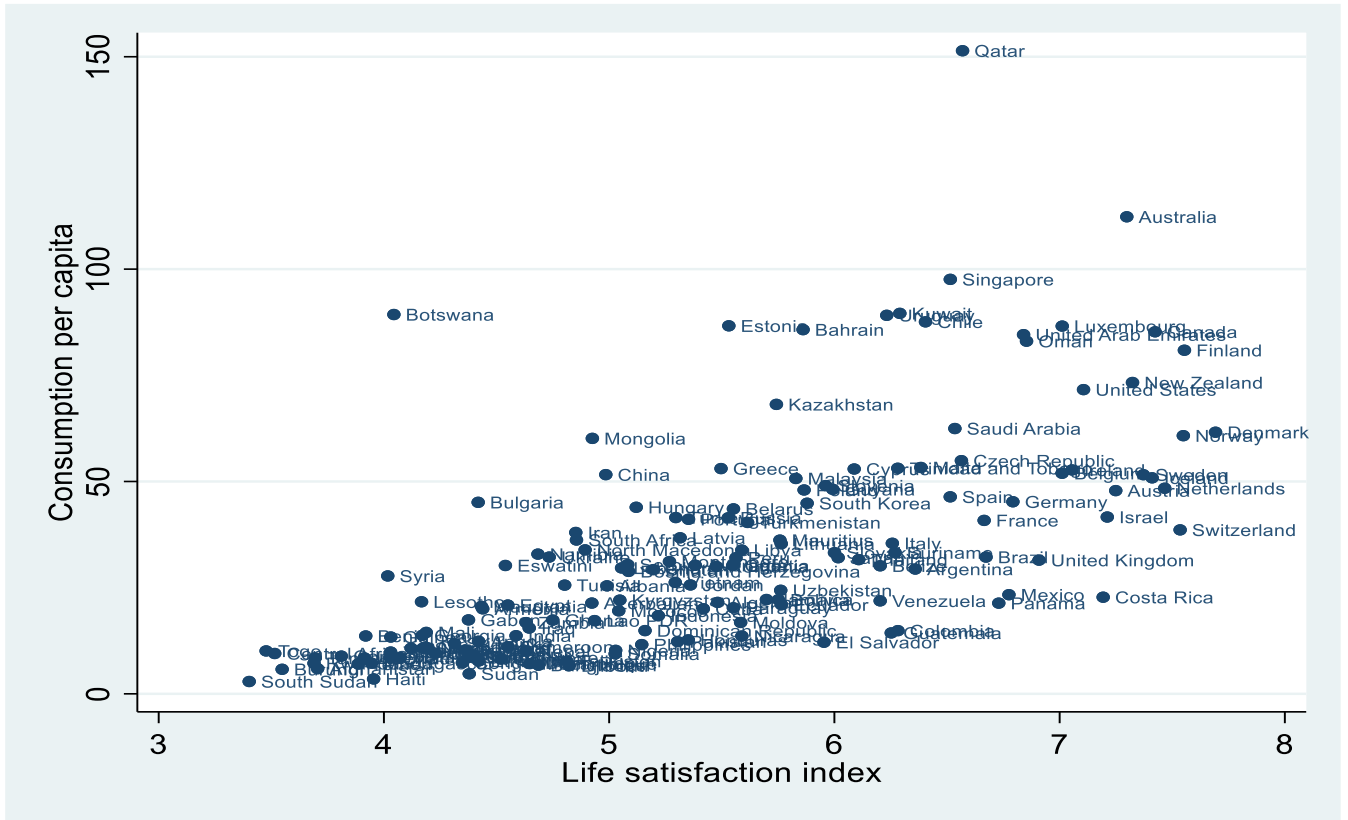**Figure 1.** Happiness and consumption per capita.
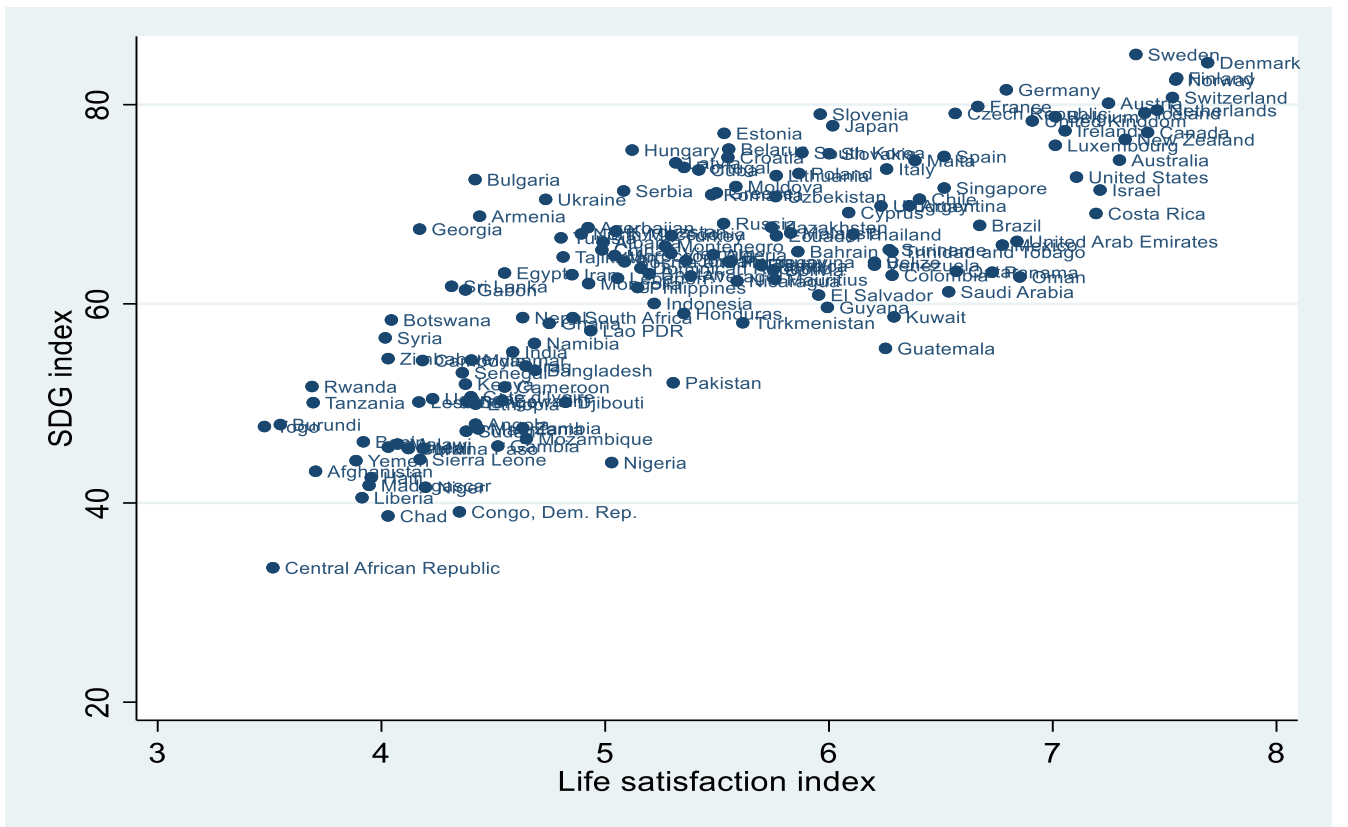

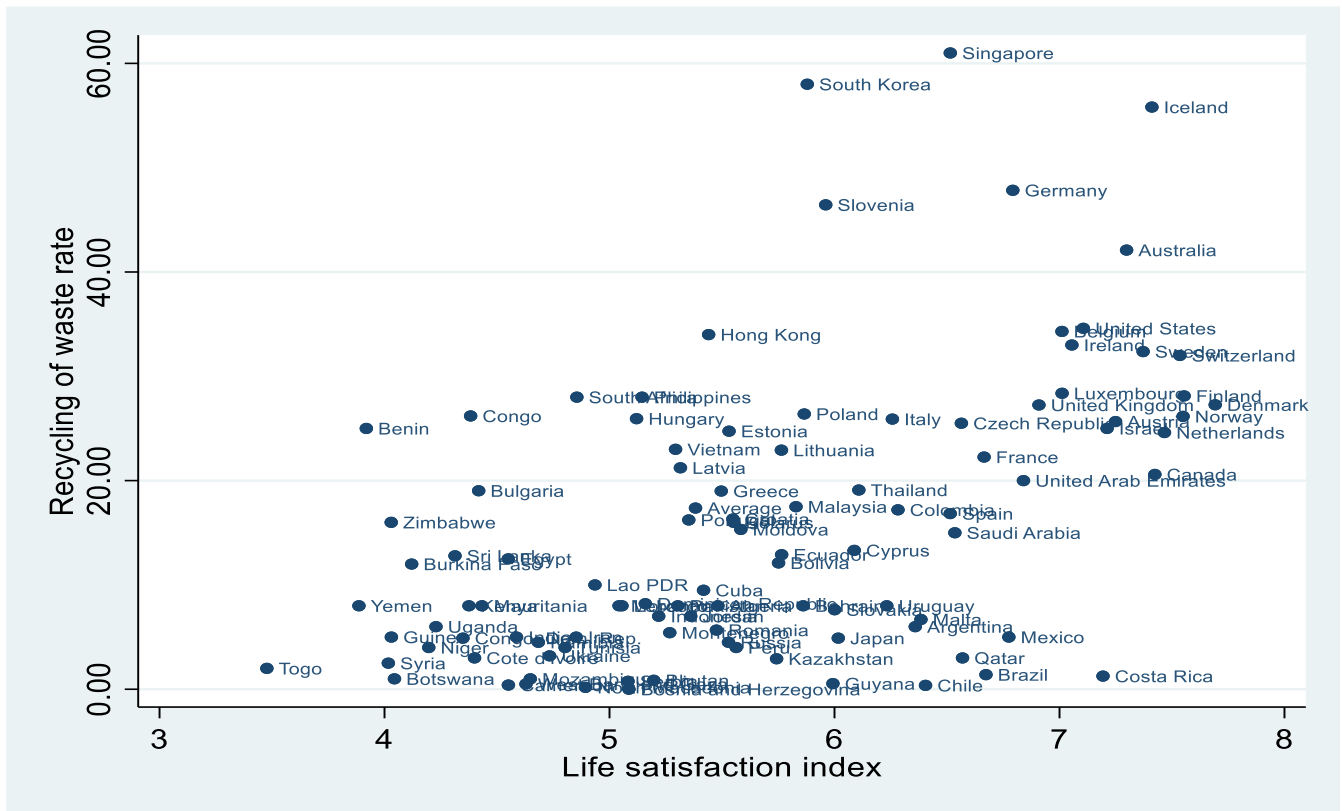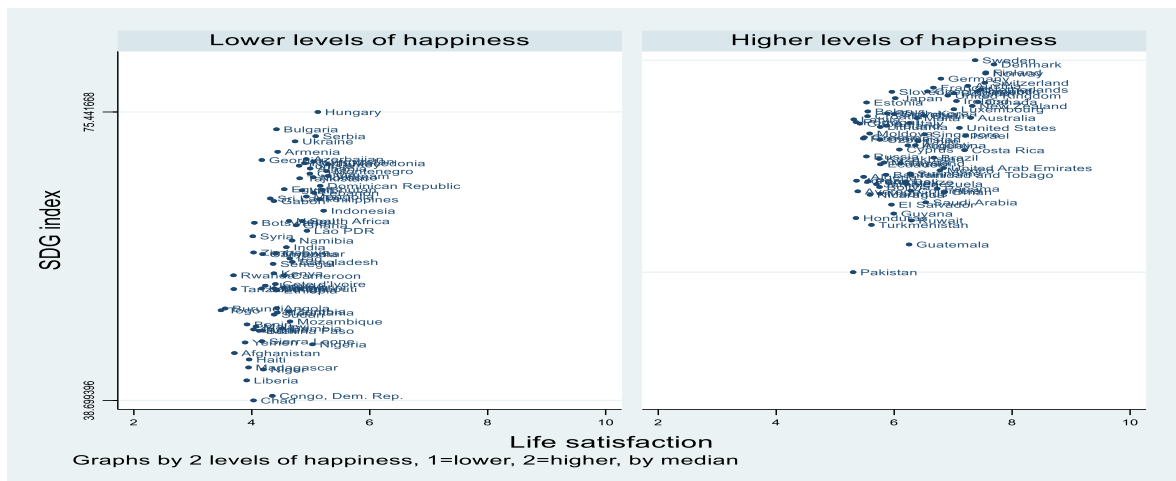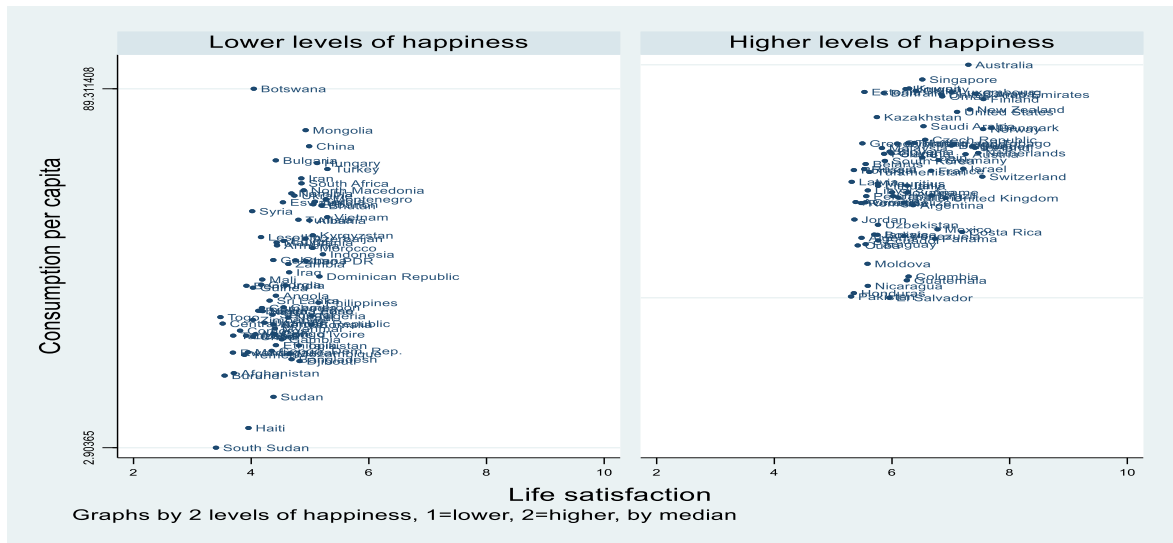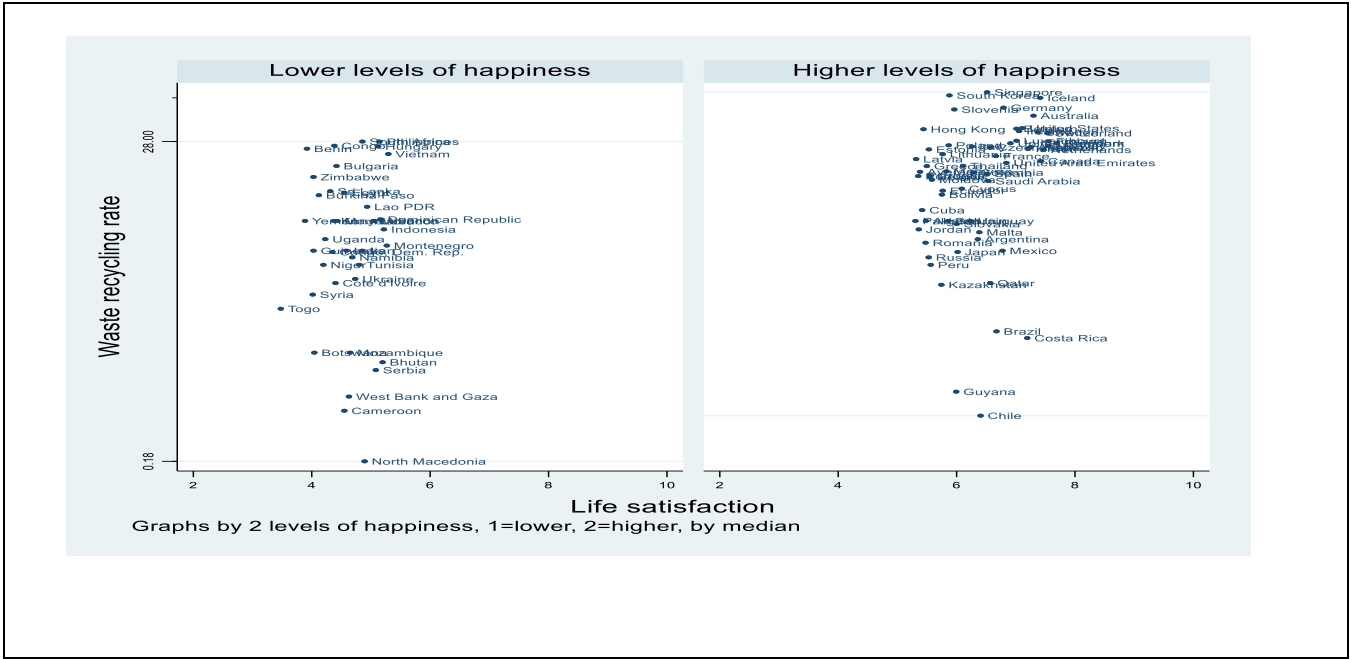**Figure 2.** Happiness and sustainability.

Figure 3. Happiness and recycling.

In order to examine the existence of nonlinearities in the happiness effect, we split our sample countries into higher and lower happiness ones by the median value of the happiness index (Asiedu *et al.*, 2012). We remove outlier countries. We recalculate the pairwise correlations. In the subsample of countries with lower happiness, the average correlations are also positive and significant at the 1% significance level. The correlation between life satisfaction and consumption is 0.399; with the SDGs index is 0.659; and with the waste recycling is 0.108. In the subsample of countries with higher happiness, the average correlations are 0.449, 0.657 and 0.394, respectively. Figure 4 provides the general pattern of the correlations. We observe that the correlations are somewhat different among the two levels of happiness. More specifically, we observe that with respect to consumption, the correlation is stronger in lower levels of happiness as expected since these are associated with lower development. With respect to sustainability, the correlations do not differ much between less and more happy countries. It appears that the degree of happiness varies about the same with the degree of sustainability-minded behavior in both less and more happy countries. Finally, with respect to recycling, the correlations are stronger in more happy countries relative to the less happy ones. It appears that awareness about responsible behavior is stronger at higher levels of happiness.

Figure 4. The happiness effect, by level of happiness.

Graphs by 2 levels of happiness, 1=lower, 2=higher, by median

Graphs by 2 levels of happiness, 1=lower, 2=higher, by median

Graphs by 2 levels of happiness, 1=lower, 2=higher, by median

We also use multivariate analysis to control for the impact of additional factors on the association between happiness and responsible and sustainable behavior and therefore for producing results that are more robust. We control for the impact of national economic, social and political factors. These country-level controls capture different time-varying influences across countries and are included in the analysis to account for spurious associations. We select them after performing collinearity tests and using log values to smooth out large numbers. The data is obtained from the global databases maintained by the World Bank, the United Nations and specialized researchers. The Appendix provides the definition and source of these control factors. Table 2 presents the summary statistics of the variables. They show considerable variation among countries as indicated by the large differences between minimum and maximum values.

Table 2. Summary statistics.

Variable	Obs.	Mean	S.D.	Min	0.25	Mdn	0.75	Max
SDGI	463	62.78	12.01	26.1	54.89	64.56	71.8	85.61
CONSCAP	3312	3.08	0.87	-0.7	2.42	3.13	3.72	5.43
RECYCLE	2261	2.25	1.48	-6.94	1.61	2.59	3.26	4.2
HAPPINESS	1698	5.44	1.12	2.66	4.61	5.33	6.28	8.02
HAPPINESS1	2760	5.95	1.3	2.5	5.0	6.1	7.0	8.5
GDPCAP	3660	17138.5	19766.6	443.5	3318.9	9635.6	25138.0	140000.1
CREDIT	3309	51.07	70.11	0.19	17.17	36.42	66.83	2564.49
GINI	1502	0.39	0.08	0.21	0.32	0.37	0.43	0.63
HEALTHEXP	1676	4.14	0.13	3.48	4.07	4.17	4.22	4.34
SOCSUP	1685	0.81	0.12	0.29	0.75	0.83	0.9	0.99
ETHNFRAC	3173	0.44	0.26	0.10	0.2	0.43	0.66	0.93
GEOPOL	4136	96.94	50.22	39.49	64.96	81.76	121.54	258.73
DEMQUAL	1558	-0.14	0.88	-2.45	-0.79	-0.23	0.65	1.58
CONTRCORR	3624	-0.02	1.00	-1.87	-0.77	-0.26	0.64	2.47
LIBDEM	3322	0.41	0.27	0.01	0.16	0.38	0.65	0.91
GENDER	3295	0.74	0.18	0.06	0.62	0.79	0.89	0.97

The regression estimates represent within-country variation in the association between a country's socially responsible and sustainable behavior and the extent of happiness of its people. Since the main outcome variables are continuous ones and our sample is unbalanced, we use an OLS model for estimating the regression (Greene, 2012). The OLS method has the disadvantage that its linear estimation may result in overestimated values for the outcome variable. However, it has the advantage of avoiding the possible estimation bias from the incidental parameter problem inherent in nonlinear estimations as well as of maintaining simplicity and comparability across countries (Angrist and Pischke, 2009). However, we apply alternative estimation methods later to check for endogeneity. We consider only observations with non-missing values. We use country-year fixed effects to control for country-year specific heterogeneity. We correct standard errors for heteroscedasticity and cluster them at the country level to allow arbitrary correlations of the error term within a country-year cell and avoid overstating estimation values (Moulton, 1990). Finally, in order to keep the analysis simpler, we do not include interaction effects. Our general estimation model is described by the following regression equation:

$$\text{RESPONSIBILITY}_{it} = \alpha + \text{HAPPINESS}_{it}\,\beta_1 + X'_{it}\,\beta_2 + \mu_{it} \tag{1}$$

where RESPONSIBILITY$_{it}$ is the broad measure of responsible behavior of a country i in year t. In this sense, Responsibility comprises in separate regressions the country-year measures, alternatively, of (a) consumption per capita (CONSCAP$_{it}$), or (b) the Sustainable Development Goals Index (SDGI$_{it}$), or (c) the recycling rate (RECYCLE$_{it}$). The key regressor, HAPPINESS$_{it}$, reflects the extent of happiness in the country i and year t as measured by the World Happiness Report. In addition, in the sensitivity tests applied later, we use an alternative measure of happiness based on the updated index provided by Veenhoven (2018). We properly identify each outcome variable in the regression tables. The vector Xi includes all country-level controls in alternative regressions. The term μ_{ij} is the two-way error term component that comprises the sum of θ_i, λ_t and $e_{i,t}$, where θ_i accounts for unobservable country-specific effect, λ_t accounts for year-specific effect and the $\varepsilon_{i,t}$ is a disturbance parameter that is assumed to vary across countries and years. Finally, we are well aware of the difficulty in interpreting the observed correlations as causal effects. We therefore interpret our results as power of association rather than outright causation, and we use the terms "predict" or "impact" to only simplify exposition. Pairwise correlations between the regressors do not show severe collinearity, as the estimated correlation coefficients are below 0.5. Therefore, they can all be included in the regression analysis.

4. Analysis of results

In order to provide a deeper analysis of the association between happiness and sustainable and responsible behavior, our analysis includes separately the baseline marginal effect and the different effects that result after controlling for the influence of the various country-level factors. First, we analyze the association between happiness and consumption. Table 3 presents the results. The coefficient of the happiness index is positive and significant in all models. Higher levels of happiness are associated with higher (log) levels of consumption per capita. The baseline marginal effect of happiness in the whole sample is 44.7 percent. Since our outcome variable is log-based, the effect should be interpreted as an elasticity. After we account for the impact of economic, social and political conditions, the effect becomes weaker. The impact of economic development is small but significant. In contrast, financial development and income inequality do not exert significant effects. On the other hand, health expenditure and social support are significant predictors of consumption per capita. Finally, the impact of political conditions is relatively stronger, which is in line with relevant research. Indeed, political conditions affect well-being through their enhancement of social capital (Putnam 1993) and by predicting moral and responsible motivation (Briguglio *et al.*, 2016). The political regime and the level of corruption affect individuals' appreciation of public and private goods (Baudreau and MacKenzie, 2014) as well as affect the direction of pro-environmental behavior (Kahn, 2007; Dupont and Bateman 2012). Political and institutional trust *affect i*ndividual behavior towards cooperation and coordination that are important conditions of happiness (Nilsson & Harring 2017; Fairbrother 2017; Hammar *et al.* 2009; Harring, 2013; Jones *et al.* 2010). The quality of democratic conditions make individuals feel that public goods are shared equitably inducing them to act as responsible consumers (Wu and Zhu 2015). The large values of the F statistic indicates that the fixed effects are significant.

Second, we analyze the association between happiness and sustainability. We regress the measure of happiness on the variation of the SDGs Index. Table 4 presents the results. The coefficient of the

happiness index is positive and significant in all models. Higher levels of happiness are associated with higher commitment to achieve the sustainability goals. The baseline marginal effect is 8.12 percent. Similarly, after we account for the impact of economic, social and political conditions, the effect becomes weaker. The impact of economic development remains positive and significant, financial development is insignificant but income inequality appears to be negative and strongly significant. Meyer and Kirby (2014) make the case why income inequality matters for sustainability. Further, all social controls appear significant in mitigating the happiness effect on sustainability. Finally, the impact of political conditions is significant and relatively stronger. Carius *et al* (2018) stressed the repercussions of geopolitics and political power on sustainable development and the fulfillment of SDGs. Likewise, corruption control is crucial for sustainable development. Wasted financial resources hinder the achievement of the SDG goals (Hoffiani, 2019). Cross-country studies by Aidt (2010) and Güney (2014) documented the adverse effect of corruption on SD. Again, the large values of the F statistic indicates that the fixed effects are significant.

Finally, we analyze the association between happiness and responsible behavior. We regress the measure of happiness on the waste recycling rate. Table 5 presents the results. The coefficient of the happiness index is positive and significant in all models, except when we account for economic conditions. Higher levels of happiness are associated with higher levels of recycling. The baseline marginal effect is 46.0 percent. However, after we account for the impact of economic, social and political conditions, the effect becomes weaker. Interestingly, economic conditions, while they do not mitigate the negligible happiness effect, do exert a significant direct effect on recycling. It appears that responsible behavior depends positively on economic and financial development and negatively on income inequality. Further, the control of corruption also appears to mitigate the happiness effect on recycling. Finally, the impact of social conditions is relatively stronger. It appears that recycling behavior is embedded strongly in social networks and cultural values prevalent in society. This result is in line with those of studies that document a strong positive role of social norms for pro-environmental behavior (Schwartz 1977; Brekke, Kipperberg, and Nyborg 2010; Valle *et al*. 2005). Communities with strong environmental awareness and values practice higher levels of recycling and are more motivated to contribute to ecosystem preservation (Briguglio *et al*. 2016; Nixon and Saphores 2009). In all models, the F-stat is large and therefore the fixed effects are significant.

Overall, our analysis documents a positive and significant association between happiness and consumption, sustainability and recycling, respectively. We find that higher levels of happiness are associated with stronger consumption levels but also stronger concerns for sustainability and responsible behavior in both direct and indirect ways. However, the power of association depends on the prevalent economic, social and political conditions in a country. This implies that to some extent political and social policy interventions influence the effect of happiness on sustainability considerations.

Table 3. Happiness and consumption.

CONSCAP	Baseline analysis	Impact of development	Impact of social conditions	Impact of political conditions
HAPPINESS	0.447***	0.156***	0.132***	0.249***
	(0.013)	(0.024)	(0.022)	(0.019)
GDPCAP		0.001***		
		(0.001)		
CREDIT		0.001		
		(0.001)		
GINI		-0.145		
		(0.249)		
HEALTEXP			2.335***	
			(0.195)	
SOCSUP			1.506***	
			(0.180)	
ETHNFRAC			0.029	
			(0.073)	
DEMQUAL				0.066**
				(0.033)

CONTRCORR				0.262***
				(0.030)
GEOPOL				-0.001*
				(0.002)
Country effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
R²	0.438	0.512	0.552	0.526
F-stat	101.047	88.036	139.693	129.811
N	1518	1297	1328	1514

Notes. The table reports the results of the multivariate analysis between happiness and consumption. The outcome variable is the level of consumption per capita (CONSCAP). The independent variable is the happiness index (HAPPINESS). Control variables are the level of GDP per capita (GDPCAP), the level of domestic credit to the private sector (% GDP), the Gini coefficient (GINI), the healthy life expectancy at birth (HEALTEXP), the extent of social support (SOCSUP), the extent of ethnic fractionalization in society (ETHNFRAC), the quality of the democratic institutions (DEMQUAL), the extent of control of corruption (CONTRCORR) and the degree of global geopolitical risk (GEOPOL). We use an OLS model with fixed effects. The parentheses report the standard errors. We do not report the estimates of the country-year effects.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4. Happiness and sustainability.

SDGI	Baseline analysis	Impact of development	Impact of social conditions	Impact of political conditions
HAPPINESS	8.126***	5.111***	2.439***	5.585***
	(0.300)	(0.658)	(0.824)	(0.514)
GDPCAP		0.001***		
		(0.001)		
CREDIT		-0.003		
		(0.002)		
GINI		-27.880***		
		(5.149)		
HEALTEXP			65.141***	
			(9.105)	
SOCSUP			18.289**	
			(7.080)	
ETHNFRAC			-6.274**	
			(2.898)	
DEMQUAL				2.619***
				(0.933)
CONTRCORR				2.726***
				(0.725)
GEOPOL				0.644***
				(0.098)
Country effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
R^2	0.625	0.719	0.845	0.696
F-stat	250.526	115.119	171.959	162.450
N	402	340	128	272

Notes. The table reports the results of the multivariate analysis between happiness and consumption. The outcome variable is the SDG general index (SDGI). The independent variable is the happiness index (HAPPINESS). Control variables are the level of GDP per capita (GDPCAP), the level of domestic credit to the private sector (% GDP), the Gini coefficient (GINI), the healthy life expectancy at birth (HEALTEXP), the extent of social support (SOCSUP), the extent of ethnic fractionalization in society (ETHNFRAC), the quality of the democratic institutions (DEMQUAL), the extent of control of corruption (CONTRCORR) and the degree of global geopolitical risk (GEOPOL). We use an OLS model with fixed effects. The parentheses report the standard errors. We do not report the estimates of the country-year effects.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5. Happiness and recycling.

RECYCLE	Baseline analysis	Impact of development	Impact of social conditions	Impact of political conditions
HAPPINESS	0.460***	0.009	0.225***	0.199***
	(0.033)	(0.055)	(0.075)	(0.055)
GDPCAP		0.001***		
		(0.001)		
CREDIT		0.003***		
		(0.001)		
GINI		-1.967***		
		(0.650)		
HEALTEXP			-0.442	
			(1.003)	
SOCSUP			1.845***	
			(0.536)	
ETHNFRAC			-1.059***	
			(0.271)	
DEMQUAL				0.100
				(0.069)
CONTRCORR				0.295***
				(0.075)
GEOPOL				-0.004
				(0.005)
Country effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
R^2	0.117	0.196	0.141	0.147
F-stat	14.550	29.044	11.244	19.944
N	1130	973	888	1039

Notes. The table reports the results of the multivariate analysis between happiness and consumption. The outcome variable is the waste recycling rate (RECYCLE). The independent variable is the happiness index (HAPPINESS). Control variables are the level of GDP per capita (GDPCAP), the level of domestic credit to the private sector (% GDP), the Gini coefficient (GINI), the healthy life expectancy at birth (HEALTEXP), the extent of social support (SOCSUP), the extent of ethnic fractionalization in society (ETHNFRAC), the quality of the democratic institutions (DEMQUAL), the extent of control of corruption (CONTRCORR) and the degree of global geopolitical risk (GEOPOL). We use an OLS model with fixed effects. The parentheses report the standard errors. We do not report the estimates of the country-year effects.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

5. Sensitivity and endogeneity analysis

Our baseline specification may be incorrect, producing biased estimates. First, nonlinearities may characterize the effect of happiness on consumption and sustainability. For example, happiness may exert its influence on the behavior and action of countries in different ways, depending on their level of development or some other factor. Second, seeking to improve their consumption patterns and sustainability policies, countries may self-select into the pool of sustainability-aspiring candidate countries, introducing potential selection bias. Third, there is a risk of reverse causation bias. It could be possible that the consumption needs and the meeting of the sustainability goals of countries may inversely influence the local social norms and behavior and hence the happiness level, generating a reverse causation problem. We recognize that higher consumption could affect the degree of happiness, but we believe that the pursuit of sustainability does not influence happiness. In general, we believe that the formation of happiness in a country has deeper historical, social and psychological roots and predates any actual consumption decisions and sustainability policies of countries. Thus, we argue that the likelihood of endogeneity due to reverse causation from consumption and sustainability to the happiness of countries does not apply. Moreover, our sample includes many heterogeneous countries with many different characteristics and we also use fixed effects, all of which reduce the likelihood of reverse causation. Fourth, there is the potential problem of measurement error in the independent variable, happiness. If present, such a measurement error would be a potential cause of endogeneity bias of our estimates.

In order to check the robustness of our results against the problem of measurement error, we use a different measure of the key regressor. We obtain the new measure of happiness from Veenhoven (2018). While it measures happiness too, the latter measure is based on different calculation methods and reflects information drawn from somewhat different sources and respondents and based on different procedures. The life evaluations from the Gallup World Poll provide the basis for the annual happiness rankings of the WHR, while for Veenhoven it is basically a measure of life satisfaction. Table 6 presents the results of the new baseline estimation for each of the three outcome variables. The coefficient of the new measure of happiness is also positive and significant in almost all models of each outcome variable. However, there are differences in magnitude and occasionally some of the controls are insignificant. Nevertheless, the new results are broadly in line with our baseline results confirming the robustness of the happiness effect on sustainability considerations. Similarly we observe that political conditions exert the stronger controlling influence.

Further, in order to check for the existence of nonlinear effects, we follow Blanchard *et al.* (2008) and Asiedu *et al.* (2012) and estimate again our baseline model after splitting the sample into subsamples. The subsamples distinguish between high- and low-income countries based on the median level of GDP per capita, as well as between high- and low-population countries based on the median level of population density. Table 7 presents the results of the new baseline estimation for each of the three outcome variables. Similarly, the coefficient of our happiness index remains positive and significant in almost all models of each outcome variable. An exception is large countries, where happiness does not predict sustainability, and poor countries, where happiness does not predict recycling behavior. There can be plausible arguments for these insignificant results. For example, Dauenhauer (2017) stresses the intense worries of small countries for the repercussions of climate change. Again, the happiness effect varies in magnitude and occasionally some of the controls turn insignificant. However, the sub-sample results are broadly in line with our baseline results, confirming the robustness of the happiness effect on sustainability considerations.

Table 6. Sensitivity analysis I - Alternative measure of the independent variable

	Baseline analysis	Impact of economic conditions	Impact of social conditions	Impact of political conditions
Panel A. Outcome variable: SDGI				
HAPPINESS1	6.152***	3.551***	-0.001	3.593***

	(0.293)	(0.373)	(0.688)	(0.385)
Control variables	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
R^2	0.504	0.736	0.837	0.681
F-stat	158.828	134.223	114.300	158.088
N	424	323	123	260

Panel B. Outcome variable: CONSCAP

HAPPINESS1	0.391***	0.111***	0.036*	0.177***
	(0.009)	(0.016)	(0.018)	(0.013)
Control variables	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
R^2	0.415	0.527	0.537	0.522
F-stat	107.196	96.797	123.463	134.651
N	2550	1260	1284	1455

Panel C. Outcome variable: RECYCLE

HAPPINESS1	0.386***	0.031	0.151**	0.159***
	(0.024)	(0.044)	(0.066)	(0.045)
Control variables	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
R^2	0.104	0.195	0.137	0.151
F-stat	13.568	29.788	10.908	20.359
N	1861	970	877	1026

Notes. We apply a different measurement of the independent variable. The new independent variable is the Veenhoven*'s* happiness index (HAPPINESS1). In Panel A, the outcome variable is the SDG General Index (SDGI). In Panel B, the outcome variable is the level of consumption per capita (CONSCAP). In Panel C, the outcome variable is the recycling rate (RECYCLE). Control variables are the level of GDP per capita (GDPCAP); the Gini coefficient (GINI); the level of credit to the domestic financial sector (%GDP) (CREDIT); the average health expectancy at birth (HEALTHEXP); the extent of social support in society (SOCSUP); the degree of ethnic fractionalization in society (ETHNFRAC); the level of democratic quality (DEMQUAL); the extent of control of corruption (CONTRCORR); and the extent of global geopolitical risk (GEOPOL). We use an OLS model with fixed effects. The parentheses report the standard errors. We do not report the estimates of the control variables and the country-year effects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7. Sensitivity analysis II - Alternative samples

	High-income countries	Low-income countries	High-population countries	Low-population countries
Panel A. Outcome variable: SDGI				
HAPPINESS	6.152***	3.551***	-0.001	3.593***
	(0.293)	(0.373)	(0.688)	(0.385)
Control variables	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
R^2	0.504	0.736	0.837	0.681
F-stat	158.828	134.223	114.300	158.088
N	424	323	123	260
Panel B. Outcome variable: CONSCAP				
HAPPINESS	0.391***	0.111***	0.036*	0.177***
	(0.009)	(0.016)	(0.018)	(0.013)
Control variables	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
R^2	0.415	0.527	0.537	0.522
F-stat	107.196	96.797	123.463	134.651
N	2550	1260	1284	1455
Panel C. Outcome variable: RECYCLE				
HAPPINESS	0.386***	0.031	0.151**	0.159***
	(0.024)	(0.044)	(0.066)	(0.045)
Control variables	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
R^2	0.104	0.195	0.137	0.151
F-stat	13.568	29.788	10.908	20.359
N	1861	970	877	1026

Notes. We use different samples structures to account for nonlinearities and measurement error. We split the sample by country development based on the median level of GDP per capital, and by country size based on the median population density, respectively. The independent variable is the Happiness Index (HAPPINESS). In Panel A, the outcome variable is the SDG General Index (SDGI). In Panel B, the outcome variable is the level of consumption per capita (CONSCAP). In Panel C, the outcome variable is the recycling rate (RECYCLE). Control variables are the level of GDP per capita (GDPCAP); the Gini coefficient (GINI); the level of credit to the domestic financial sector (%GDP) (CREDIT); the average health expectancy at birth (HEALTHEXP); the extent of social support in society (SOCSUP); the degree of ethnic fractionalization in society (ETHNFRAC); the level of democratic quality (DEMQUAL); the extent of control of corruption (CONTRCORR); and the extent of global geopolitical risk (GEOPOL). We use an OLS model with fixed effects. The parentheses report the standard errors. We do not report the estimates of the control variables and the country-year effects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8. Endogeneity analysis: Alternative estimation methods

	Sustainability		Consumption		Recycling	
	IV.2SLS (1)	IV.GMM (2)	IV.2SLS (3)	IV.GMM (4)	IV.2SLS (5)	IV.GMM (6)
HAPPINESS	-8.109*	-8.168*	-0.075**	-0.091*	0.591*	0.015
	(8.167)	(8.149)	(0.098)	(0.097)	(0.307)	(0.307)
GDPCAP	0.001*	0.001*	0.001*	0.001*	0.001**	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GINI	-18.037***	-18.138***	-0.570***	-0.619***	-4.125***	0.001
	(6.883)	(6.821)	(0.208)	(0.203)	(0.668)	(0.623)
HEALTEXP	1.584***	1.587***	0.034***	0.035***	-0.049**	0.001
	(0.522)	(0.521)	(0.006)	(0.006)	(0.024)	(0.024)
SOCSUP	46.217*	46.440*	1.673***	1.751***	0.593	0.001
	(28.034)	(27.960)	(0.365)	(0.358)	(0.999)	(0.975)
DEMQUAL	3.359**	3.384**	0.291***	0.291***	0.140**	0.001
	(1.543)	(1.526)	(0.026)	(0.026)	(0.067)	(0.066)
CONTRCORR	-13.219	-13.194	-0.024	-0.043	-0.001	0.001
	(11.021)	(11.018)	(0.143)	(0.142)	(0.638)	(0.624)
F-stat	70.292	71.248	293.796	300.151	55.237	9.001
Sargan (p-v)	0.012 (0.913)		1.145 (0.285)		9.722(0.011)	
Hansen J (p-v)		0.012(0.913)		1.145(0.285)		9.722(0.011)
N	238	238	1287	1287	895	895

Notes. The table reports the results from using different estimation methods. The parentheses include the standard errors. Columns 1 and 2 report the results after applying an instrumental variables (IV) method to our sustainability outcome variable that uses the 2SLS and the system GMM estimators, respectively. Columns 3 and 4 report the results after applying an instrumental variables (IV) method to our consumption outcome variable that uses the 2SLS and the system GMM estimators, respectively. Columns 5 and 6 report the results after applying an instrumental variables (IV) method to our recycling outcome variable that uses the 2SLS and the system GMM estimators, respectively. The external instrument used is the extent of women*'s* political empowerment (GENDER). The test for instrument strength is the F statistic v-a-v Stock and Yogo (2005) critical values. The test for overidentifying restrictions and the relevance of all instruments for the IV-2SLS method is the Sargan stat, whilst for the GMM method is the Hansen J stat. We do not report the country-year fixed effects. The symbols *, **, *** correspond to $p < 0.1$, $p < 0.05$ and $p < 0.01$, respectively. The Appendix provides the definition of the variables. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Finally, in order to check further the sensitivity of our results against omitted variable bias, we apply alternative methods for estimating equation (1). When the regressor is measured with error (which is independent from the regressor itself), this error augments the regression*'s* residual. Assuming that the measurement error does not correlate with the outcome variable(s), the regression will produce biased estimates, a problem that the addition of data cannot eliminate. The observed explanatory variable is also measured with error, causing its correlation with the error term of the regression that generally results in estimation bias, due to endogeneity. The latter is more severe when the error term varies widely, which is often the case in cross-section estimation. We correct for measurement error in the two key regressors, using the instrumental variable (IV) approach (Greene, 2012). We identify an external instrument, which is strongly correlated with our happiness variables and uncorrelated with the error of the regression. We identify the extent of women*'s* political empowerment (GENDER) in a country as the external instrument. Audette *et al*. (2019) make a strong case why gender equality affects happiness. Kabene *et al*. (2017) document a positive relation between the proportion of women in political positions and the level of happiness

of countries. Table 8 provides the results of the using the IV methods. The chosen external instrument meets the Stock and Yogo*'s* (2005) approximate rule that the F-stat > 10, and so they are not weak instruments. Further, the non-zero values of the Sargan and Hansen J statistics and of their probabilities imply that the null hypothesis cannot be rejected and therefore our external instruments are broadly relevant. The results show that the coefficient of happiness remains positive and significant when the 2SLS estimator is used in the analysis, whilst the GMM estimator produces significant effects with respect to consumption and sustainability but not recycling. Where significant, the effects are smaller in magnitude relative to those of the baseline model. It appears that some omitted variable bias is present. However, this is expected. The conditions influencing the happiness of counties are too complex for our model to account them for adequately. More research is needed to illustrate the conditions influencing happiness in a country.

1.   Discussion

The aim of this paper is to explore the association between happiness or the psychology of pleasure-seeking, sustainability and consumption. Previous studies suggested that happiness and consumption are inversely related but they were not connected with sustainability considerations (Veenhoven, 2004). This study aims to fill the void and provide an empirical analysis of the association between happiness, consumption, sustainability and responsible behavior. The paper challenges the traditional view that happy people may be less sustainability-minded and less responsible environmentally and that the hedonists' focus on their own pleasure causes harm in the environment and the society (Veenhoven, 2004; Huta & Watermen, 2013; Kashdan *et al.*, 2008; Ajzen, 1991). In order to establish the association between happiness and sustainability, we analyze the annual data for 152 countries on happiness, consumption, sustainability and responsible behavior. At the initial level, our analysis documents that the top-ranked countries in the latest World Happiness Report (WHR, 2019) are broadly ranked high at the SDGs report (SDG, 2018). The initial pairwise correlations show that increasing happiness broadly goes hand in hand with higher consumption and sustainability considerations. Further, we apply multivariate analysis for each outcome variable separately and document a positive and significant association between happiness, consumption, sustainability and responsible behavior (measured by the recycling rate). This association holds in aggregate and across the different degrees of happiness across countries. Happier countries are shown on aggregate to be more consuming but also responsible and adhering to higher sustainability practices. We check the robustness of results by applying additional sensitivity and endogeneity tests.

   Our findings show that countries that values hedonism - human activities aiming at increasing pleasure, joy and comfort - as a source of happiness, do not necessarily cause harm in the environment but may instead exhibit stronger sustainability-minded behavior. So, it is possible that one can adhere to the values of hedonism and eudemonism and also be environmentally responsible. It appears that meeting higher sustainability standards should be a continuous learning process, which is based on continuous knowledge acquisition through a feed-back between living practices and the environment (Meppem & Gill, 1998). Sustainability emerges as a balanced process of adaptation in a complex social system (Jeroen & Bergh, 1996). From this perspective, the balance between the "greedy" view and the "green" view of consumption (Veenhoven, 2004) can be reconsidered. Our findings show that, while associated with higher consumption, happiness can cause more responsible consumption and stronger adherence to sustainability and responsible behavior. In other words, happy consumers can be green consumers.

6.   Implications and conclusion

This paper is the first to look at the link between sustainability and happiness on a national level. Our findings go beyond the traditional analysis of the association between wealth and happiness (Hagerty & Veenhoven, 2003). While psychology has broadly viewed it in a negative sense, hedonism can have a positive side. Hedonic values balanced with eudemonic values could provide pleasure, joy and meaning in life and also contribute towards the achievement of more sustainable environmental conditions. Hedonism could be not an antecedent but a component of happiness. Hence the traditional dilemma between a happy life versus a good life may not be valid. Valuing pleasure and joy could lead to responsible behavior towards the environment because people simply want to take care of the many sources of joy and pleasure, which include the environment.

Our findings also shed some light on the relevance of hedonistic utilitarianism, where the rightness of a human action depends entirely on the amount of pleasure it tends to produce and the amount of discomfort it tends to prevent (Tännsjö, 2007). If pleasure and discomfort can be sourced in sustainability-minded considerations of people, then different countries with varying sustainability considerations will exhibit different degrees of happiness, sustainable consumption and responsible behavior. Happiness emerges out of the right action, which varies across cultures and countries. The study has many implications. On the educational level for example, we can now conclude that happiness and sustainability can work well together and so educate people on how they can be responsible happy citizens (see Abbas et al., 2019). On the ecosnomics and policy level, the study sheds light on the consumer behavior of happy countries and draws attention on their sustainable consumption behaviors. Future research can focus on examining specific compeonents in the happiness report and its relatioships to sustainable behavior.

References

Abbas, J., Aman, J., Nurunnabi, M., & Bano, S. (2019). The impact of social media on learning behavior for sustainable education: Evidence of students from selected universities in Pakistan. *Sustainability*, *11*(6), 1683.

Abbas, J., Aqeel, M., Ling, J., Ziapour, A., Raza, M. A., & Rehna, T. (2020b). Exploring the relationship between intimate partner abuses, resilience, psychological, and physical health problems in Pakistani married couples: a perspective from the collectivistic culture. *Sexual and Relationship Therapy*, 1-30.

Abbas, J., Zhang, Q., Hussain, I., Akram, S., Afaq, A., & Shad, M. A. (2020a). Sustainable innovation in small medium enterprises: The impact of knowledge management on organizational innovation through a mediation analysis by using SEM approach. *Sustainability*, *12*(6), 2407.

Aertsens, J., Verbeke, W., Mondelaers, K., & Huylenbroeck, G. V. (2009). Personal determinants of organic food consumption: a review. British Food Journal, 111(10), 1140-1167. doi: 10.1108/00070700910992961

Aidt, T.S., 2010. "Corruption and Sustainable Development," Cambridge Working Papers in Economics 1061, Faculty of Economics, University of Cambridge.

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50 (2), 179-211.

Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S. & Wacziarg, R. (2003). Fractionalization. Journal of Economic Growth 8(2): 155-194.

Aman, J., Abbas, J., Nurunnabi, M., & Bano, S. (2019). The relationship of religiosity and marital satisfaction: The role of religious commitment and practices on marital satisfaction among Pakistani respondents. *Behavioral Sciences*, *9*(3), 30.

Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. Mostly Harmless Econometrics: An Empiricists Companion. Princeton: Princeton University Press

Apaiwongse, T. (1991). Factors affecting attitudes among buying-center members toward adoption of an ecologically-related regulatory alternative: a new application of organizational theory to a public policy issue. Journal of Public Policy & Marketing, 10, 145-160.

Asiedu, E., Freeman, J. A., Nti-Addae, A. 2012. Access to credit by small businesses: how relevant are race, ethnicity, and gender? American Economic Review 102(3), 532-37

Audette, A. P., Lam, S., O'Connor, H., Radclif, B. (2019). (E)Quality of Life: A Cross-National Analysis of the Effect of Gender Equality on Life Satisfaction. Journal of Happiness Studies 20, 2173–2188

Banicki, K. (2014). Positive psychology on character strengths and virtues. A disquieting suggestion. New Ideas in Psychology, 33, 21-34. doi: 10.1016/j.newideapsych.2013.12.001

Barbaro, N., & Pickett, S. M. (2016). Mindfully green: Examining the effect of connectedness to nature on the association between mindfulness and engagement in pro-environmental behavior. Personality and Individual Differences, 93, 137-142.

Baudrillard, J. (1997). Fragments: Cool Memories III, 1990-1995. New York: Verso.

Bauman, Z. S. (1992). Blood and identity. The Sociological Review, 40 (4), 675-701.

Bechtel, R., & Corral-Verdugo, V. (2010). Happiness and sustainable behavior. In V. Corral-Verdugo, C. García, & M. Frías (Eds.), Psychological approaches to sustainability. New York: Nova Science Publishers.

Biswas, T., W-H. Wang, and R. Krishnamurti. (2008). Integrating sustainable building rating systems with building information models. Chiang-Mai, Thailand: CAADRIA.

Blanchard, L., Zhao, B., Yinger, J. 2008. Do lenders discriminate against minority and woman entrepreneurs? Journal of Urban Economics 63(2), 467-497

Boudreau, C., &. MacKenzie, S.A. (2014). "Informing the electorate? How party cues and policy information affect public opinion about initiatives." American Journal of Political Science 58 (1), 48-62.

Bourdieu, P. & Trans. R. N. (1984). A social critique of the judgement of taste. Harvard UP.: Cambridge, MA.

Brekke, K.A., Kverndokk, S, & Nyborg, K. (2003). An economic model of moral motivation. Journal of Public Economics, 87, 1967-1983

Briguglio, M., Delaneyc, L., & Wood, A. (2016) Voluntary recycling despite disincentives. Journal of Environmental Planning and Management 59 (10). http://dx.doi.org/10.1080/09640568.2015.1086323

Brown, P. M., & Cameron, L. D. (2000). What can be done to reduce overconsumption? Ecological Economics, 32(1), 27-41. doi: 10.1016/s0921-8009(99)00093-2

Caldara, D., Iacoviello, M. (2018). Measuring geopolitical risk. International Finance Papers. At www.federalreserve.gov/pubs/ifdp/.

Carius, A., Ivleva, D., Pohl, B., Rüttinger, B., Schaller, S., Tänzler, D., & Vivekananda, J., (2018). A foreign policy perspective on the SDGs, Adelphi, Climate Diplomacy, Federal Foreign Office.

Catlin, J., & Wang, Y. (2013). Recycling gone bad: when the option to recycle increases resource consumption. Journal of Consumer Psychology, 23, 122-127.

Chancellor, J., & Lyubomirsky, S. (2011). Happiness and thrift: When (spending) less is (hedonically) more. Journal of Consumer Psychology, 21(2), 131-138. doi: 10.1016/j.jcps.2011.02.004

Coppedge, Michael, John Gerring, Carl Henrik Knutsen, Staffan I. Lindberg, Jan Teorell, David Altman, Michael Bernhard, M. Steven Fish, Adam Glynn, Allen Hicken, Anna Lührmann, Kyle L. Marquardt, Kelly McMann, Pamela Paxton, Daniel Pemstein, Brigitte Seim, Rachel Sigman, Svend-Erik Skaaning, Jeffrey Staton, Steven Wilson, Agnes Cornell, Lisa Gastaldi, Haakon Gjerløw, Nina Ilchenko, Joshua Krusell, Laura Maxwell, Valeriya Mechkova, Juraj Medzihorsky, Josefine Pernes, Johannes von Römer, Natalia Stepanova, Aksel Sundström, Eitan Tzelgov, Yi-ting Wang, Tore Wig, and Daniel Ziblatt. 2019. "V-Dem [Country-Year/Country-Date] Dataset v9", Varieties of Democracy (V-Dem) Project. https://doi.org/10.23696/vdemcy19

Deci, E. L., & Ryan, R. M. (2006). Hedonia, eudaimonia, and well-being: an introduction. Journal of Happiness Studies, 9(1), 1-11. doi: 10.1007/s10902-006-9018-1

DeLeire, T., & Kalil, A. (2010). Does consumption buy happiness? Evidence from the United States. International Review of Economics, 57(2), 163-176.

Diener, E. (1984). Subjective well-being. Psychological Bulletin, 95(3), 542–575.

Dupont, D.P., & Bateman I.J. (2012). Political affiliation and willingness to pay: an examination of the nature of benefits and means of provision. Ecological Economics, 75 (0), 43-51.

El Massah, S. (2018). Industrial symbiosis within eco-industrial parks: sustainable development for Borg El-Arab in Egypt. Business Strategy and the Environment, 27, 884-892.

El Massah, S., & Omran, G. (2014). Would climate change affect the imports of cereals? the case of Egypt. Berlin: Springer-Verlag Berlin Heidelberg.

Elliott, R. (1994). Exploring the symbolic meaning of brands. British Journal of Management, 5 (s1).

Faber, R. J. & Christenson, G. A. (1996). In the mood to buy: differences in the mood states experienced by compulsive buyers and other consumers. Psychology and Marketing, 13 (8), 803-819.

Fabio, A. D., & Kenny, M. E. (2018). Connectedness to nature, personality traits and empathy from a sustainability perspective. Current Psychology. doi: 10.1007/s12144-018-0031-4

Fairbrother, M. (2017). Environmental attitudes and the politics of distrust. Sociology Compass Journal, 11 (5). https://doi.org/10.1111/soc4.12482

Fishbein, M. & Ajzen, I. (1975). Belief, attitude, intention and behavior: an introduction to theory and research. Reading. MA: Addison-Wesley.

Frank, R. H. (1985). The demand for unobservable and other no-positional goods. The American Economic Review, 75 (1), 101-116.

Gabriel, Y. & Lang, T. (1995). The unmanageable consumer. Contemporary consumption and its fragmentation. London: Sage Publications.

Giesinger, J. (2012). Kant's account of moral education. Educational Philosophy and Theory, 44(7), 775-786. doi: 10.1111/j.1469-5812.2011.00754.x

Gilbert, D. (2006), Stumbling on Happiness. New York: Knopf.

Granzin, K. L. & Olsen, J. E. (1991). Characterizing participants in activities protecting the environment: a focus on donating, recycling, and conservation behaviors. Journal of Public Policy & Marketing, 1-27.

Greene, W. (2012) Econometric Analysis. 7th Edition, Prentice Hall, Upper Saddle River.

Guillen-Royo, M. (2008). Consumption and subjective wellbeing: exploring basic needs, social comparison, social integration and hedonism in Peru. Social Indicators Research, 89(3), 535-555. doi: 10.1007/s11205-008-9248-1

Güney, T. (2014). Corruption, prosperity and sustainable development: Some new evidence. Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi, 9, 3, 181-206.

Guven, C. (2012). Reversing the question: Does happiness affect consumption and savings behavior?. *Journal of Economic Psychology*, *33*(4), 701-717.

Hagerty, M.R. & Veenhoven, R. (2003). Wealth and happiness revisited- growing national income does go with greater happiness. Social Indicators Research, 64: 1-27. https://doi.org/10.1023/A:1024790530822

Hammar, H., Jagers, S. C., & Nordblom, K. (2009). Perceived tax evasion and the importance of trust. The Journal of Socio-Economics, 38 (2): 238-245. https://doi.org/10.1016/j.socec.2008.07.003

Han, H. (2015). Purpose as a moral virtue for flourishing. Journal of Moral Education, 44 (3), 291-309 DOI: 10.1080/03057240.2015.10403.

Harring, N. (2013). Understanding the effects of corruption and political trust on willingness to make economic sacrifices for environmental protection in a cross-national perspective. Social Science Quarterly. 94(3), 660-671.

Hetrick, W. (1989). The ideology of consumerism: a critique. AMA Winter Educator*s'* Conference: Marketing Theory and Practice. Chicago: American Marketing Association.

Hoffiani, M. (2019). The nexus between corruption, sustainable development and rule of law. Örebro University, Juridicum.

Hollis-Walker, L., & Colosimo, K. (2011). Mindfulness, self-compassion, and happiness in non-meditators: A theoretical and empirical examination. Personality and Individual differences, 50(2), 222-227. https://www.iep.utm.edu/hedonism/#SH1e

Huang, M.-H., & T. Rust, R. (2011). Sustainability and consumption. Journal of the Academy of Marketing Science, 39(1), 40-54.

Huneke, M. E. (2005). The face of the un-consumer: An empirical examination of the practice of voluntary simplicity in the United States. Psychology and Marketing, 22 (7), 527-550 DOI: 10.1002/mar.20072.

Huta, V., & Waterman, A. S. (2013). Eudaimonia and its distinction from hedonia: developing a classification and terminology for understanding conceptual and operational definitions. Journal of Happiness Studies, 15(6), 1425-1456. doi: 10.1007/s10902-013-9485-0

Jeroen C.J.M. & van den Bergh. (1996). Ecological Economics and Sustainable Development: Theory, Methods and Applications. Edward Elgar.

Jones, N., Evangelinos, K., Halvadakis, C.P., Iosifides, T. & Sophoulis, C. M. (2010). Social factors influencing perceptions and willingness to pay for a market-based policy aiming on solid waste management. Resources, Conservation and Recycling. 54 (9), 533-540.

Kabene, S., Baadel, S., Jiwani, Z., Lobo, V. (2017). Women in Political Positions and Countries' Level of Happiness. Journal of International Women's Studies, 18(4), 209-217.

Kahn, M.E. (2007). Do Greens drive Hummers or Hybrids? Environmental ideology as a determinant of consumer choice. Journal of Environmental Economics and Management , 54 (2), 129-145

Kangun, N., Carlson, L., & Grove, S. J. (1991). Environmental advertising claims: a preliminary investigation. Journal of Public Policy & Marketing, 10 (2), 47-58 DOI: 10.1177/074391569101000203.

Kashdan, T. B., Biswas-Diener, R., & King, L. A. (2008). Reconsidering happiness: the costs of distinguishing between hedonics and eudaimonia. The Journal of Positive Psychology, 3(4), 219-233. doi: 10.1080/17439760802303044

Kotler, P. & Armstrong, G. (2004). Principles of Marketing, 10th edition. New Jersey.

Leiserowitz, A.A., Kates, R.W., Parris, T.M. 2006. Sustainability values, attitudes, and behaviors: a review of multinational and global trends. Annual Review of Environment and Resources 31, 413-444

Lindenberg, S., & Steg, L. (2007). Normative, gain and hedonic goal frames guiding environmental behavior. Journal of Social Issues, 63(1), 117-137. doi: 10.1111/j.1540-4560.2007.00499.x

Meppem, T. & Gill, R. (1998). Planning for sustainability as a learning concept. Ecological Economics, 26 (2), 121-137.

Meyer, C., Kirby, J. 2014. Income inequality is a sustainability issue. Harvard Business Review, January 28.

Milne, G. R., Iyer, E. S., & Gooding-Williams, S. (1996). Environmental organization alliance associations within and across nonprofit, business, and government sectors. Journal of Public Policy & Marketing, 15 (2), 203-215 DOI: 10.1177/074391569601500203.

Moll, H. C., Noorman, K. J., Kok, R., Engström, R., Throne-Holst, H., & Clark, C. (2008). Pursuing more sustainable consumption by analyzing household metabolism in European countries and cities. Journal of Industrial Ecology, 9(1-2), 259-275. doi: 10.1162/1088198054084662

Moulton, Brent R., "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units," Review of Economics and Statistics, 72 (May 1990): 334-8.

N. J. Dauenhauer, "On front line of climate change as Maldives fights rising seas," New Scientist, 20 March 2017 Stock, J. H., and M. Yogo (2005), "Asymptotic Distributions of Instrumental Variables Statistics with Many Weak Instruments," Chapter 6 in this volume.

Nilsson, F., & Harring, N. (2017). The large-scale collective action dilemma of recycling: exploring the role of trust. Working Paper. The Quality of Government Institute Department of Political Science: University of Gothenburg.

Nixon, H., & Saphores J.D.M. (2009). Information and the decision to recycle: results from a survey of US households. Journal of Environmental Planning and Management, 52 (2), 257-277

North, D. C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge: Cambridge University Press

Prinz, A., & Bünger, B. (2012). Balancing 'full life': An economic approach to the route to happiness. *Journal of Economic Psychology*, *33*(1), 58-70.

Prothero, A. (1996). Environmental decision making: research issues in the cosmetics and toiletries industry. Marketing Intelligence & Planning, 14 (2), 19-25.

Putnam, R. (1993). Making Democracy Work. Princeton, NJ: Princeton University Press.

Report of the World Commission on Environment and Development Our Common Future Brundtland Report 1987. Retrieved from https://www.are.admin.ch/are/en/home/sustainable-development/international-cooperation/2030agenda/un-_-milestones-in-sustainable-development/1987--brundtland-report.html.

Samuel, A. (2016). Psychographics are just as important for marketers as demographics. Retrieved on 4 May from Harvard Business Review: https://hbr.org/2016/03/psychographics-are-just-as-important-for-marketers-as-demographics.

Schwartz, S. H. (1977). Normative influences on altruism. advances in experimental social psychology. Advances in Experimental Social Psychology, 10, 221-279.

Schwepker, C. H. & Cornwell, T. B. (1991). An examination of ecologically concerned consumers and their intention to purchase ecologically packaged products. Journal of Public Policy and Marketing, 77-101.

SDG- Sustainable Development Goals Report. Retrieved from https://unstats.un.org/sdgs/report/2018.

Seligman, M.E.P. Csikszentmihalyi M. (2000). Positive psychology: An introduction. American Psychologist, 5-14.

Seroczynski, A. D. (2015). Virtues and vices in positive psychology: a philosophical critique. Journal of Moral Education, 44(1). https://doi.org/10.1080/03057240.2014.969886

Stern, P. C. (2000). New environmental theories: toward a coherent theory of environmentally significant behavior. Journal of Social Issues, 56 (3), 407-424.

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, 6, 81-97.

Tännsjö, T. (2007). Narrow hedonism. Journal of Happiness Studies, 8(1), 79-98.

The World Bank*'s* consumption data reference: Excel file of World*'s* Final Consumption Expenditure Levels. Retrieved from https://data.worldbank.org/indicator/NE.CON.TOTL.CD

The World Happiness Report (WHP) 2019. Retrieved from http://worldhappiness.report/ed/2019/.

Valle, D.P.O. Rebelo, E, Reis, E., & Menezes, J. (2005). Combining behavioral theories to predict recycling involvement. Environment and Behavior, 37 (3), 364-396

Van den Brande, K.; Happaerts, S.; Bruyninckx, H. The Role of the Subnational Level of Government in Decision-Making for Sustainable Development—A Multi-Level Governance Perspective; Steunpunt Duurzame Ontwikkeling—Katholieke Universiteit Leuven: Leuven, Belgium, 2008.

Veenhoven, R. (2003). Hedonism and happiness. Journal of Happiness Studies, 4(4), 437-457. doi: 10.1023/b:johs.0000005719.56211.fd

Veenhoven, R. (2004). Sustainable consumption and happiness. MPRA.

Veenhoven, R. (2018) Happiness in nations. World Database of Happiness, Erasmus University Rotterdam, The Netherlands.

Verdugo, V.C. (2012). The positive psychology of sustainability. Environment, Development and Sustainability, 14 (5), 651-666.

Waterman, A.S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. Journal of personality and social psychology, 64(4), 678.

Watson, D. C. (2019). Materialism: Temporal balance, mindfulness and savoring. Personality and Individual Differences, 146, 93-98.

White, K., Simpson, B. (2013). When do (and don't) normative appeals influence sustainable consumer behaviors? Journal of Marketing, 77 (2), 78-95 DOI: 10.1509/jm.11.0278.

White, K., Simpson, B., & Argo, J. J. (2014). The motivating role of dissociative out-groups in encouraging positive consumer behaviors. Journal of Marketing Research, 51(4), 433-447. doi: 10.1509/jmr.12.0335

Woodruff, R. B. (1997). Marketing in the 21st century customer value: the next source for competitive advantage. Journal of the Academy of Marketing Science, 25(3), 256-256. doi: 10.1177/0092070397253006

Wu, Y., & Zhu, J. (2015). When are people unhappy? corruption experience, environment, and life, satisfaction in mainland China. Journal of Happiness Studies, 17, 1125-1147

Zidanšek, A. (2007). Sustainable development and happiness in nations. Energy, 32(6), 891-897. doi: 10.1016/j.energy.2006.09.016

Appendix. Definition of variables.

Variable code	Definition and source
SDGI	The SDG general index, ranging from 0 to 100, from the UN Sustainable Development Report.
CONSCAP	The level of consumption per capita (log), from the World Development Indicators, from the World Bank.
RECYCLE	The recycling rate, from the *What A Waste* Global Database, World Bank. It measures the percent of waste annually generated that is recycled in a country.
HAPPINESS	The index of life ladder (happiness), from the UN World Happiness Report.
HAPPINESS1	The life satisfaction index, from R. Veenhoven (2018) Happiness in Nations, World Database of Happiness, Erasmus University Rotterdam, The Netherlands
GDPCAP	The level of gross domestic product per capita (log), from the World Development Indicators, World Bank. It is considered a measure of economic development of countries.
CREDIT	The level of domestic credit to the private sector (% GDP), from the World Development Indicators, World Bank. It is considered a measure of financial development of countries.
GINI	The Gini coefficient, from the World Development Indicators, World Bank. It is considered a measure of income inequality of countries.
HEALTHEXP	The index of health expectancy at birth (years), from the Health Indicators, World Health Organization. It reflects the overall mortality level of the population of countries.
SOCSUP	The index of social support, from the UN World Happiness Report.
ETHNFRAC	The measure of ethnic fractionalization in society, ranging from 0 to 1, from Alesina *et al.* (2003). It reflects the likelihood that two randomly selected persons from a given country will not share the same ethnic origin (ethnic heterogeneity). A higher index reflects a lower probability of common sharing.
GEOPOL	The measure of global geopolitical risk, from Caldara and Iacoviello (2018). It is based on the counting of the occurrence of words related to geopolitical tensions in 11 leading international newspapers.
DEMQUAL	The index of the quality of democracy, from the UN World Happiness Report.
CONTRCORR	The index of control of corruption, from the Worldwide Governance Indicators, World Bank. It measures the effectiveness of policies in combatting corruption.
GENDER	The meaure of women's political empowerment, from the V-Dem dataset, from Coppedge *et al.* (2019). Varieties of Democracy (V-Dem) Project, version 9. At: https://doi.org/10.23696/vdemcy19.