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Sustainable behavior and its correlates - stress and dominant social paradigm

Master Thesis submitted in fulfillment of the Degree

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Submitted to Dr. Ivo Ponocny

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Affidavit

I hereby affirm that this Master's Thesis represents my own written work and that I have used no sources and aids other than those indicated. All passages quoted from publications or paraphrased from these sources are properly cited and attributed.

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Abstract

The concept of sustainable behavior has been examined for the last two decades, and the findings provided a foundation to create approaches motivating pro-environmental attitudes and behavior and supported meaningful measures to affect climate change. The focus of the study is to expand the existing knowledge of how the perception of environmental and social problems may differ in people's behavioral patterns and quality of life and how stress or mental pressure impacts those relations. The research question of the Master Thesis was addressed by surveying respondents from Russia and the European region. Representatives of these two regions were expected to demonstrate varying cultural values, well-being and stress levels, and sustainability awareness.

Focusing on the barriers that hinder people from shifting their environmentally harmful behavior to a more sustainable one, the Master Thesis provides a foundation for policymakers into how social psychology can increase awareness regarding environmental and social issues without harming an individual's quality of life. Additionally, the impact of stress or mental pressure on the behavior and attitudes of the respondents was studied. For this purpose, the author applied an online experiment within the survey to affect the experimental group with a stimulus to change the physical and emotional strain. The results indicate positive as well as negative impacts of political and technological aspects of social norms on sustainable behavior. More precisely, the findings showed that technological optimism has a negative effect on indignation due to environmental damage and pro-environmental behavior. In contrast, components of political aspects of social norms showed positive correlations with consideration of future consequences, a feeling of indignation, and frugal behavior of the respondents. Moreover, the moderating effect of the political dimension of social norms has been confirmed for the relationship between consideration of future consequences and quality of life. However, the analysis of the collected data has not provided solid evidence to conclude an impact of stress on the studied figures or to confirm a moderator effect of the stress on the researched relationships.

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1. Introduction

In the face of many global problems regarding climate change, many researchers have tried to get people to adopt more sustainable lifestyles, such as using fewer of the world's resources (Aronson et al., 2019, pp. 443). Sustainable behavior is one of the concepts that can encourage sustainable consumption among people. As a complex concept, sustainable behavior considers various social psychological factors. Assessing each of them and better understanding the factors that induce sustainable behavior may identify the broad challenges to shifting human behavior to be more sustainable.

Many scholars and practitioners have noted that awareness of environmental problems may negatively impact people's behavioral patterns and how they evaluate their quality of life (QOL). Nevertheless, there are still some uncertainties regarding the relationship between the quality of life and components of sustainable behavior. The profound studies regarding sustainable behavior from Corral-Verdugo and his colleagues (2017) have shown that sustainable behavior contributes to indicators of QOL not only through the physical and social environment but also through psychological consequences of engagement in sustainable actions (Tapia-Fonllem, 2017). However, it is not so clear why some people cannot enjoy positive social practices and behave more ecologically, while others, under the same conditions, may conduct sustainable behavior and benefit from it. The Master Thesis assesses the main components of sustainable behavior of respondents and its relationship with stress factors and respondents' commitment to the dominant social paradigm as the dimension of social norms.

Moreover, the barriers to sustainable behavior became a thorny issue as people are getting more stressed due to the Covid-19 pandemic, and the assessment of the impact of social norms and stress on human behavior may help policymakers, politicians, and economists enable the resilient economic recovery from lockdown measures, unconstructive incentives, or restrictions that the government took. This research consists of analyses of the motivation behind the sustainable behavior that would observe the limitation of social norms (how sustainable behavior pattern is related to attitudes towards political, economic, and technological aspects of life) and describe how dominant social paradigm and stress can affect the perceptions in shaping behavioral patterns.

Besides, the research may help social psychologists better understand cultural differences while conducting experiments and studies to answer questions about the social influence that makes people act more environmentally responsible. Learning about the intersection between the quality of life (QOL) and sustainable behavior may vary between countries. It is essential to motivate people from different societal strata to act in an environmentally friendly way. It may help researchers better understand the descriptive norms that people with different levels of QOL use to guide their behavior. The understanding should enable creating more effective sustainability interventions.

1.1.   Research Question

The Master Thesis addresses the impact of stress on respondents' sustainable behavior and how this pattern is related to attitudes towards political, economic, and technological aspects of their life. The research question is formulated as follows:

How can fundamental components of sustainable behavior be affected by stress and individuals' perceptions of life in the technological, economic, political dimensions of dominant social paradigm?

The study combines assessments of the motivations driving sustainable behavior, social norms, and stress. The findings of the analyses are expected to shed light on the limitation of social norms and describe how dominant social paradigms influences people's choice towards sustainable resource consumption. Social norms have been studied by White and her colleagues (2019), Cialdini, Reno, and Kallgren (1990), but their impact on sustainable behavior needs to be examined in further detail when it comes to individual behavior in stressful situations. Besides, one of the aims of the study is to identify the impact of cultural, social, and psychological barriers to sustainable behavior on the quality of life (QOL) and understand how people associate sustainable behavior with the dynamics in the quality of life.

Many studies have assessed the idea of sustainable development and the way how to contribute to it. Many scientific works have highlighted the notion of sustainable and responsible consumption to influence the population's consumption (White et al, 2019; Tapia-Fonllem, 2017; Cao et al, 2014; De Young, 1996). Moreover, many researchers have noted that awareness of environmental problems may have a significant impact on

how people behave and how they evaluate their quality of life (Steg, 2005). According to the World Health Organization (2012, pp. 11),

"quality of life is an individual's perception of one's position in life in the context of his/her culture and values in which they see themselves. It entails their goals, perspectives, principles, and concerns".

Milbrath, in his book Environmentalists: Vanguard for a New Society (1986), has described the idea of the dominant social paradigm (DSP) as the worldview or lenses that "people use to interpret the functioning of the world around them". Furthermore, Kilbourne (1997) continued the idea to clarify that DSP may play an essential role in the relationship between sustainable behavior and QOL on the example of Western industrial societies (see Figure 1). However, a dominant social paradigm, according to William E. Shafer (2006), does not reflect entirely the social norms of the society, but rather society's values, norms, beliefs, and organizations anchored in the paradigm. In the research, the Master Thesis considers the DSP not as social lenses used to interpret social world, as Kilbourne and his colleagues described in their research (2002), but instead it considers the paradigm as social norms that prevalent in a particular society.
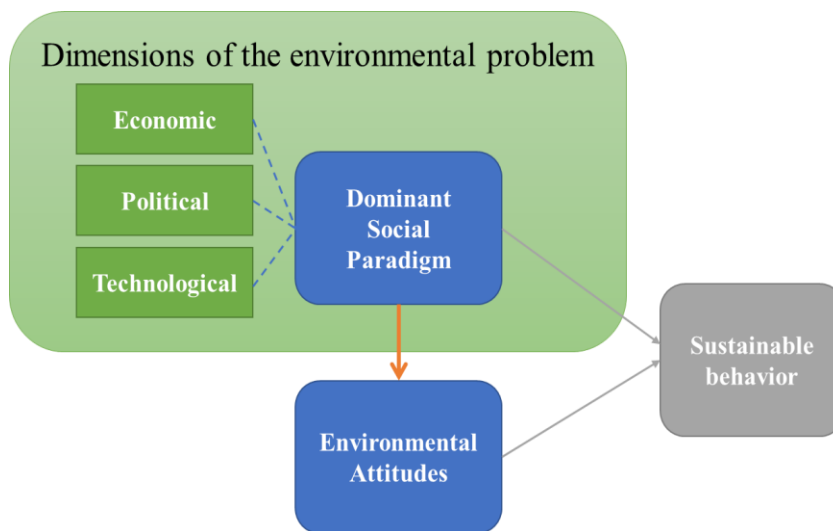
Figure 1 Kilbourne's proposed model of DSP (adapted) (Kilbourne et al. "The role of Social Paradigm", 2001, pp. 211)

According to Corral-Verdugo (2012), the definition of sustainable behavior is the set of actions that lead to protection and saving socio-physical resources of our planet, considering the integrity of animal and plant species, and wellbeing of the future and

current generations (Corral-Verdugo et al., 2012). Besides, Corral-Verdugo and his colleagues (2009) described that sustainable behavior may have additional features such as affinity toward diversity, altruistic, pro-ecological, frugal, and equitable behavior which he named as first-order factors of sustainability. Sustainable behavior construct is composed of pro-ecological, frugal, altruistic, and equitable behavior (Corral-Verdugo et al., 2009). Each of those elements shows a significant correlation with a high-order factor of sustainable behavior, which, interestingly, may lead to the presence of second-order factors that Corral-Verdugo calls "pro-sustainability orientation" that may be strongly associated with QOL (see Figure 2). These factors are essential in this Master Thesis, as in sub-Hypothesis 1 and 2, the researcher tests the correlation between the dimensions of dominant social paradigm, stress, and these second-order factors of sustainable behavior and how this correlation may have an impact on the quality of life of the respondents.
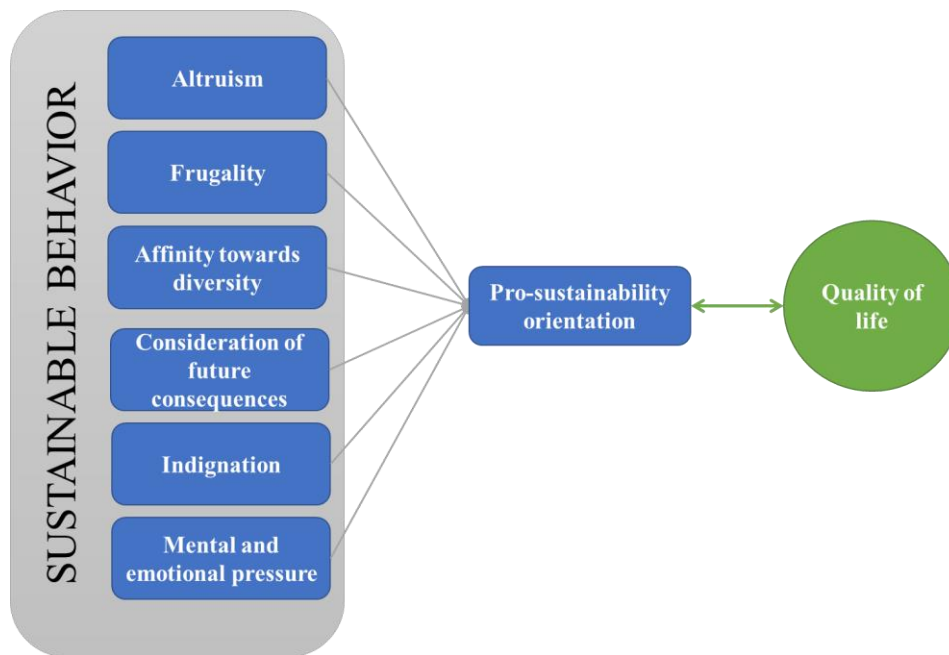
Figure 2 Model of relations between first-order factors of sustainability, pro-sustainability orientation, sustainable behavior, and quality of life

The Master Thesis provides a review of the recent studies about sustainability preferences under stress. In studies of sustainable consumption, Birgitta Gatersleben and Isabelle Griffin (2017) have proposed the idea of the stress theory (more precisely Environmental Stress Theory) as the conceptual lens to advance the analysis of the cognitive dissonance regarding shifting consumer behavior toward sustainability. Stress alongside insomnia and burnout may impact human wellbeing and a person's manner of assessing the QOL

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(Ribeiron et al., 2017). This concept serves as a cornerstone for testing Hypothesis 2, 3, and Sub-Hypothesis 2.

The researcher evaluated these barriers by comparing the main factors of sustainable behavior of two different cultures and conducted an online experiment. The evaluation consists of statistical assessment to prove the reliability of the recent studies regarding sustainable behavior and quality of life. Since the research consists of comparison of different cultural settings, the sample should consist of those who live in the European region (mainly, in Austria) and those who live in Russia (the European region of Russia). To facilitate a better understanding of the online experiment conditions, the researcher offers an opportunity for the study participants to choose the language of the study – either English or Russian. And the experimental part of the research provides a foundation to assess how people from different cultures are affected by the stress factor in their decision to behave more sustainably.

2. Literature review

Sustainable behavior research mainly focuses on enhancement of sustainable behavior adoption and ways to influence the population's consumption through raising awareness on environmental issues. The raised awareness is expected to alter people's behavior and their quality of life evaluation (QOL) (White et al., 2019; Tapia-Fonllem, 2017; Cao et al., 2014; De Young, 1996; Steg, 2005). A fair amount of attention has been given to determining personal characteristics, attitudes, psychological benefits that shift the individuals' lifestyle to be more sustainable (Corral-Verdugo et al., 2012).

Within the Master Thesis, sustainable behavior is defined as a set of approaches that with total support from a large number of followers may accumulate a positive impact on the environmental resilience. However, there are varying approaches to defining sustainable behavior. One of the dominant approaches emphasizes the limitation of the availability of natural resources as a trigger for sustainability (Gatersleben and Griffin, 2017). The authors focused on this sustainability domain predominantly studied either the structural aspects of sustainable behavior or described the constraints that hinder people from acting in more sustainable ways (Fleury-Bahi et al., 2017). The Master Thesis is also based on this dominant approach to studying sustainable behavior. The rest of the section aims to provide an overview of the theoretical concepts from the sustainable behavior domain,

including external factors impacting the behavior and the existing knowledge on behavior's effect on the QOL.

Only at the beginning of the twenty-first century, sustainable behavior started to be assessed regarding its impact on human well-being and QOL (Tapia-Fonllem et al., 2017). Before that, people addressed environmental-behavior issues only by encouraging pro-ecological behavior that the primal focus was on the prevention of hyper-consumption and reduction of the use of virgin materials. Fleury-Bahi et al. (2017) have stated that now environmental problems may cause a significant decrease in the QOL and, therefore, the links between well-being and environmental issues are becoming more important recently because the latter play an essential role in basic human needs (such as pure water, safe food, and condition of life). Gatersleben (2001), through the examination of 393 Dutch households, assumes that sustainable consumption pattern can be performed "when the quality-of-life benefits and the environmental costs of these consumption patterns are balanced" because sustainable behavior may not only be influenced through altruistic motives but also through available opportunities (for example, easy access to a recycle bin) and through financial abilities of a household. However, Tapia-Fonllem et al. (2017) argued that the contribution between sustainable behavior and QOL is more complex. It may be because those behaviors lead to an increase in human well-being by protecting the earth supplies that are essential to meet people's needs (Tapia-Fonllem et al., 2017).

2.1. The Definition of Quality of life and Sustainability

Quality of life measures are well-established in the medical and psychological literature as a crucial indicator of several types of well-being (Utsey, Bolden, & Brown, 2001). According to Enric Pol and his colleagues, examining the human quality of life (QOL) is complex, and it takes an appropriate measurement of the intrinsic quality of several dimensions such as environment, health condition, needs, life satisfaction, standards of living, sustainable development, etc. (Tapia-Fonllem, 2017; Uzzell & Moser, 2006). The multidimensional human QOL comprises physical, functional, emotional, and social well-being. However, despite the multidimensional definition of QOL, some researchers have also highlighted the subjective QOL (Cella, 1994). Such subjectivity of the QOL refers to the fact that people's perspective of well-being has a subjective component that makes the measurement of QOL quite confusing and makes it difficult to create a

universal notion of QOL in scientific studies (Fallowfield, 2009; Cella, 1994). Nevertheless, the WHO (2021) proposed a definition that includes the cultural, individuals' perceptions, individuals' principles, and values that many scientists used recently.

According to Corral-Verdugo and Pinheiro (2004), the definition of sustainable behavior is the set of actions focused on preventing environmental degradation and enhancing the well-being of the current and future generations (Corral-Verdugo et al., 2012). In the profound studies of Corral-Verdugo and his colleagues (2009), the researchers have highlighted the additional features of sustainable behavior that are called the first-order factors of sustainable behavior. These factors are altruism, frugality, affinity towards diversity, indignation due to environmental damage, pro-ecological behavior, intention to act, equity, and happiness (Corral-Verdugo et al., 2009). Details on some of these factors are presented below.

According to Singer (2011) and Corral-Verdugo (2012), altruism is a complex and challenging-to-analyze concept. The complexity lies in a motivational state aimed at increasing the well-being of others or meeting other people's needs at some cost to oneself (Corral-Verdugo et al., 2012; Singer 2011). Protecting the social environment through sustainable behavior is recognized as altruism that is considered not as something that brings economic benefit but rather as satisfaction from doing something positive for others. Moreover, altruistic behavior refers to operations that enhance trust and quality of social relations between people and, therefore, increase the QOL of people (Tapia-Fonllem et al., 2017).

Frugality describes a behavioral characteristic of a sustainable way of life (Iwata, 2002; De Young, 1996). Frugal behavior is a set of self-regulated consumer behavior that is associated with sacrificing through "denying a series of short-term purchasing whims and industriousness by resourcefully using what is already owned or available for use" (Lastovicka et al. 1999, p. 96) and is commonly believed to lead to the achievement of long-term goals toward sustainable consumption. In his research of reduced consumption behavior, De Young (1996) stated that there is a relationship between intrinsic satisfaction and the practice of frugal behaviors due to beliefs of a person that he or she had direct control over their desires, rewards, and punishments (De Young, 1996). According to Corral-Verdugo, frugal actions have seemed an antagonist to consumerism

in the industrialized world. Therefore, it is expected that the frugality indicator of the research respondents is negatively correlated with DSP or DSP's dimensions (Corral-Verdugo, 2012).

Affinity towards diversity gives an insight into human preference towards complexity, variations, and diversity. It reflects a stable liking for cultural, physical, biological diversity in daily interaction with the social world (Corral-Verdugo, 2012). In terms of environmental protection, people who are more tolerant of diversity and consider it a feature of their lives are more prone to practice more environmentally friendly behaviors. Consideration of future consequences describes an ability of a person to set his or her goals, anticipate the consequences of their actions, and think about the immediate and distant impact of their actions on others or the environment (Corral-Verdugo & Pinheiro, 2006). In their assessment of water conservation practices in two Mexican cities, Corral-Verdugo and Pinheiro have noted that time orientation behavior forces sustainable consumption habits.

As sustainable behavior replaced the notion of pro-environmental orientation, now it is commonly used to emphasize the effort to preserve the natural environment (Cesar Tapia-Fonllem et al., 2017). In contrast, sustainable behavior protects the natural and social (human) environment (Victor Corral-Verdugo, 2012). According to Corral-Verdugo, pro-environmental behaviors may have a solid contribution to QOL by waste prevention or resource life extension that is used constantly to sustain human life.

As mentioned, the correlation of some elements of sustainable behavior with a sustainable-behavior higher-order factor (Tapia-Fonllem and his colleagues identified the factor as sustainable behavior itself) (see Figure 3) may lead to the existence of pro-sustainability orientation that has a strong connection with the QOL. In the research, this construct will be used to assess the sustainable behavior of respondents that will be described in more detail in the Methodology section.
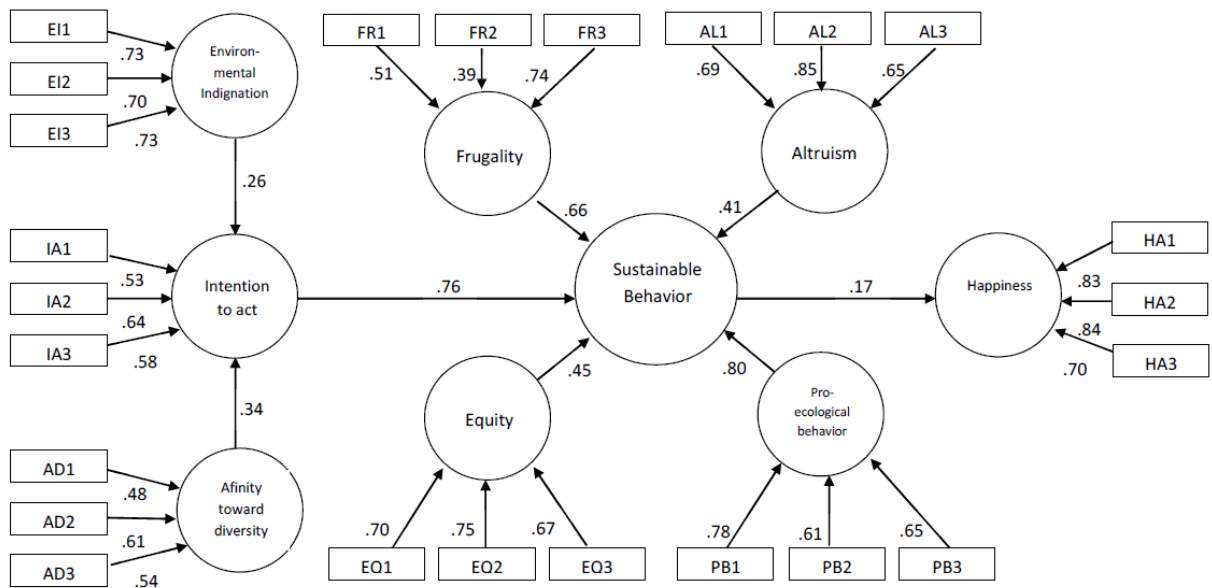
Figure 3 Structural model of determinants of sustainable behavior (Corral-Verdugo et al., Sustainability 2013, pp. 720)

However, when it comes to the links between QOL and sustainability, many scientists, as mentioned, note that awareness of environmental issues may have a considerable impact on human behavior and how they evaluate their QOL (Steg, 2005). Gabriel Moser stated that sustainable QOL could be achieved through human interaction with the environment, which people consider one of the dimensions of QOL, respectfully. As "altruism is implicit in a more sustainable way of living since this implies acting to produce positive impacts on the needs of other persons" (V. Corral-Verdugo et al., 2009, pp. 35), helping others without a reward of material nature has a link to health benefits when this help is not expected to be overwhelming (Post, 2005). An opposite example of this pattern is when human well-being and health are negatively affected by environmental quality shortages (air pollution, water pollution, traffic noise, criminality rate, etc.) (Moser, 2009). Corral-Verdugo and Moser stated that interaction with the environment (social or physical) could create a positive psychological consequence that is a component of subjective factors of the QOL of an individual.

As mentioned, Gatersleben and Poortinga (2001) examined how the well-being of Dutch households can be affected if they had to increase or reduce their electricity consumption to a sustainable level. This is a good illustration that change of sustainable behavior may decrease the person's QOL because such actions may reduce comfort, freedom, pleasure, and, to some extent, social relationships with other people, work efficiency, and leisure-

time and private life. Besides, Gatersleben (2001) showed that availability and financial opportunity play a crucial role in forming consuming patterns. For instance, people provided with sorting bins for recycling near their homes are more likely to perform pro-environmental behavior than those who do not have these conveniences.

2.1.1. Pro-environmental behavior and its driving forces

Environmental psychology seeks to gain more insights into the relationship between people and the natural environment. The discipline studies the impact of the environment on individuals and how those environmental stimuli shape human behavior and attitudes (Demarque & Girandola, 2019). Many researchers have accentuated the role of major threatening factors on adverse changes in individuals' quality of life, such as climate change, deforestation, urban noise, and air and water pollution. In the face of these issues, people can mitigate the problem of environmental quality by improving an individual's connectedness to nature and creating incentives to avoid or, at least, curb the overexploitation of natural resources (Steg, Van Den Berg, & De Groot, 2019). For these reasons, environmental psychology sets a range of aims to depict how a person can cope with environmental stressors and facilitate pro-environmental behavior. This section aims to describe in detail the nature of pro-environmental intention and behavior and its main drivers.

As with every other stressor factor, environmental stressors impact the physical condition of human beings, such as adrenaline, cortisol, blood pressure, and mental state (Bilotta, Vaid, & Evans, 2019). As a result of human activities, environmental stressors are distinguished by the exposure's duration, frequency, intensity, and periodicity. Specialists of environmental psychology generally highlight noise, crowding, traffic congestion, and poor quality of neighborhood and housing as the most common stressors of the environment humans face in their daily life. Interaction with those socio-physical stressors leads to adverse reactions such as irritation or annoyance and involves different human cognitive assessments of the stress event and coping strategies that help individuals to deal with changes in an extreme condition. However, the magnitude of the effect might vary depending on individual perceptions of the sources of environmental stressors. According to Mirilia Bonnes and her colleagues (2019), a negative response to a harmful environmental condition might correlate with the level of arousal (Bonnes,

Scopelliti, & Fornara, 2019). For instance, a low level of arousal might nullify the reaction to the discomfort, making it insignificant.

In contrast, a person with a high level of arousal might be more sensitive to annoyance or disturbance. For people who live in urban settings, multiple stressors might cause a stimuli overload – when an individual lacks personal coping resources to overcome the stress event and diminish cognitive functioning (Bonnes, Scopelliti, & Fornara, 2019). For its part, the decrease in one's quality of life can foster environmental concern, which in turn might induce him/her to behave more pro-environmentally.

As mentioned, the process of pro-environmental behavior reflects the response to the impact of environmental issues on an individual's well-being and quality of life. However, mitigating ecological stressors is not the only way to contribute to well-being. Other sources of pro-environmental behavior that also provide a positive relationship with the protection of an environment are environmental concern and environmental risk perception (Demarque & Girandola, 2019; Navarro,2017). The two terms significantly impact self-assessment of quality of life and might result from social and environmental inequality (Contzen, Mosler, & Kraemer-Palacios, 2019). The manifestation of these inequalities generally takes three forms:

1. The unequal negative contribution of different groups to environmental issues.
2. The inequality in access to vital environmental resources.
3. The inability of certain groups to handle and adequately react to environmental crises

The inequalities may take different forms. For instance, in geographical scope, low- and middle-income countries (LMICs), compared with high-income countries, face more significant environmental problems due to technical disadvantages, industrial risks, and lack of financial resources and experience (Contzen, Mosler, & Kraemer-Palacios, 2019). Living close to sources of pollution and environmental disasters increases ecological vulnerability, which in turn worsens situations with social risks such as difficulties in accessing healthcare or education services or facilities. The vulnerability of these countries toward biophysical issues raises environmental concerns of other groups and, therefore, leads to the development of ecological worldviews (De Groot & Thøgersen, 2019). Those underlying beliefs on the connection of its commitment towards nature and people who may suffer from the imbalance of environmental inequality were mainly

studied in high-income countries. In the past, the environmental concern of people who live in LMICs was assumed to be low as they probably desperately fought against other needs. However, the result of Fred C. Pampel's research (2014) casts doubts on this hypothesis advocating that there is a high level of environmental concern among low- and middle-income nations but less prominent and accurate than in high-income countries. The research showed that there were positive moderate significant relations between the educational level of respondents and their willingness to behave more pro-environmentally (pay more taxes or give part of their income to prevent environmental pollution) (Pampel, 2014). Nadja Contze and her colleagues (2019) assumed that environmental concerns might be a crucial part of the inhabitant's QoL assessment or part of the inhabitant's cultural values.

Still, the link between values or social norms and environmental concerns needs to comprehensively explain the attitude and behavior of an individual regarding environmental orientation. Ecological behavior, as discussed later, can be described by injunctive and descriptive norms, while values determine attitudes and beliefs that shape individuals' behavior. However, their associations are more complex as they have different levels (Gifford & Nilsson, 2014). For instance, a "pro-social" value-oriented person may make the same choice regarding environmentally friendly consumption as a "pro-self" value-oriented person. However, they may have different motives, and it might be hard to conclude whether the person's values relate to PEB or whether the action was done according to self-centered reasons.

2.1.2. Pro-environmental commitment

In environmental psychology, these findings may give valuable insight into the gravity of current and future consequences of environmental risks. Moreover, a better understanding of the environmental concern provides a clearer picture of the main factors that trigger pro-environmental behavior and encourage people to protect the environment (Félonneau & Causse, 2017). Those behavioral intentions to be committed toward the environment, as one may see in the previous examples, implicitly connects with quality of life. The commitment theory is an approach that studies the application of commitment in pro-environmental behavior and focuses on individual changes to create satisfaction in their consistent action on protecting wildlife and natural settings. Joule and Beauvois, in 1998, suggested an approach that aims to create a paradigm of free will compliance

concerning environmental commitment where a person can change their behavior unintentionally, consistently, and voluntarily persuading that the cost (effort) of the acts might be insufficient.

Other studies regarding pro-environmental behavior have gained an essential insight into the source of the interaction of people with nature. Some of them state that positive attitudes and experience with natural surroundings in early years (before the age of 11) lead to a higher level of pro-environmental behaviors and attitudes as adults lead (Wells & Lekies, 2006). Linda Steg, in her book Environmental Psychology (2019), described the link between the nature experience of people in childhood and later their environmentalism. One of the examples of this link was the surveys of Wells and Lekies in 2006 and Lohr and Pearson-Mims in 2005. The first survey polled 2000 people over 18 in the United States and showed that people with fewer limitations with access to outdoor activities (hiking, gardening, visiting parks, etc.) when they were children gave more personal and symbolic meaning to nature. The second survey showed that the presence of the bond of memory of the essential or meaningful person in childhood and engagement with nature might evoke pro-environmental behavior in adulthood. People who stated that they have a strong early memory about their interaction with nature and had a person who was influential to the experience showed a higher importance of nature in their quality of life.

To gain more insights into how attitude and behavior can be affected by the individual's membership or consideration of one or several groups or movements, researchers devote great attention to social identity theory (SIT) and self-categorization theory (SCT) to obtain a positive approach to promote pro-environmental behavior (Fleury-Bahi & Ndobo, 2017). Tajfel (1978) and Turner (1987) proposed both theories to emphasize the role of the group identification processes and self-perception in environmental problems.

The social identity theory states that individuals imply personal and social dimensions in their identification processes and self-esteem evaluation. A person's social identity is the interaction of values and self-esteem with the idea of belonging to a particular group. It mainly depends on the social comparison of in-groups and relevant out-groups. While social and spatial (geographic inscription) identifications play a significant role in analyses of intergroup conflicts, discrimination, and prejudices, the approach of the social identity might be a tool to evaluate contextual conditions as a motivation to shift an

individual's behavior to the more environmentally friendly one. Nevertheless, it cannot be assumed that self-esteem can only motivate identity. Vivian L. Vignoles and his colleagues (2006) proposed that self-esteem alongside continuity, distinctiveness, belonging, efficacy and meaning of the action could be other motivational goals in identity construction (Vignoles, Regalia, Manzi, & Golledge, 2006).

The extension to the theory that covers the importance of personal identity or cognitive dimension is the self-categorization theory (Fleury-Bahi & Ndobo, 2017). However, the theory does not abandon the possibility that a person can define him-/herself in terms of social identity. The self-categorization theory states that when personal identity is salient, a person tends to behave according to his/her personal needs, goals, and motives. In contrast, when a social identity becomes salient because of the influence of a particular social category at a given time, the self becomes depersonalized, and a person tends to behave according to the interest and norms of a particular group (Lise Jans and Kelly Fielding). SCT proposes that the difference between out-groups and in-groups makes the social identity more salient in case the difference within the in-groups is inconsequential. This relation is called a principle of meta-contrast (Turner et al., 1987). Therefore, a new shared social identity might be associated with an established social context that distinguishes social settings as a separate group or with the interaction between members of in-groups and out-groups (Jans & Fielding, 2019). The social identity approach provides a solid foundation for strategies to promote pro-environmental behavior by identifying key touch points where interactions between group members may foster pro-environmental settings within groups.

2.2. Dominant social paradigm

Moser stated that QOL relatively varies between countries and is socially constructed and culturally bound (Moser, 2009). In Environmentalists: Vanguard for a New Society (1986), Milbrath has described the new framework of the dominant social paradigm (DSP) as the lenses that helps people to perceive the world. In the example of Western industrial societies, as mentioned, William E. Kilbourne and his colleagues (1997) assessed this paradigm profoundly and highlighted that DSP could play an essential role in the relationship between sustainable behavior and QOL. Due to the dominant social paradigm, people in the same countries may share common values, beliefs, and perceptions regarding social and physical environments (Dunlap & Van Liere, 1984).

Dunlap and his colleagues assessed the traditional values of one study group and their commitment to the DSP and concluded that there was a persistence of a negative relationship between DSP and the pro-environmental orientation of the study group. More interestingly, some part of the group demonstrated some conflicting cognition as the respondents stated that they equally support their commitment to the DSP and the idea of environmental protection. However, the authors believed that in the long term, this cognitive dissonance reduces whether the faith in the current DSP falls, or an individual finds environmental protection less crucial (Dunlap & Van Liere, 1984).

According to Kilbourne (1997), the social paradigm consists of four dimensions of the environmental problem: economic, political, technological, and ethical. However, the researcher focuses on the first three dimensions, which are the main barriers preventing a more sustainable behavior. Through the studies on the university students in England, Denmark, and the USA, Kilbourne and his colleagues have shown that in the examination of DSP of the respondents in the context of environmental issues (specific and general problems), the attitudes toward elements of DSP (namely the economic, political, and technological) performed a significant intercorrelation (Kilbourne et al., 2001). Details on these dimensions are presented below.

- The political dimension shows the extent to which a person relies on governmental agencies, environmental taxes, or legal sanctions to solve social issues (Kilbourne, 1997). Assessing this dimension gives some insight into people's trust in the government of their country of residence.

- According to Postman (1993) and Winner (1986), people commonly assume that technological development will overcome all human problems, primarily environmental (Kilbourne, 1997). Moreover, technological optimism may dull human perception of sustainability and decrease the motivation to protect the environment because people who are strongly committed to DSP believe that some of the achievements in technological developments have far outmatched the environmental issues.

- The economic dimension represents the necessity of economic growth and individual material well-being as the priority of human life and, therefore, promotes economic liberalism. Under this dimension, people tend to believe that environmental problems could be better solved by economic progress in the long term rather than an individual or a society.

According to Manning (2009), facing fewer barriers (real-world, cultural, social, or psychological) makes it more likely for human behavior to be more environmentally friendly. Overcoming these barriers may be complex and time-consuming for an individual. Therefore, it is crucial to analyze each barrier to create approaches for social marketing and social psychology to engage people in sustainable actions consciously and unconsciously. Manning (2009) suggested that one way to empower sustainable human behavior is to make the action more appealing to our automatic thinking system (or System 1).

Social proof plays a crucial role in creating a dominant social paradigm of a person as the form of economic, political, ethical, and technological worldviews most commonly held within a culture (Pirages et al., 1974). Social norms that differ depending on the culture or community may be an essential link between human behavior and System 1. Cialdini (2006) noted that people always look for implicit and explicit messages about which behavior is expected and accepted by society. In other words, we are looking for so-called "social proof" from other people to approve our actions and to guide our behavior and attitudes. It is a powerful tool to assess how people behave in a new or ambiguous situation. Research showed that people are more likely to exhibit behavior when there is social proof for it (Manning, 2009). Furthermore, an individual's awareness of social and environmental problems may create internal strains and desire to act more environmentally (Cherrier, 2009; Kozinets and Handelman, 2004; Longo et al., 2017) that originates through individual's high moral principles, or "sustainable identity" (Valor et al., 2018). In contrast, Kilbourne stated that the awareness of environmental issues might be blurred by the people's confidence in the economic, political, and technological aspects of DSP (Kilbourne, 1997).

2.3. Environmental Stress Theory

Stress is examined as a deliberate distraction of human attention from the environmental stimulus or stressors in this research. Stress, as mentioned, and other mental issues may have a negative effect on human well-being and QOL (Ribeiron et al., 2017) and, at the same time, may have a significant impact on human sustainable behavior. In the study of sustainable consumption, Birgitta Gatersleben and Isabelle Griffin (2017) have proposed the stress theory (more precisely Environmental Stress Theory) as the conceptual lens to advance the analysis of the cognitive dissonance regarding shifting consumer behavior

toward sustainability. According to Lazarus (1996), not all environmental stimulus that a society or a government establishes motivates people to behave more sustainably due to environmental stressors such as adverse effects on an individual's health caused by pollution or noise (Lazarus, 1966). Environmental stressors occur depending on individual factors (how an individual is coping with these stressors) or intense external environmental stimulus.

The other theory that arises from stress theory is the Environmental Load/Overload Theory, which states that humans may ignore environmental issues because an individual must cope with other stressors that significantly impact his/her QOL (Gatersleben & Griffin, 2017). This concept was linked to the social norms observed in urban areas where the environmental assessment was complicated due to the presence of many external stimuli (inherent to big cities) that a person should cope with. Gatersleben stated that prolonged focus on stimuli in an urban environment that demands attention (noise, traffics) might lead to mental fatigue. Moreover, such irritation to those stimuli (depending on a person's ability to cope with different stressors) can result in irritability, intolerance, frustration, and errors.

2.4. The conflict between values and behavior

Existent studies on personality and environmental issues showed that personal environmental concerns regarding people's actions that lead to negative consequences motivate people to change their behaviors and attitudes (Hennecke, Bleidorn, & Deniss, 2014; Liberman & Trope, 1998). People's personality traits regarding sustainability may significantly differ due to time, frequency of traits changes, or social-environmental changes. Christopher Hopwood and his colleagues (2021) stated that human's willingness to make sacrifices to behave more sustainable might be related to an increase in the personality traits of openness and neuroticism. According to their assessment of people's concerns about climate change problems in Germany, people tend to be more open overtime to the impact of human development on the environment and be more aware of their actions and contributions to the future negative consequences (Hopwood, Schwaba, & Bleidorn, 2021). Neuroticism is a tendency to experience negative emotions when a person becomes more aware of environmental issues in general (Lahey, 2009).

These negative emotions create an ecological worldview that may endorse the belief that people should behave more pro-environmentally. Pro-environmental behavior has been

a centric topic of most environmental psychology research and may be highly beneficial for the environment and, interestingly, not necessarily empowered by environmental goals. It means that people may behave pro-environmentally without realizing it because the actions might be motivated by social norms or values (De Groot & Thøgersen, 2019). Human values have several features:

- They consider beliefs
- They transcend specific situations and adhere to on a longer-term
- They serve as a guide to assess and correspondently react to the specific event by prioritizing one value over the others.

Although the role of human values in pro-environmental behavior is indirect and abstract, the personality traits may shape human values that affect pro-environmental beliefs and behavior. In an environmental context, one of the tools of assessment and prediction of sustainable attitudes and behaviors based on human values is social value orientations (SVO), which was established by Messick and McClintock (1968) (De Groot & Thøgersen, 2019). SVO theory specifies the values into pro-self orientation and pro-social orientation, considering which people act environmentally friendly depending on whether a person is concerned with the positive utility of his/her sustainable action or a person has a moral obligation towards the others.

According to Schwartz's value theory (1992, 1994), in the sustainability domain, there are four types of values that showed a relevant correlation with human response capabilities to environmental issues: altruistic and biospheric values, egoistic and hedonic values (De Groot & Thøgersen, 2019). Each pair represents two different dimensions of values: self-transcendence and self-enhancement value dimensions. Altruistic values reflect a human consideration of the benefit of other people, while biospheric values reflect a moral obligation towards the environment for its own sake and the quality of nature (Van der Werff, Steg, & Keizer, 2013). According to De Groot and his colleagues (2015, 2016), the self-transcendence dimension is a relevant predictor for pro-environmental behaviors (De Groot & Thøgersen, 2019). However, altruistic and biosphere values may differently contribute to pro-environmental behavior.

The self-enhancement value dimension also represents the essential values for predicting human behaviors and attitudes. In some cases, one may show positive relation to the environmental behavior, while the other showed an opposite relation. Egoistic values

reflect the relationship between costs and benefits of acting pro-environmentally. Hedonic values reflect approximately the same relationship as egoistic values, but the main distinction between them is that hedonic values consider reducing effort and increasing positive feelings from not behaving pro-environmentally (De Groot & Thøgersen, 2019).

2.4.1. Social norms and social influence

For the last century, social norms have been studied by many human sciences to explore the concept of identity and apply social construction models to sustainable developments. In the past, the dominant social norm was consumerism – stating that objectively a person should tend to spend more, and the quality of life positively correlates with the level of consumption. To oppose the trend of hyper-consumption, environmentalists established pro-environmental norms to raise the value of environmentally friendly behavior (Félonneau & Causse, 2017). It is essential to understand the process of social influence as consumerism and pro-environmentalism prescribe contradictory guidelines for society, creating ambiguity in the socio-normative framework of what is socially valued today. In environmental psychology, researchers pay particular attention to social norms and how they guide and tell people what is commonly appropriate. However, the norms are not only about expected behavior in a group context; it also describes the affiliation to the group and vice versa, defining what groups do and their essence (McDonald & Crandall, 2015). Based on the results of their experiments, Paul Wesley Schultz and his colleagues (2008) showed that social norms could be influenced in many ways, aligning descriptive or normative norms to influence conservation behavior among hotel guests. The research results on social influence could be applied in other fields to engage people in behavior with a more positive direction for the environment (Schultz, Khazian, & Zaleski, 2008). The chapter focuses on types of social norms and the influence process that helps people manage behavioral transformation in the social world.

Research on moral evaluation can impact compliance decisions regarding environmental problems as they are mostly related to human behavior and actions (Keizer & Schultz, 2019). However, different sets of rules and schemes of acceptable actions guide people in everyday life. Some decision-making processes can be influenced by norms that other people approve of. In contrast, others might be affected by the personal rules and moral obligation to perform or refrain from specific actions or behavior – which is called

personal norms (Schultz, et al., 2016). Thus, the question arises of why people conform to social and personal norms and what it means for sustainable behavior.

Kees Keizer and P. Wesley Schultz (2019) distinguished two types of social norms:

•   Injunctive norms – responsible for commonly approved or disapproved behaviors by a group or a society

•   Descriptive norms – norms that are demonstrated by most of the group members (Keizer & Schultz, 2019)

Conforming to different types of social norms involves different motivations. Injunctive social norms refer to the social approval of an individual's behavior or avoidance of violating those norms (social sanctions). The motivation responsible for making people around us like us and approving our actions in a given situation is called normative social influence. However, it might work differently regarding the approval of one's actions. The injunctive social norms inspire people to act via social evaluation – a socioemotional process that makes the decision-maker believe his/her action is under critical examination from the other social group members. This can be displayed by adolescents who have a complex and sensitive reaction to social evaluation by their peers and other members of other social groups (Somerville, 2013). Apart from sociocultural factors and experience, social sensitivity is partly attributed to neural mechanisms (neural circuity) that assign essential associative information to memory and with hormones (namely, oestradiol, oxytocin, testosterone, and adrenal androgens) play a crucial role in social-effective development that enable teenagers to adapt mature social challenges and creating self-esteem in their transition between childhood and adulthood (Crone & Dahl, 2012). The recent research on risk evaluation and dangerous behavior in adolescents showed that biased responses such as impulsive and immature actions were related to goal flexibility – the ability to shift goals priorities or change the value of motivations. An example of flexibility could be the tendency to place a greater value on gaining admiration from other group members by taking riskier actions or those that go against one's values.

Descriptive norms motivate people to follow the people around them and presumably lead to a desired or right outcome (Keizer & Schultz, 2019). This "following the example of others" motivation is termed informational social influence (Deutsch & Gerard, 1955). Interestingly, people tend to ignore the strength and ubiquity of descriptive social norms. Robert B. Cialdini and Melanie R. Trost (1998) stated that people preferably choose to

use the actions of others in the novel, unclear, or uncertain situation as the source of reference to act in a similar situation. As people do not consider that the actual behavior of others predetermines their action in the situation, the compliance process regarding a person's decision can be biased in two points:

1. When the decision maker takes the role of an observer and justifies or evaluates his/her own actions.
2. When the decision maker takes the role of a tactician and encourages others to take a particular action.

Due to these findings, many information campaigns that stress non-environmental actions changed their approach of focusing on the cause of the problems (information dissemination) into the approach with normative messages creating a description of a group with desired behavior and actions (Cialdini, 2007). The former approach was based on the knowledge-deficit model assuming that people tend to behave differently if they gain more information about the consequences of unwanted activities. In their research on energy conservation, Shultz and his colleagues (2008) showed that the approach needed more incentives to act and largely ignored the motives behind the actions (Schultz, Khazian, & Zaleski, 2008). Noah J. Goldstein and his colleagues came to a similar conclusion regarding the power of descriptive norms and social identities. Their results showed that the normative messages performed better engagement in pro-environmental behavior than simply informing the importance of environmental protection.

Interestingly, in contrast to Schultz's and his colleagues' research about normative messages using descriptive and injunctive norms, Goldstein and his colleagues used provincial norms – the norms derived from local settings and circumstances - with descriptive norms to strengthen the impact of the normative massage (Goldstein, Cialdini, & Griskevicius, 2008). The term "local social norms" was also studied by Ferdinando Fornara and his colleagues (2011). It showed that the spatial-physical setting might become a strong source of influence as coexisting in close distance with others creates an implicit group where people tend unconsciously categorize themselves to the group (Passafaro & Bonnes, 2011).

Contrary to the normative pressure of social influence is personal norms. Schwartz (1977) identifies personal norms as the set of rules and behavior that is not based on the

judgment of social members but on the self-expectation of their actions. Distinguishing the moral obligation to perform or avoid doing specific actions based on the values and beliefs of the social norms creates two theoretical frameworks – the norm activation model and the value-believe-norm model of environmentalism – that solve the dilemma that was mentioned before about the motives of pro-environmental behavior (Bamberg, Hunecke, & Blobaum, 2007). Linda Steg and Annika Nordlund (2019) emit four factors that activate personal norms in the norm activation model (NAM): problem perception, an ascription of responsibility for the consequence of taking or not taking action, outcome efficacy, and self-efficacy. The concept of NAM was mainly studied in the context of altruism and pro-environmental behavior, which is mainly based on the anticipation of negative emotions on the outcome of an event. The recent research on the moderate effect of emotions on personal norms within NAM showed that personal norms have significant but moderate relation with social norms (Onwezen, Antonides, & Bartels, 2013).

However, in a situation when people do not do anything to reduce inner disapproval of their own actions and lending others to be accountable for the consequences (the group), it may lead to deindividuation through submersion in a mob or "getting lost in the crowd" (Lea, Spears, & de Groot, 2001). The deindividuation process was mainly observed in aggressive and antisocial actions such as riots or mass violations. In the past, Gustav Le Bon (1895), in his study of the Popular Mind has associated the loss of rationality of a person in the crowds with the herding instinct, imitation of others, and self-justification of own actions for the sake of the idea. Zimbardo (1969) has developed a theoretical framework stating that the most important variables that trigger a loss of self-awareness are: anonymity, the ambiguity of the situation, loss of responsibility and accountability, sensory overload, etc. Another study by Keizer and his colleagues made a curious discovery regarding disorders and crime and linked it to an example of descriptive norms. The person who observed a violation of social norms is tempted to violate other norms leading to the spread of disorders (Keizer, Lindenberg, & Steg, 2008).

A person subject to deindividuation tends to feel less accountable for his/her actions as they believe that there is a low chance that somebody can connect their actions or inaction with them and, therefore, accuse them. However, the consequences of deindividuation could be not so extreme and do not lead to savagery. According to Spears and Postmes (2013) in their research on group identity and the deindividuation effect, the deindividuation level strongly correlates with a commitment to the group's norms. They

argued that Le Bon's description of the loss of identity in the crowd lacks a connection to social norms and proposed another explanation. Spears and Postmes (2013) stated that even in the chaos of the mob, people still can find a pattern of social identities as a person in the crowd takes a specific social role within the group. Hence, a person in the mob with a high likelihood will be under the influence of the specific situational group's norms rather than under the societal norms (Haslam, Reicher, & Birney, 2016). Consequently, the mob that does not have aggressive intentions (such as a masquerade or people at a party) might also exhibit specific norms that lead to positive behavior.

2.5. The link between Dominant Social Paradigm and pro-environmental behavior

Self-transcendence and self-enhancement value dimensions are strongly related to the Dominant Social Paradigm dimensions. The empirical evidence across cultures suggested that Kilbourne's structural model of DSP and environmental concerns are contributed to the individual's values (Kilbourne & Polonsky, 2005). In the past, most of the studies assumed that enhancing environmental concerns and knowledge would lead to an increase in pro-environmental behavior among the society. However, there was substantial evidence that the assumption had a behavior gap. For example, in the United States, the environmental concern and knowledge for the last thirty years have significantly improved, but at the same time, people did not become commensurately more environmentally friendly, or their behavior even remained unchanged (Kilbourne & Polonsky, 2005).

The gap suggested that other variables had to be more relevant in this relation and needed to be considered for further environmental behavior studies. Kilbourne (2005) suggested assessing environment-marketing relation to exploring environmental values in depth.

Dunlap and van Liere (1984) examined three relevant dimensions (economic, political, and technological) from an empirical perspective that played a crucial role in the relation between marketing and the environmental concern (Kilbourne & Polonsky, 2005). Further studies showed that different dimensional constructs of DSP could describe the different perceptions of change on consumption behavior. One of Kilbourne's dimensional constructs of DSP is the socio-economic dimension. A correlation between environmental concerns and consumers' willingness to change their consumption patterns has been found within this dimension. Moreover, Kilbourne, in his research, highlighted

that the economic component of the DSP showed a high negative effect on environmental attitudes and perception to change consumption behavior that led to degradation of the environment. In contrast, political and technological showed a minor impact on this relation (Kilbourne & Polonsky, 2005). However, Beckmann (1998), in his empirical research on the other-dimensional construct, has examined that the organizational construct that described the human position in nature was strongly related to value systems and environmental concerns. The other study of the relation of values and the dimensions of DSP was presented in Cotgrove's study of DSP in modern Western societies (1982) (Kilbourne & Polonsky, 2005), where he highlighted three core components or values of DSP:

- The priority of economic growth

- Usage of natural resources for the sake of humanity

- Domination over nature or prioritizing human needs over other species' needs (Shafer, 2006)

The values play a crucial role in our social norms, as they are prioritized in a specific situation of human life and have a strong influence on people's beliefs and attitudes. For instance, when a person is deciding what car he/she need to buy, a person who prioritizes biospheric values over egoistic, hedonic, or altruistic ones will consider the biospheric features of the car, such as emission sensors, hybrid engines, or air filtration systems. To increase values saliency, which can be resulted in more pro-environmental behavior, people need cognitive support for those values. The absence of support generates discomfort where human behavior conflicts with his/her attitudes – that is, a cognitive dissonance. According to De Groot and Thøgersen, creating an individual's internal justification by linking biospheric values to self-esteem and providing cognitive support for these values to strengthen one's self-focus is an effective tool to motivate people to behave more pro-environmentally (De Groot & Thøgersen, 2019).

As mentioned, the concept of pro-environmental behavior could be described as one of the main characteristics of sustainable behavior. The notion of sustainable behavior has been entrenched in an environmental quality assessment due to human interest in the new concepts that evaluated not only the condition of bio-physical and nature protection but consider economic, social, and political benefits of actions that are called sustainable (Tapia-Fonllem, Corral-Verdugo, & Fraijo-Sing, 2017). Moser (2009) has stated that in

many countries, environmentally concentered people found negative health consequences and distrust of authorities as sufficient threats to their quality of life due to the change on individual's locus of control – reduced the feeling of control over the environmental conditions. Moreover, this imbalance between self-demand on the quality of environment and individual's response capabilities were referred to by McGrath (1970), Evans and Cohen (2004) as stress (Bilotta, Vaid, & Evans, 2019). The stress could be perceived as the consequence of the wrong interaction between the environmental issues with an individual's beliefs, values, social norms, coping strategies that people use to overcome the environmental stressors. Therefore, the recent studies of the environmental stress theory have shown that the stressful events that occurred from an individual's cognitive appraisal or other environmental stressors can elevate stress level and may therefore lead to chronic exposure to these issues (van den Berg, Joye, & Vries, 2019).

According to this model, stress results from the interaction between a person and the environment. Stress resulted not only from the occurrence of an event but also from people's cognitive appraisal of the event and the coping approaches they use to deal with the event, both of which also influence stress levels. Annoyance on noise, traffic, crowding, and quality of housing or neighborhood and intensity of its physical parameters lead to a decrease in motivation and negatively impact the human value of the control over environmental stressors. Elena Bilotta and her colleagues (2019) stated that if a person regularly faces exposure to the environmental stressors, "physiological indicators of stress such as adrenaline, cortisol, and blood pressure as well as psychological indicators of stress..." (Bilotta, Vaid, & Evans, 2019, Environmental Psychology: An Introduction - Environmental Stress, pp. 43) will negatively influence the human quality of life and its perception.

However, in some other cases, coping with this mental pressure to achieve environmental quality and sustainability goals may contradict one's values shared in a particular society or often can be perceived as a threat to the latter. Some sociocultural contexts in which a person is embedded may create difficulties for him/her to appraise environmental stressors and mitigate them (Bilotta, Vaid, & Evans, 2019). For these occasions, the recent studies established the notion of a dominant social paradigm (DSP) to conceptualize the social norms, values, and beliefs about the world that "comprise a society's dominant worldview" (Shafer, 2006, pp. 123)

2.5.1. Social dominance orientation

There is another approach to assessing the commitment degree of a person to social norms. Social dominance orientation (SDO) – the conceptualizing a person's needs to approve its actions in hierarchal and unequal social groups. To achieve better insights into intra- and interpersonal psychological factors that are related to pro-environmental behavior and attitudes, the researchers proposed the measurement of SDO. Willingness to switch one's behavior to a more environmentally friendly one, as mentioned, requires changes in habits and norms that are fraught with difficulties, including sociodemographic affiliation, values, worldviews, or even political preferences (Panno et al., 2018). Linking to the research of Corral-Verdugo and his colleagues (2009), Panino and his colleagues assumed that the affinity towards diversity (ATD) – one of the factors of sustainable behavior – conceptually stands in opposition to SDO.

Moreover, Panino's research (2017) proposed the idea that the social dominance orientation could impact the relationship between an individual's mindfulness and the willingness to engage in pro-environmental behavior (Panno et al., 2018). Amel and her colleagues (2009) studied the link between mindfulness and sustainable behavior. In this research, awareness of an individual's actions was considered to promote environmentally friendly behaviors (Amel, Manning, & Scott, 2009). The idea has similarities with focusing on a personal concern as one of the personal factors that can promote sustainable behavior (Hopwood, Schwaba, & Bleidorn, 2021). Hopwood and his colleagues (2021) stated that people feel more motivated or inspired to change their behavior or attitudes when they understand that their actions had negative impacts. However, considering mindfulness in predicting sustainable behavior was unpractical. People may demonstrate a commitment to sustainable actions whether they have a self-world connection – that is, the personal connection with nature with a focus on self – or not (Amel, Manning, & Scott, 2009).

In another study, SDO was described as the tendency of prioritizing the economic dimension over pro-sustainable actions (Milfont et al., 2018). Milfont and his colleagues (2018) thought their assessment of the relation between SDO and environmental engagement across 25 nations showed that if a person is highly committed to one's social orientation, less likely that the person engages in pro-environmental actions. More interestingly, this association occurred more frequently in countries with more substantial

equity, higher standard of living indicators, and better performance on environmental problems (Milfont et al., 2018). The researchers have analyzed the moderation effect on the SDO-environmentalism relation. They have concluded that the Human Development Index (HDI) represents the standard of living, life expectancy, education of the nation, and income per capita impact the environment-relevant variables. Milfont's research (2018) illustrates the interaction between social orientations and sociocultural contexts that guide people regarding their attitudes and behavior. According to their findings, the inequality and hierarchy in society play a significant role in human attitudes towards pro-environmental actions depending on social contexts in which people live, environmental standards, and HDI. To achieve a high engagement in environmental protection, the authors stated that the society should gain equality, promote pro-environmental activities, and enhance human development and environmental standards (Milfont et al., 2018).

3. Hypotheses

Master Thesis focuses on testing several hypotheses that allow to answer the research question and provide a better understanding of the relationship between sustainable behavior, its components, and quality of life (QOL), and how it is affected by the stress or mental pressure and by dominant social paradigm (DSP). The hypotheses were developed based on the literature review. Hypothesis 1 focuses on the relationship between several components of DSP as social norms and sustainable behavior, while Hypothesis 2 assesses the difference in the key indicators between the two experimental sub-samples. Besides, the third central hypothesis includes two sub-hypotheses focused on assessing the moderation effect of DSP and stress on the relationship between QOL and sustainable behavior.
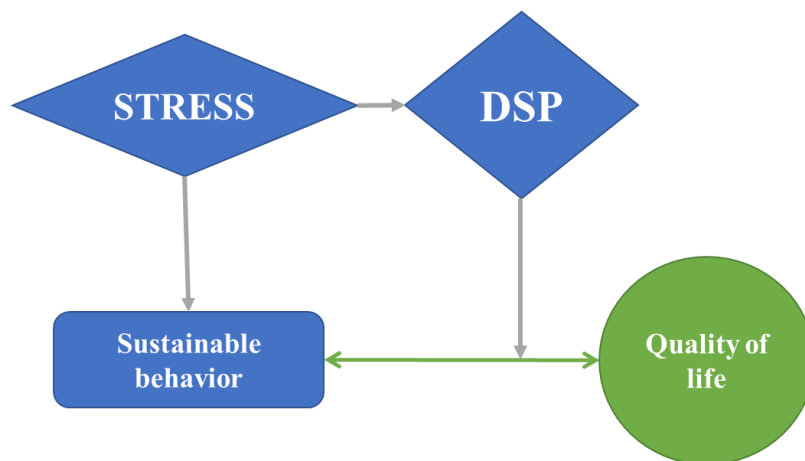
Figure 4 Testing model

H1: Commitment to the dominant social paradigm is negatively related to sustainable behavior. According to Kilbourne (2001), people with higher commitment to the dominant social paradigm tend to demonstrate less sustainable consumer behaviors than those with lower commitment. This hypothesis is tested within the Master Thesis on two divergent sub-samples: research participants from Russia (representing high commitment) and the European Union region (representing low commitment). It is expected that there is a statistically significant difference between these sub-samples in terms of the demonstrated sustainable behavior and the impact on sustainable behavior.

H2: Stress or mental pressure is negatively related to respondents' sustainable behavior. The hypothesis is tested through an experiment in the form of a survey with a time limit that is expected to induce momentary stress or mental pressure changing respondents' judgment on sustainability (see Figure 3). Additionally, long-term stress and mental tensions are planned to be controlled for within this hypothesis.

H3: Stress or mental pressure is related to commitment to the dominant social paradigm of the respondents. In unstable mental states, people tend to stick to their social norms in their decision-making processes. In the Master Thesis, this hypothesis aims to give some insights into the complexity of the dominant social paradigm and is a prerequisite for the sub-hypotheses 1 and 2.

Sub H1: The dominant social paradigm moderates the relationship between sustainable behavior and quality of life. Analysis of the role of the dominant social paradigm in the relationship between sustainable behavior and QOL is conducted within the research. According to Kilbourne (2004), the dominant social paradigm impacts environmental attitudes (see Figure 4), and as has been mentioned, DSP may play an essential role in the relationship between sustainable behavior and QOL. The hypothesis was tested through two -ways interaction analysis.

Sub H2: The relationship between sustainable behavior and quality of life is moderated by stress (defined as mental pressure). Even though mental pressure is considered one of the first-order factors of sustainable behavior (Corral-Verdugo, 2004), stress may significantly impact people's psychological and physical states and, therefore, it may negatively affect the QOL. In the Master Thesis, the researcher tests the hypothesis also through two-ways interaction analysis.

4. Methodology

The author evaluated the technological, economic, political, cultural, social, and psychological barriers by comparing the main factors of sustainable behavior of people from two different cultures and introduced an experimental condition to gain more insights into the effect of stress on an individual's decision to behave more sustainably. The purpose of the study is to confirm the reliability of the previous findings regarding sustainable behavior and quality of life and test the hypotheses regarding the impact of DSP as social norms prevalent in a particular society and stress on sustainable behavior of the respondents.

The study follows the fixed design strategy as it is the one that contributes to the greater feasibility. The strategy advocates for specification of the statistical analysis approach and definition of the list of variables to be analysed before data collection takes place. The strategy is also considered advantageous as it allows controlling for stress under the experimental conditions, ensures collection of data relevant to the research purpose, and enables application of several types of sampling design, e.g., clustering sampling, convenience sampling, and snowball sampling. Following the fixed design strategy, this section contains an overview of the data collection process, a list of measurements used for the study, and a description of the applied statistical analysis approach. Furthermore, the experimental survey's structure and content, sample designing are described in detail.

4.1. Experimental survey

The survey is organized into three main parts: introduction of the stress condition to half of the sample (1), data on prominent trends in human behavior toward sustainable consumption (2), quality of life and stress (3), social norms (4) and descriptive statistics (5). The detailed structure of the survey, length of the survey, assurance of privacy, and intervention that influenced participants' responses are provided below.

4.1.1. Survey Structure

The survey contains 77 questions (including optional and priming manipulation questions) to establish experiments and collect data on the main constructs and control variables. The time needed to accomplish the survey is approximately 15 minutes. The survey completion could be performed in more than one iteration with no time limits.

Respondents could make a pause, rethink the question, and then return to answering the rest of the questions without an opportunity to go back to the previous section.

The survey is structured in eight sections: Introduction, Stressful situation description, Stressful situation self-evaluation, Sustainable behavior, Quality of Life and Stress, Dominant Social Paradigm, Demographic Data, and End Message (See Figure 5).

The "Introduction" part consists of an opening statement that welcomes and introduces the participants with brief description of the term of sustainable behavior and the short description of the survey. Moreover, in this section the participants are ensured that the survey is anonymous and the record of this survey did not contain any identifying or private information about them.

"Stressful situation: description" section represented only in the experimental manipulation of stress level of the participants and was not visible for other participants. Moreover, the participants were unaware of the experimental condition of the study. The section aims to gather information about the stressful situation that participants recently has experienced and establish the tasks that would evoke negative emotions that were expected to last till the end of the assessment of the main construct.
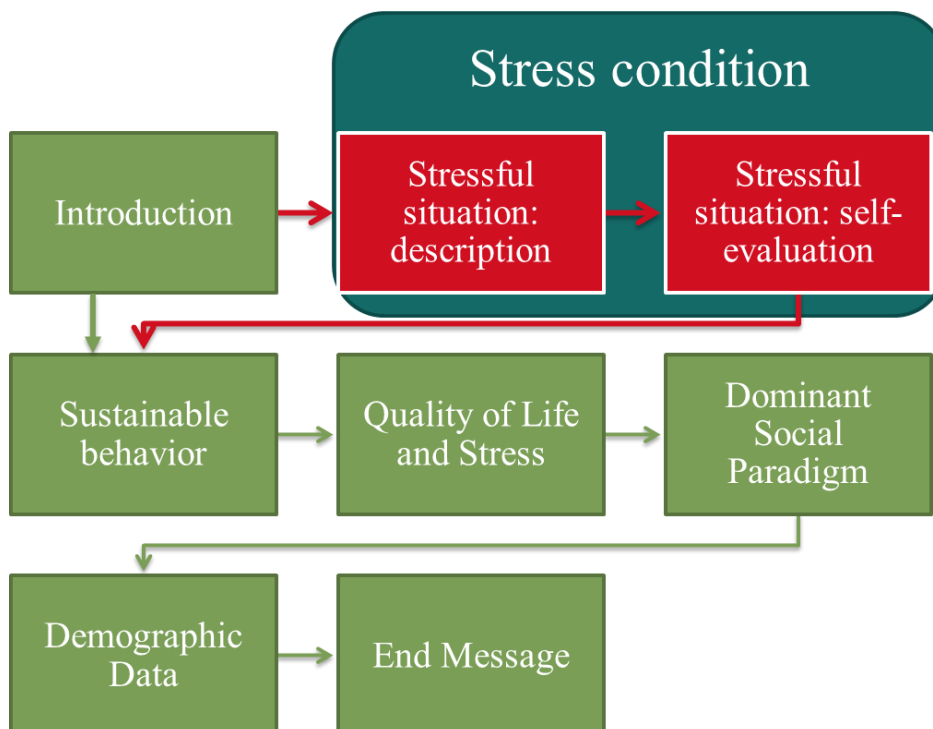
Figure 5 Survey Structure

As the previous section, self-evaluation of the stressful situation section was established within the experimental condition. The participants were asked to evaluate the stress situation that they described in the previous section to reinforce the priming effect that the author was striven to seek. The experimental part of the research provided a foundation that helped the study assess how people from different cultures were affected by the stress factor in their decision to behave more sustainably.

The "Sustainable behavior" part contained questions measuring awareness of an individual's sustainable behavior, frugality, affinity towards diversity, altruism, pro-environmental behavior, consideration of future consequences of their actions, and feelings of indignation.

The "Quality of Life and Stress" part aimed to collect information regarding assessing respondents' quality of life and general stress that they have recently experienced. Including the Quality-of-Life metric in the survey has its weight and importance. The analysis' results may increase insights into how social psychology can increase individuals' contribution to the environment without harming their quality of life, whether they are affected by mental pressure. Therefore, the author combined both QoL and stress variables into one section.

The "Dominant Social Paradigm" part contained three sections of questions that represent the metric of the main dimensions of DSP (technological, economic, and political). More insights into each subsection are provided below in the metric description.

The "Demographic Data "part collects information regarding participants' gender, age, education level, place of residence, and citizenship.

The last part, "End Message" provided gratitude to the participants for their contributions. Moreover, the author's message revealed the true purpose of the study's experimental details with those participants that were under experimental conditions. The author provided personal contact data for the participants to contact or gain more information about the research.

4.1.2. Introduction of the stress condition

In the first part of the survey, the researcher randomly assigned participants to two experimental conditions. The difference between the two conditions is presence of a priming tool used at the beginning of the survey which is an open question regarding the

stressful situation that a respondent recently experienced: "Shortly describe the stressful situation that you recently experienced in 5-20 words. Example: Two days ago, when I was driving, I got into a car accident". Afterwards, the survey provided some questions for the respondent to assess key criteria related to the stress level of the described situation. This survey part started with the statement of "Please indicate the extent to which the statements apply to the stressful situation that you have just described:", which was followed by specifications such as "I feel sad about it", "The stress that I described is long-term", or "The level of stress described corresponds to X on the scale below". Responses ranged from 0 to 10 (for the first two questions: 0 = "It does not apply to me" to 10 = "It totally applies to me"). Moreover, to strengthen negative priming effect within this section every question is followed by visualization of people that are feeling sadness or having an exam.

4.1.3. Priming effect

According to Carey K. Morewedge and Daniel Kahneman (2010), a human being has many systematic errors called biases that are resulted from the failures of automatic thinking (System 1) and the operations that happen in conscious thinking (System 2). Priming is the process when living through a recent experience or ambiguous information influences the accessibility of schemas, traits, or concepts when a person needs to make a judgment or a decision. (Aronson, Wilson, and Sommers, 2019). The unintentionally, quickly, and unconsciously feature of the priming effect blurs a person's impression of the social world and makes people unaware that they apply wrong concepts or schemas in System 1.

An example of using the priming effect in the studies of sustainable behavior is the study of Steven Arnocky and his colleagues (2015). The authors examined the impact of priming manipulation on a sustainable behavior attribute – consideration of future consequences (CFC) (Arnocky, Milfont, & Nicol, 2015). However, in their study, the priming effect was presented as manipulation of time orientation. The researchers drove environmental concern among the participants by the priming techniques, but the future priming on sustainable behavior slightly influenced the indicator of CFC.

As mentioned, the study's main aim is to identify the impact of cultural, social, and psychological barriers on sustainable behavior and understand how this impact may affect the quality of life (QOL). By contrast, the additional aim of this study is to affect

the judgmental biases due to the influence on the consistency of personal attitudes. Strong activation of memories or emotions about some negative or stressful situation may significantly influence the decision-makers by overweighting negative thoughts, underweighting, or neglecting other essential information (Morewedge & Kahneman, 2010). The impact could be done by interaction with emotions, motor responses, or visual perception. Within these systematic errors, associative coherence plays a crucial role. If someone exposures someone to a word – Vomit – it brings about emotional, visual, and even a facial expression of disgust to this word as an associative response to the word (Kahneman, 2011). Reminding people about their negative memories or emotions or showing those may distract or change their behavior, as was described in Kahneman's book Thinking, Fast and Slow (2011), where to increase the tendency of participants-parents to support some school initiatives, the researchers put some images of the initiatives on the way to the school. Writing about the stress or traumatic events is upsetting and, in the short-run, may increase negative moods and alter participants' resilience either positively or negatively (Aronson, Wilson, and Sommers, 2019).

The aim of the priming effect in this study is to increase the participant's discomfort, to prime their consciousness toward stressful situations and bring momentary stress that is assumed to impact the quality of life of the participant and his/her sustainable behavior. This priming approach strengthened the stress condition that the author seeks to achieve. The main assumption was that the strength of the influence of stress on people's behavior is different for respondents from different cultural settings.

4.2. Sample Designing

The research question of the Master Thesis is to be addressed by surveying respondents from Russia and European countries and evaluating the data via statistical analysis methods. The author distributed the survey and collected responses within his personal network. Representatives of these two regions were expected to demonstrate varying cultural values, wellbeing levels, sustainability awareness. More precisely about social norms, the Kilbourne's scientific findings (1997) about how the dominant social paradigm affects individuals' sustainable behavior were tested in two different cultures.

As mentioned, the respondents were randomly assigned to one of the two experimental conditions: "stress" or "no-stress". The role of the conditions is to provide a foundation for assessing how people from different cultures are affected by stress in their decision

to behave more sustainably. To facilitate a better understanding of the survey, the researcher offers study participants an opportunity to choose the language of the survey – English or Russian, depending on respondents' language proficiency to facilitate a better understanding of the study content.

There are three main sampling methods: clustering sampling, convenience sampling, and snowball sampling. Clustering sampling, as mentioned before, was used within cluster and factor analyses to create a new variable that represents the key latent feature of the sample (sustainable behavior). Convenience sampling was used in the social media groups that promote sustainable behavior and has been used to collect data from people on the street in Vienna; and snowball sampling was used in the personal network of the researcher. However, snowball sampling has certain disadvantages, because the referral attribute of the method may significantly change the proportion of sub-samples.

The sample size was expected to amount to 100 individuals, the sub-samples are expected to be of approximately equal size, the justification of the sample size is provided below. The age of respondents is expected to be within 20- and 50-years interval. Besides, they are expected to have at least one academic degree, have work experience and a formed view on politics, economics, and role of technological advancement in their lives.

In the research, as mentioned, the author involved people residing in Russia and Europe (mostly from Austria). As Russia has lower quality of life index (101,57) than some European countries (for instance QOL index in Austria is 181,68), this study aims to assess the link between dominant social paradigm, stress, quality of life and behavior that may differ between countries that have different presence of quality of life (Standard of Living By Country 2021, 2021). The researcher found it essential to test the difference in interaction between sustainable behavior and quality of life that may presence in compering Russia and European countries because of a markable difference in cultural values, wellbeing, etc. According to author's opinion, by comparing these features the study might shed light on the inefficient mechanisms a government uses to improve the wellbeing of its population. Therefore, the target population for the research was defined as follows:

- **Elements**: Respondents that exhibit sustainable behavior and respondents that do not exhibit sustainable behavior
- **Extent**: The western part of Russia and European countries

- **Time**: April of 2022
- **Sampling units**: Respondents that are highly committed to their social norms and respondents that demonstrate a low commitment to their social norms.

The survey was conducted with the help of online survey platform LimeSurvey. The author distributed the survey and collected responses within his personal network through online communications tools (social media, emails, and messengers).

4.2.1. Sample size calculation

Equation 1 Sample Size formula. The formula was taken from the online survey platform SurveyMonkey (Momentive, n.d.)

$$\text{Sample size} = \frac{\dfrac{z^2 \times p\,(1-p)}{e^2}}{1 + \left(\dfrac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

The formula that is shown above (Equation 1) was used in the pre-study stage to determine the required sample size to correctly conduct the data analysis. The main expression considers population size (N), z-score (z), margin of error (e), and sample proportion. As mentioned, the author was planning to involve participants mainly from western part of Russia and Austria. The population size of these two territories were 98 million people. With a 95% confidence level z-score would be 1,96. And the conversion rate that represented the sample proportion was assumed to be 50%. To calculate the margin of error the formula bellow was used:

Equation 2 Margin of error

$$\text{Margin of error} = z \times \frac{\sigma}{\sqrt{n}}$$

To calculate this variable, the author decided to rely on the recent research of Corral-Verdugo (2011) about sustainable behavior. It is assumed that the margin of error should be 10.8% where the sample size (n) was 604, the standard deviation (σ) of the indicator

of sustainable behavior was 1.04, and with confidence level 99% the z-score is 2,58. Given the numbers, according to the Equation 1, the sample size should be 83.

4.3. Measurements

In this study the main constructs consisted of sustainable behavior as a dependent variable and dimensions of dominant social paradigm and stress as independent ones. As mentioned, the connection between sustainable behavior and individual's quality of life has been studied by many researchers, but the relationship between personality and sustainable behavior might be more complex due to sociocultural context. This complexity of personality provides an interest on assessing the interaction between constructs. The quality of life is considered in this construct as a dependent variable to measure this complexity. The details on the main constructs and control variables are provided below.

4.3.1. Main Constructs

The first main construct, sustainable behavior, represents the set of actions that have goals of preventing environmental degradation and enhancing the well-being of the current and future generations (Corral-Verdugo et al., 2012). Corral-Verdugo and his colleagues (2009) have underlined the higher-order factors of sustainable behavior that consist of altruism, frugality, affinity towards diversity, future orientation, and indignation due to environmental damage (Corral-Verdugo et al., 2009). For most of the constructs, the scales have 10-point response-option format (from 1 – "It does not apply to me" to 10 – "It totally applies to me") and every statement has additional option of "N/A" for those for whom the question is not relevant or who are not willing to rate to the statement.

Altruism. Measuring altruism behavior may be challenging and complex, and it may consist of difficulties because analyzing motivational state or motivation aimed at increasing others' wellbeing at some cost to oneself could be non-transparent due to different perceptions of altruism among countries (Corral-Verdugo et al., 2012; Singer 2011). The author presented four statements that aims to assess the altruism actions of participants. The participants were asked to rate the following statements on a scale from 1 – "It does not apply to me" to 10 – "It totally applies to me". The questions are provided below:

- "I feel better if I can assist or help people who fall or get hurt"

- "I feel better if I can support people in need even if I don't know them"
- "I feel better if I can donate blood, money, or provide other humanitarian support"
- "I feel better if I can visit and help the sick, people with disabilities, elderly, or orphans at hospitals/homes"

Additionally, the author presented participants some sentences with personal requests where he asks them, how likely they would help him do some actions that may seem unappealing after completing this section. This dimension was measured through presenting research participants the following statements: "How likely is it that you would like to meet with me after this survey and help with an experiment conduct?", "How likely is it that you would like to give me extra 10 minutes to help me with another survey?". The answers were measured on a scale from 1 = " Extremely unlikely " to 10 = "Extremely likely". After completing the section / survey, participants are shown the text where the author states that the help has already been provided and no further action from their side is needed.

Frugality. According to De Young (1996) and Lastovicka (1999), the behavioral characteristic of personal sustainability is a self-regulated behavior that person associates with her or his sacrifices to make the world better in long-term. The frugality behavior is measured on several domains through separate statements. The respondents rated these statements on the scale from 1 – "It does not apply to me" to 10 – "It totally applies to me". The statements are provided below:

- "I usually do not buy new things if old ones function (car, TV, fridge, etc.)"
- "I usually do not buy more food than needed"
- "I usually buy organic goods"
- "I prefer to walk or ride a bike rather than using a car"
- "I consider my consumption behavior as sustainable"

Affinity towards diversity. To assess individual's preference for physical, biological, human, and social diversities, the researcher measured this indicator through several items mostly taken from the Corral-Verdugo et al. (2009) ATD scale. The statements had to be evaluated on the scale from 1 to 10 (1 = "Completely disagree" to 10 = " Completely agree"). The statements that should be rated by the participants are provided below:

- "I enjoy being with people of every social class"

- "I enjoy working/studying with people of difference cultural backgrounds"
- "The more the variety of cultural backgrounds surrounds me, the better for me"
- "I feel comfortable to live outside of my home country of my residence"
- "I enjoy working/studying with people that are older or younger than me"

Consideration of future consequences. This indicator measures the ability of participants to set personal goals, anticipate the consequences, and consider the impact of their actions on others or the environment using the scale that has been established in Corral-Verdugo and his colleagues' study (2009). This dimension was measured through presenting research participants the following statements:

- "I meet my obligations to friends and authorities on time"
- "I believe that a person's day should be planned ahead each morning"
- "I do find it important to think about negative future outcomes"
- "It upsets me to be late for appointments"
- "My behavior and attitude are not only influenced by immediate outcomes"
- "When I want to achieve something, I set goals and consider specific means for reaching those goals"

The researcher asked the participants to evaluate the statements on the scale from 1 to 10 (1 = "Completely disagree" to 10 = " Completely agree").

Indignation due to environmental destruction. This indicator assessed people's emotions due to anti-environmental actions whether these actions were performed by them or others (Corral-Verdugo et. al., 2009). In this section of the research, the author added items that include situations with mindless consumption or destruction of natural resources that participants may have an aversion to and, at the same time, do not carry monetary damage to the participants or to others. This dimension was measured through presenting research participants the following statements:

- "I feel annoyed when I see someone throws their cigarette butts or their trash on the floor"
- "I feel bad when I see someone gets hurt"
- "I feel bad when I see someone harms an animal, person or plant"
- "I feel annoyed when I watch news regarding pollution"
- "I feel annoyed when I see my friend wasting too much water"

Participants rated their reactions using the following scale: from 1 = "Completely disagree" to 10 = "Completely agree".

Self-evaluated sustainable behavior. This section aimed to assess participants' awareness and perception of the term of sustainable behavior and their sustainable behavior by providing these two statements: "I am familiar with the term of sustainable behavior", "I consider my behavior as sustainable". As the sections above aimed to analyze the first-order factors of sustainable behavior, the section provided an opportunity for participants to assess their sustainable behavior by themselves.

4.3.2. Dominant Social Paradigm

Another main construct is Dominant Social Paradigm (DSP). As mentioned, Kilbourne (1997) describes DSP in four dimensions that provides an individual's attitudes to environmental problems reflected in different perspectives. However, the author focused on the first three dimensions (economic, political, and technological) as these are the main barriers preventing a more sustainable behavior. The statements that were used in this section were rated by participants using the following scale: from 1 = "Completely disagree" to 10 = "Completely agree".

Political dimension. Through this indicator, the author assessed the extent to which the participant relies on governmental agencies, environmental taxes, or legal sanctions to solve social issues. Moreover, the items gave some insight into participant's trust to the government of his/her country of residence. Most of the questions were borrowed from European Social Survey (2018) and the questionnaires that Kilbourne and his colleagues established. The section was divided into two types of questions. The first one is the trust statements:

- "I trust the parliament of the country of my residence" (European Social Survey, 2018)
- "I trust the legal system of the country of my residence" (European Social Survey, 2018)
- "I trust the politicians of the country of my residence" (European Social Survey, 2018)

The second part of this section consisted of the questions regarding political engagement, and participants should express their opinion on the following statements:

- "The average person usually has more power in dealing with social problems" (Kilbourne, p. 226, 2001)

- "Corporation interests have a stronger political impact than individuals" (Kilbourne, p. 226, 2001)

- "Most environmental issues can be solved with new legislation" (Kilbourne, p. 226, 2001).

Technological dimension. This dimension was measured through presenting research participants the following statements:

- "Advancing technology provides us with hope for the future" (Kilbourne, p. 226, 2001)

- "The negative impact of technology outweighs its advantages" (Kilbourne, p. 226, 2001)

- "The lack of natural resources in the future due to human impacts of the environment will be solved by technology" (Kilbourne, p. 226, 2001)

- "Advancing technology is out of our control" (Kilbourne, p. 226, 2001)

- "When environmental or social problems are bad enough, technology will solve them" (Kilbourne, p. 226, 2001).

Economical dimension. In this part, using the scale that was established by Kilbourne (2001) the author assessed the self-interest in the quest for material wellbeing as a more desired mode of behavior then sustainable behavior. This dimension was measured through presenting research participants the following statements:

- "Economic goals are more important than environmental goals" (Kilbourne, p. 226, 2001)

- "I focus too much on economic measures of wellbeing (economic growth, GDP, inflation rate, etc.)" (Kilbourne, p. 226, 2001)

- "If the economy continues to grow, everyone benefits" (Kilbourne, p. 226, 2001)

- "Individual behavior should be determined by economic self-interest" (Kilbourne, p. 226, 2001)

- "The environmental and social issues could be solved by economic growth" (Kilbourne, p. 226, 2001).

4.3.3. Stress or mental pressure

As the author established an additional test for stress assessment, a conscious self-assessment of the participants' feelings of being overwhelmed – such as stress, depression, burnout, anxiety – was also measured. And the assessment within this section is considered as the long-term (everyday) stress and mental pressure. The participants were asked about their current mood and the type of mental problems they might have. This dimension was measured through presenting research participants the following statements:

- "I don't usually have time for leisure"
- "I don't have time for my work/studies"
- "I feel that I haven't achieved my goals for the past few months/weeks"
- "In the past few months, I felt nervous and stressed"
- "In the past few months, I did not feel confident about my ability to handle personal problems"
- "In the past few months, I struggled to control irritations in my life"

These questions were assessed on the following scale: from 1 = "It does not apply to me" to 10 = "It totally applies to me".

4.3.4. Quality of life

In the research, the author assessed the QOL perception of each participant. To measure QOL, the concept was divided into several categories: purchasing power, safety, health care, cost of living, property price to income ratio, traffic commute time, environmental quality, and climate. The measure of QOL was estimated through aggregating these indicators. The approach is consistent with the existing literature (Gatersleben, 2001; Steg and Gifford, 2005). Each of these categories consists of interval-scale statements that had to be evaluated using a scale from 1 = "It does not apply to me" to 10 = "It totally applies to me".

4.4. Control Variables

The argumentation of the choice for the control variables were based on the summary of literature review and the construct that was proposed (See Figure 4). Control variables include gender differences, age, place of residence, country of residence, academic degree, and salary level. These variables are not of interest to the research's aim and were

assumed that would not be affected by the experimental condition, but the author was curious how the change of the main constraints might be influenced by these control variables.

Six demographic variables were used as control variables: gender, age, education level, residence, citizenship, and income. The gender variable includes male, female, and other answers. The answer for the age construct was limited up to 89 to help avoid errors in the responses. Two items measured education level. Firstly, participants are required to choose one of these answers: Undergraduate, Graduate, Professional, School, Other. Choosing Graduate, Professional, or School, the participants are presented with an additional question where he/she must provide information about their academic qualifications. Further, the participants provide information about country of their residence and citizenship to understand whether the differences between them related to sustainable behavior, social norms, or stress level.

5. Results

5.1. Data preparation

Data preparation and analysis stages were performed through the use of R to validate the reliability of the data collected and to test the hypotheses. The data preparation phase considered the following steps:

- Labeling and re-coding the data and scales that could be further used for the data analysis.
- Creating construct variables, multi-item constructs, from the items representing a dimension of each sector that the author was assessing through the data collection phase.
- Validating the intercorrelation of the items of each control variable and keeping the most reliable ones.
- Creating a common variable of sustainable behavior and reliability could be used further for validating hypotheses.

The result of the data preparation is presented below in Table 1, including the descriptive statistics. It can be concluded that moderate levels of dimensions of the dominant social paradigm (means = 4.867, 5.591, 4.545) and stress were reported by the participants. In contrast, the participants reported that some items of sustainable behavior (affinity towards diversity, indignation, altruism, frugality, consideration of future consequences) were remarkably higher (see Table 1). The general sample's quality of life was also noticeably high (mean = 8.059).

The first step of correcting the data was to analyze the internal consistency of the group of scales used in the survey. The researcher tested 64 items, excluding the demographic questions about the respondents, by calculating Cronbach's alphas of each group of constructs and testing through the factor analysis to see whether the items might have an alternative use. Tables 1 and 2 exhibit the univariance statistics and adjustments that the author made to increase the reliability of each construct.

Table 1 The minimums, medians, means, maximums, and standard deviations of measures.

Item Code	Item	Minimum	Median	Mean	Maximum	Standard Deviation
ATD	Affinity towards diversity	3.667	8.167	8.047	10	1.605
Indignation	Indignation	3.25	8.25	8.105	10	1.49
PEB	Pro-ecological behavior	1	6.333	6.067	10	2.6
Altruism	Altruism	2.5	7.75	7.705	10	1.75
Frugality	Frugality	2	6.5	6.841	10	1.75
COFC	Consideration of future consequences	4.333	7.667	7.342	10	1.541
AltruismAdd	The additional testing item for altruism	1	6.5	6.186	10	2.942
QoL	Quality of life	3.5	8.333	8.059	10	1.479
Stress	Mental state and stress	2	5.917	5.868	9	1.702
DSP.E	The economic dimension of the social norms	1	5	4.867	10	2.039
DSP.T	The technological dimension of social norms	1	5.375	5.591	10	1.952
DSP.P	The political dimension of the social norms	1	4.667	4.545	10	2.453
Sustainable-Behavior	Sustainable Behavior	26.50	43.25	43.77	60	6.575

According to the first reliability test, Cronbach's Alpha level was below 0.7 (see Table 3) for almost half of the variables. For this reason, the author adjusted the variables of a preference towards diversity, indignation, pro-environmental behavior (PEB), consideration of future consequences (COFC), quality of life (QoL), and variables of social norms. The list of measures and the final version of the list of items that were kept can be seen in table Y. To view the full version of the questions, follow Appendix 1. Notably, the initial reliability analysis of the political dimension of the dominant social paradigm constructs revealed that abandoning the first four items that were initially used to measure the political variable of social norms led to an increase of Alpha level by 27%. Moreover, the analysis of the alpha level of the four items showed only 0.36 and cannot be summarised and used as an individual variable for the analysis. However, abandoning the first four items used in Kilbourne's research significantly changes the nature of the constructs; therefore, each item were used as a control variable in the analysis.

Table 2 Constructs and list of items used for each construct.

Variable	The adjusted group of items	The initial group of items
ATD	ATD1, ATD2, ATD3	ATD1, ATD2, ATD3, ATD4, ATD5
Indignation	Indignation1, Indignation2, Indignation3, Indignation4, Indignation5	Indignation1, Indignation2, Indignation3, Indignation4, Indignation5
PEB	PEB1, PEB2, PEB4	PEB1, PEB2, PEB3, PEB4
Altruism	Altruism1, Altruism2, Altruism3, Altruism4	Altruism1, Altruism2, Altruism3, Altruism4
Frugality	Frugality1, Frugality2, Frugality3, Frugality4, Frugality5	Frugality1, Frugality2, Frugality3, Frugality4, Frugality5
COFC	COFC1, COFC2, COFC4	COFC1, COFC2, COFC3, COFC4, COFC5, COFC6
AltruismAdd	AltruismAdd1, AltruismAdd2	AltruismAdd1, AltruismAdd2
QoL	QoL2, QoL3, QoL5, QoL6, QoL7, QoL8	QoL1, QoL2, QoL3, QoL4, QoL5, QoL6, QoL7, QoL8
Stress	Stress1, Stress2, Stress3, Stress4, Stress5, Stress6	Stress1, Stress2, Stress3, Stress4, Stress5, Stress6
DSP.E	DSP.E1, DSP.E3, DSP.E4, DSP.E5	DSP.E1, DSP.E2, DSP.E3, DSP.E4, DSP.E5
DSP.T	DSP.T2, DSP.T3, DSP.T4, DSP.T5	DSP.T1, DSP.T2, DSP.T3, DSP.T4, DSP.T5
DSP.P	DSP.P5, DSP.P6, DSP.P7	DSP.P1, DSP.P2, DSP.P3, DSP.P4, DSP.P5, DSP.P6, DSP.P7

The modified constructs indicated acceptable reliability for further analysis, except for the variables that measured indignation due to environmental damage, frugal behaviors, and consideration of future consequences. The further development of the initial consistency of those variables by re-coding the scales or changing the combination of the items could not be reached. However, the alpha level in those variables might be considered appropriate as it constitutes a higher 0.63. Victor Corral-Verdugo (2012) also considered an alpha level above 0.63 as an adequate level of internal consistency.

Table 3 Cronbach's Alpha, Adjusted Cronbach's Alpha, and changes in Cronbach's Alpha.

Variable	Cronbach's Alpha	Cronbach's Alpha before adjustment	Increase / Decrease in Cronbach's Alpha
Affinity Toward Diversity	0.742	0.664	0.078
Indignation	0.654	NA	NA
Pro-environmental behavior	0.803	0.792	0.010
Altruism	0.818	NA	NA
Frugality	0.682	NA	NA
Consideration of future consequences	0.628	0.562	0.066
Altruism (Additional)	0.844	NA	NA
QoL	0.837	0.817	0.021
Stress	0.778	NA	NA
Economic D.	0.817	0.783	0.034
Technological D	0.781	0.789	-0.007
Political D.	0.914	0.642	0.271

As the survey was done in two languages – Russian and English – it is reasonable to see the reliability of those instruments for two different sub-samples. The following procedure also ensured the adequacy of the used scales for analyzing the sub-samples and ensured that the approach used for the general sample did not decrease the consistency of the instruments within the sub-samples. According to the analysis of language sub-samples, the internal consistency of the instruments does not differ from the alpha coefficients in the general sample. The internal reliability analyses between both language subsets have also proposed excluding the items – that were measuring obligations towards friends and authorities, attitude to individual political power, pro-environmental attitude towards refillable packages, focus on economic measures of wellbeing, attitude to the legislative power regarding solving environmental problems, personal concern regarding daily plans, and concern regarding their educational and common opportunities, – from the list.

Table 4 Cronbach's Alpha, Adjusted Cronbach's Alpha, and changes in Cronbach's Alpha for language sub-samples.

Variable	Cronbach's Alpha	Cronbach's Alpha before adjustment	Increase / Decrease in Cronbach's Alpha
ATD (Eng.)	0.742	0.625	0.117
Indignation (Eng.)	0.660	NA	NA
PEB (Eng.)	0.764	0.777	-0.013
Altruism (Eng.)	0.819	NA	NA
Frugality (Eng.)	0.734	NA	NA
COFC (Eng.)	0.699	0.652	0.047
AltruismAdd (Eng.)	0.844	NA	NA
QoL (Eng.)	0.819	0.795	0.025
Stress (Eng.)	0.838	NA	NA
DSP.E (Eng.)	0.827	0.814	0.013
DSP.T (Eng.)	0.797	0.787	0.010
DSP.P (Eng.)	0.868	0.599	0.270
ATD (Rus.)	0.711	0.666	0.045
Indignation (Rus.)	0.689	NA	NA
PEB (Rus.)	0.743	0.638	0.105
Altruism (Rus.)	0.833	NA	NA
Frugality (Rus.)	0.513	NA	NA
COFC (Rus.)	0.435	0.322	0.114
AltruismAdd (Rus.)	0.799	NA	NA
QoL (Rus.)	0.794	0.823	-0.029
Stress (Rus.)	0.630	NA	NA
DSP.E (Rus.)	0.819	0.764	0.055
DSP.T (Rus.)	0.703	0.730	-0.027
DSP.P (Rus.)	0.983	0.671	0.312

However, the adjustment in the list of items has differently affected the consistency of the several scales depending on the language the respondents chose to answer (see Table 4). For instance, the dropping items (ATD4, ATD5) that did not contribute to the internal consistency of the variable of affinity towards diversity increased the alpha level by ~0.12 in the English language group. In contrast, it increased only by 0.05 in the Russian

language group. Such remarkable differences in the impact of the correction could be observed in variables of pro-environmental commitment and consideration of future consequences.

5.2. Analysis of the General Sample

Bivariate correlation analysis was performed to analyze the relationship between the scales, which is shown in Table 5. To outline the significant correlations ($p < 0.05$), the author has visualized the result of correlation analysis and testing models that would help for further analyses. As can be seen in Figure 6, the items of sustainable behavior show significant intercorrelation with each other. This funding gives grounds to use these scales for computing a common variable of sustainable behavior in addition to item sustainable behavior (SB2 - representing the participants' self-esteem of their sustainable behavior).
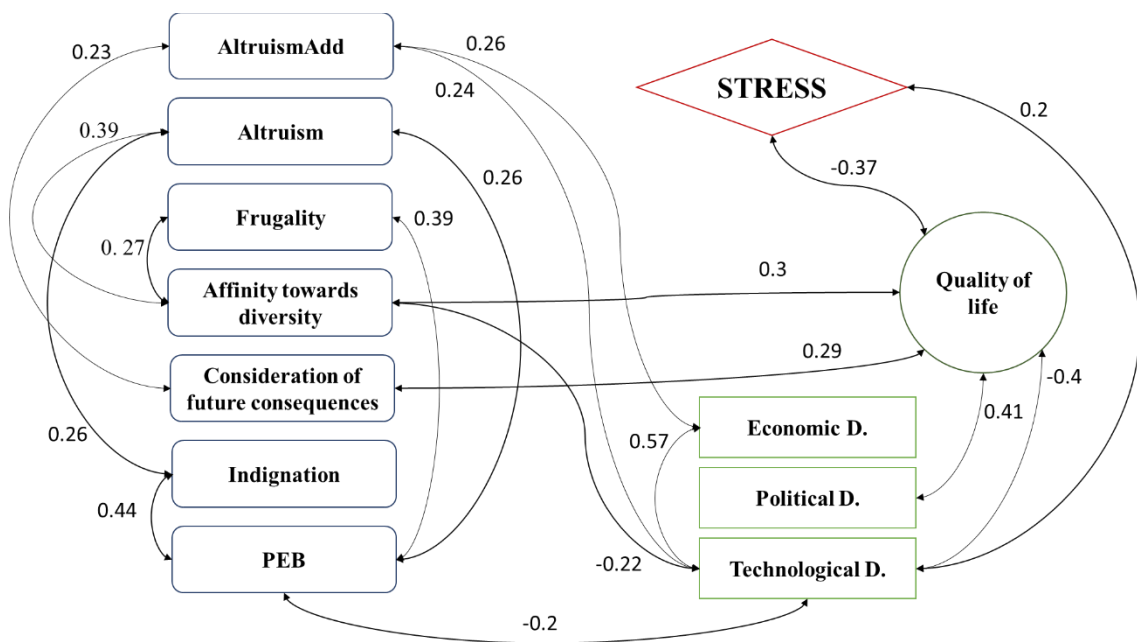
Note: continuous lines represent a significant relationship between variables (p-value is lower than 0.05)

Figure 6 Model of relations between the testing variables and items of sustainable behaviors

The analysis of correlations indicates that the stress variable has little effect on measures of sustainable behavior. However, instead, the relations between stress with quality of life and technological dimension of social norms (DSP.T) of the respondents are

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moderate (r = - 0.37 and 0.2 respectively) and statistically significant (p-value = ~0 and 0.05 respectively) (see Figure 6). More interestingly, the variable of technological aspect showed a significant positive correlation with the additional variable of altruism (r = 0.24 and p-value = 0.016) (which the author added to assess the proactive behavior of altruism of the respondents). It also negatively correlated with pro-environmental behavior (r = - 0.2 and p-value = 0.049) and affinity toward diversity (r = - 0.2192 and p-value = 0.028).

Another finding is that the economic dimension of social norms also correlates with the additional variable of altruism (r = 0.2566 and p-value = 0.01), but at the same time, have no relation with the QoI of the respondents. However, the correlation analysis also shows that the high trust in the political sphere of the country of residence leads to higher satisfaction with the respondents' life (r = 0.41 and p-value = ~0). These findings might state that the respondents' goal-directed behavior differs depending on their commitment to the technological and economic attitude toward ecology. More precisely, a high commitment leads to a low motivation to act environmentally friendly. According to Linda Steg, environmental behavior might be motivated by the personal perception of environmental goals and habitual behavior or other goals (Steg & Nordlund, 2019). Therefore, the sequential correlations between the items of sustainable behavior, dimensions of social norms, and quality of life could be used as proof for Hypothesis 1 and Sub-Hypothesis 1.

The next step of the analysis was assessing the conducted variable of sustainable behavior (SustainableBehavior) and the self-observed variable of sustainable behavior (SB2). The variable of sustainable behavior represents a sum of its main factors (affinity towards diversity, indignation due to environmental damage, pro-environmental behavior, altruism, frugality, and consideration of future consequences). Initially, the additional value of altruism was added. However, the reliability analysis showed that Cronbach's alpha level of the new variable was lower (alpha level = 0.56) than if the additional variable were not included (alpha level = 0.63). The result of the analysis is shown in Table 6. The correlation matrix in Table 6 shows that the self-esteem variable of sustainable behavior (SB2) has a significant correlation (r = 0.5 and p-value = ~ 0) with the aggregated value of sustainable behavior. However, it has no relation with quality of life, whereas the sum of items of sustainable behavior does (r = 0.23 and p-value = 0.02). Moreover, despite the low significance of the correlation (p-value = 0.059), it is notable

for highlighting the correlation between the technological dimension of social norms and the new variable of sustainable behavior.

Table 5 Correlation coefficient of Sustainable Behavior variables and the control variables.

Variables	Sustainable behavior	p-value	Sustainable behavior (self-estimated)	p-value
Affinity towards diversity	0.547	0***	0.188	0.0632 `
Indignation	0.603	0***	0.287	0.004***
Pro-environmental behavior	0.753	0***	0.292	0.004***
Altruism	0.580	0***	0.230	0.023***
Frugality	0.646	0***	0.529	0***
Consideration of future consequences	0.399	0 ***	0.191	0.059 `
Altruism (Additional)	0.128	0.211	0.330	0***
QoL	0.232	0.02**	0.078	0.445
Stress	0.023	0.819	0.127	0.207
Economic aspects of social norms	-0.134	0.185	0.053	0.604
Technological aspects of social norms	-0.190	0.059 `	0.116	0.254
Political aspects of social norms	0.081	0.43	0.076	0.457
Sustainable behavior	1.000	NA	0.496	0***
Sustainable behavior (self-estimated)	0.496	0***	1.000	NA

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

Table 6 Correlation coefficients of variables in the general sample.

Scales	ATD	Indignation	PEB	Altruism	Frugality	COFC	AltruismAdd	QoL	Stress	DSP.E	DSP.T	DSP.P
ATD	1.000	0.151	0.155	0.393	0.270	0.083	0.066	0.300	-0.123	-0.120	-0.219	0.114
p-value	NA	0.133	0.124	~0***	0.007**	0.410	0.516	0.002**	0.223	0.236	0.028*	0.260
Indignation		1.000	0.441	0.262	0.166	0.083	0.037	-0.138	0.166	-0.168	-0.160	-0.179
p-value		NA	0***	0.008**	0.099	0.412	0.714	0.170	0.099	0.095	0.113	0.075
PEB			1.000	0.256	0.392	0.134	0.058	0.184	-0.057	-0.074	-0.198	0.145
p-value			NA	0.01*	~0***	0.183	0.566	0.067	0.575	0.464	0.048*	0.150
Altruism				1.000	0.082	0.136	0.096	0.056	0.097	-0.107	0.004	-0.030
p-value				NA	0.415	0.177	0.342	0.582	0.336	0.291	0.972	0.769
Frugality					1.000	0.118	0.002	0.115	0.018	-0.150	-0.153	0.100
p-value					NA	0.244	0.982	0.253	0.855	0.136	0.129	0.320
COFC						1.000	0.225	0.287	0.050	0.159	0.104	0.054
p-value						NA	0.02421*	0.004**	0.624	0.113	0.304	0.597
AltruismAdd							1.000	-0.037	-0.085	0.257	0.241	-0.098
p-value							NA	0.715	0.402	0.01**	0.016*	0.331
QoL								1.000	-0.366	-0.163	-0.398	0.410
p-value								NA	~0***	0.105	~0***	~0***
Stress									1.000	0.172	0.201	-0.174
p-value									NA	0.087	0.0445*	0.084
DSP.E										1.000	0.573	0.080
p-value										NA	0***	0.428
DSP.T											1.000	-0.028
p-value											NA	0.782
DSP.P												1
p-value												NA

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05

5.3. Non-hierarchical Clustering

As the first summarising approach could be relevant to conduct a standard variable of sustainable behavior, it still needed to be transparent in analyzing the sustainable behavior of the participants as some variables might have different weights in the variable. Instead of summarising the values of each scale of sustainable behavior, it might be reasonable to assess the interrelations among variables to find a latent pattern.

For these reasons, another approach that was used to conduct a new variable that would be used to assess the factors of sustainable behavior is k-means Clustering. The reason for using the non-hierarchical type of Clustering was that the author intended to keep the same scale as the SB2 variable was measured. Each respondent was assigned to a cluster number depending on the cluster centers. The complete list of the cluster membership and the distance of each cluster member to its center is available in Appendix 6.

Table 7 The list of items in the k-means cluster analysis.

New variables	Constituent items
ClusterSB1	ATD, Indignation, PEB, Altruism, Frugality, COFC
ClusterSB2	ATD1, ATD2, ATD3, Indignation1, Indignation2, Indignation3, Indignation4, Indignation5, PEB1, PEB2, PEB4, Altruism1, Altruism2, Altruism3, Altruism4, Frugality1, Frugality2, Frugality3, Frugality4, Frugality5, COFC1, COFC2, COFC4

As can be seen above in Table 7, two different approaches were used in the k-means clustering. The author kept the initial variables used to construct the SustainableBehavior variable in the first. In the second approach, the items used for the constructs were used as the constituent items for clustering analyses. The number of interactions for the non-hierarchical clustering was set to 1000. As some items consisted of NA values, the author filled the gap with the means of each item to perform the assessment. The Clustering results were two new variables – ClusterSB1 and ClusterSB2 – used to analyze the general sample.

Bivariate correlations among the main constructs and the new variables with statistical significance of the relations are presented in Table 8. As expected, the relations between the new variables and variables of sustainable behavior were moderate and significant. Interestingly, no strong, statistically significant correlation between the testing variables

of sustainable behavior and stress was not observed. However, the second variable of sustainable behavior exhibits a negative relation with the stress variable (r = -0.15155 and p-value = 0.1323).

Table 8 Correlation analysis for the cluster variables of sustainable behavior.

Variables	ClusterSB		ClusterSB2	
	Correlation	p-value	Correlation	p-value
Affinity towards diversity	0.176	0.08`	0.429	~0***
Indignation	0.594	~0***	0.349	~0***
Pro-environmental behavior	0.368	~0***	0.428	~0***
Altruism	0.386	~0***	0.299	~0***
Frugality	0.163	0.104	0.380	~0***
Consideration of future consequences	-0.070	0.491	0.348	~0***
Sustainable Behavior (self-estimated)	0.334	~0***	0.195	0.052 `
Sustainable Behavior	0.445	~0***	0.619	~0***
Altruism (Additional)	0.121	0.231	-0.020	0.844
QoL	-0.009	0.931	0.222	0.027*
Stress	-0.012	0.905	-0.152	0.132
Economic aspects of social norms	-0.086	0.398	0.036	0.719
Technological aspects of social norms	-0.050	0.620	-0.105	0.298
Political aspects of social norms	-0.107	0.289	0.109	0.279

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

The results of tables 8 and 6 are illustrated in Figure 7, which represents the structural models of the relation of testing variables of sustainable behavior and other control variables. As the second variable that was conducted has more connection with the constructs and Qol variable and has less modification in components than the first variable, in Clustering, only the ClusterSB2 variable has more priority in further analysis.
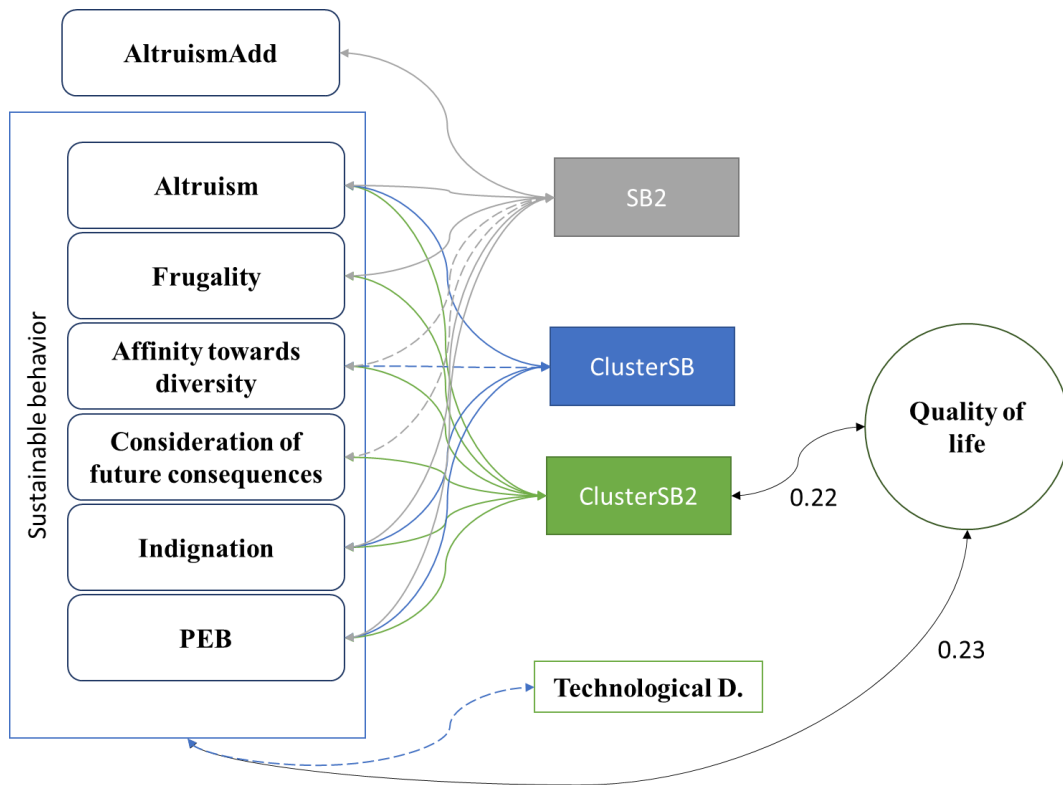
Note: continuous lines represent a significant relationship between variables (p-value is lower than 0.05), loosely dashed lines represent a less significant relationship between variables (p-value is between 0.1 and 0.05)

Figure 7 The models of relations between sustainable behaviors and quality of life.

As can be seen in this figure, while testing variables of sustainable behavior (SustainableBehavior, ClusterSB, ClusterSB2), other the self-report variable of sustainable behavior (SB2) has also been influenced by main factors of sustainable behavior. Interestingly, none of these constructs significantly correlate with stress variables or dimensions of dominant social paradigm. However, according to Figure 6, altruistic, pro-ecological, and equitable behaviors correlated significantly with the social components of the respondents. To gain more insights into these relations, those models were tested to validate whether the variables can predict the respondents' self-reported quality of life or have no influence on it.

Table 9 represents the correlation analysis of four items used to measure the respondents' political dimension of social norms. As those variables were not used in conducting the common variable DPS.P and cannot be combined as one variable, it is essential to assess the relations of those items with our control and independent variables. At the Figure 8,

it can be seen a visualization of the statically significant correlations between of four initial items of political dimension of social norms and other variables.

Table 9 Correlation analysis for the items of the political dimension of the social norms.

Variables	Individual contribution (DSP.P1)		Political equality (DSP.P2)		Power of legislation (DSP.P3)		Personal power (DSP.P4)	
	Correlation	p-value	Correlation	p-value	Correlation	p-value	Correlation	p-value
ATD	0.013	0.903	-0.014	0.892	-0.059	0.563	-0.084	0.421
Indignation	0.097	0.349	0.298	** 0.004	0.109	0.288	0.033	0.751
PEB	0.085	0.412	0.081	0.439	0.035	0.729	0.005	0.963
Altruism	0.001	0.991	0.007	0.947	0.042	0.684	0.038	0.714
Frugality	0.193	0.059'	0.000	0.999	0.223	* 0.028	-0.149	0.153
COFC	0.111	0.281	0.178	' 0.087	-0.097	0.345	0.128	0.218
Sustainable Behavior (self-evaluated)	0.239	0.02*	0.158	0.136	0.163	0.113	0.076	0.471
Altruism (Additional)	0.063	0.550	0.155	0.141	-0.256	* 0.012	0.133	0.207
QoL	0.074	0.472	-0.290	** 0.005	-0.138	0.176	-0.131	0.209
Stress	0.090	0.383	0.308	** 0.003	0.096	0.345	0.176	' 0.089
DSP.E	0.100	0.332	0.096	0.36	0.025	0.807	0.370	*** ~0
DSP.T	0.267	~0***	0.249	* 0.016	0.105	0.302	0.334	** 0.001
Sustainable Behavior	0.140	0.173	0.133	0.203	0.070	0.492	-0.012	0.91
ClusterSB	-0.055	0.597	0.150	0.151	0.128	0.208	0.091	0.382
ClusterSB2	0.137	0.183	-0.011	0.914	-0.057	0.579	0.008	0.94

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '' <0.1

As seen below, participants who stated that an average person has more input in dealing with social issues have also evaluated their behavior as more sustainable and tend to rely highly on technological development regarding solutions to environmental and social problems. Interestingly, the item measuring political equality showed a positive correlation with indignation, technological dimension of social norms, and stress and negative relation with quality of life. It can be assumed that a higher quality of life leads to less trustworthiness in the fairness of the election procedures or vice versa. As there was no connection between the feeling of indignation exposed by observation of destructive action toward ecology and quality of life, the model above suggests that

political aspects of social norms may indeed have an impact on the relationship between quality of life and sustainable behavior.
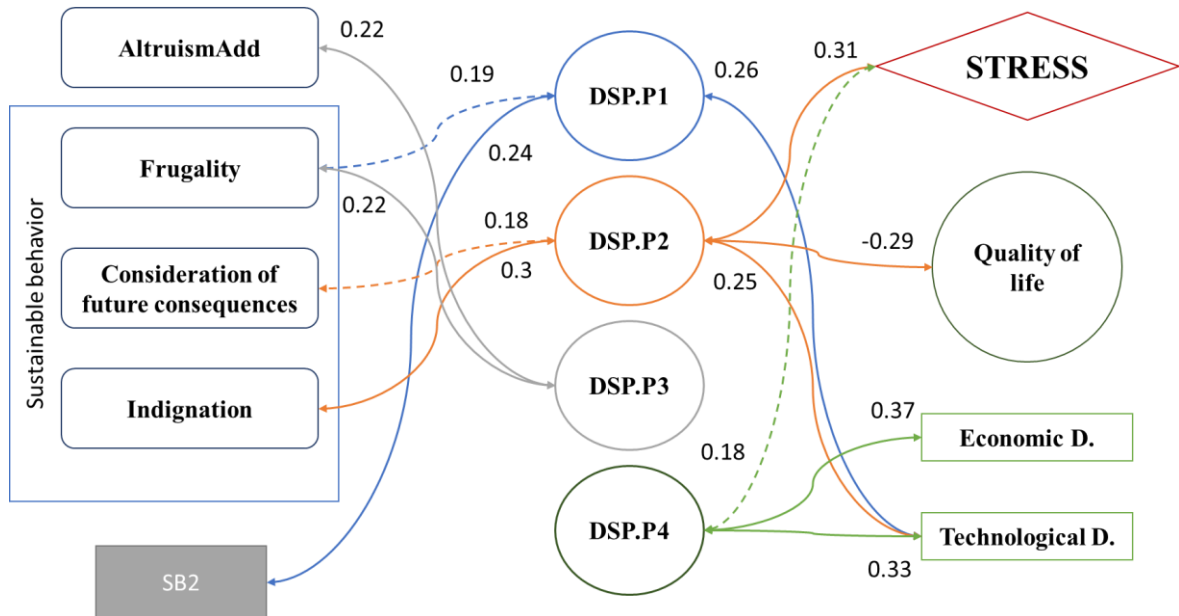
Note: continuous lines represent a significant relationship at 5% (p-value < 0.05), and loosely dashed lines represent a statistically significant relationship at 10% (p-value < 0.1)

Figure 8 Model of relations between the testing variables and the first four items of DSP.P.

The same assumption might also be applied to the stress, as previously, the common variable of DSP.P did not show any relation with the stress variable. Another finding was regarding the participant's concern about the political power of individuals. The analysis showed that it might relate to the stress variable and significantly correlates with other dimensions of the dominant social paradigm. All these relations were essential to the models and hypotheses tests.

5.4. Impact of the priming effect

Before analyzing the testing models, it is crucial to understand whether the priming effect impacts the participant's responses. Among 100 respondents, 51 were assigned to the experimental group, and the group was subject to the influence of the priming effect. As described in the methodology, they were asked to describe the most recent stressful situation and evaluate it with three questions. The average value of the first assessment question was 5.6, representing that the participants, in most cases, showed a moderated

level of sorrow in the described situation. The mean of the second question was 3.7, which means that most of the cases were presumably short-term. However, most participants reported that the stress level corresponds to medium (Low – 4, Medium – 31, High – 12, Very High – 4).

Table 10 Distribution type tests

Variable	p-value (experimental group)	p-value (control group)	Result
Affinity Toward Diversity	0.245	0.277	Normally distributed data
Indignation	0.327	0.496	Normally distributed data
Pro-environmental behavior	0.264	0.728	Normally distributed data
Altruism	0.580	0.460	Normally distributed data
Frugality	0.661	0.964	Normally distributed data
Consideration of future consequences	0.549	0.718	Normally distributed data
Sustainable behavior (self-estimated)	0.409	0.174	Normally distributed data
Altruism (Additional)	0.566	0.654	Normally distributed data
QoL	0.331	0.178	Normally distributed data
Stress	0.955	0.294	Normally distributed data
Economic D.	0.521	0.740	Normally distributed data
Technological D.	0.659	0.855	Normally distributed data
Political D.	0.747	0.780	Normally distributed data
Individual contribution (DSP.P1)	0.109	0.188	Normally distributed data
Political equality (DSP.P2)	0.272	0.161	Normally distributed data
Power of legislation (DSP.P3)	0.275	0.071	Normally distributed data
Personal power (DSP.P4)	0.007	0.213	Not-normally distributed data

To analyze the differences between the two groups – experimental and control – the researcher first tested for homogeneity of the sample and, therefore, as the two testing

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groups are independent, decided which test between Mann-Whitney-U-test or t-test to perform. The author used a One-Sample Kolmogorov-Smirnov test to assess whether the variables in the sample have a deviation from a normal distribution. The analysis was performed on both experimental and control groups. The result shows that among both groups in all testing variables, the p-value is higher than 0.05, which gives the incentive to perform a parametric test (t-test) on those variables.

Table 10 shows that the priming effect influences pro-environmental behavior, whereas the other variables remain the same. The priming variable was re-coded with 1, which represents the control group, and 2, which represents the experimental group, to perform a correlation analysis between this priming variable (ExpOrContr) and the variable of pro-environmental behavior.

Table 11 Results of the T-Test and Mann Whitney U-Test.

Variable	test type	p-value	Variable	test type	p-value
Altruism	t-test	0.943	Individual contribution (DSP.P1)	t-test	0.598
Frugality	t-test	0.686	Political equality (DSP.P2)	t-test	0.555
Altruism (Additional)	t-test	0.665	Power of legislation (DSP.P3)	t-test	0.428
QoL	t-test	0.639	Personal power (DSP.P4)	Mann-Whitney	0.788
Indignation	t-test	0.613	Consideration of future consequences	t-test	0.372
Affinity Toward Diversity	t-test	0.588	SB2	t-test	0.165
Technological D.	t-test	0.555	Stress	t-test	0.139
Economic D.	t-test	0.495	Pro-environmental behavior	t-test	0.029*
Political D.	t-test	0.414			

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

The results show that the priming condition of stress has been negatively correlated ($r = -0.22$) with pro-environmental commitment and increased the mean of pro-environmental behavior of the participants from 5.5 to 6.62. However, interestingly, it also shows that

the priming manipulation has negatively correlated with the stress variable ($r = 0.149$ and p-value $= 0.13$) and decreased the mean of the stress variable from 6.126 to 5.621. Despite the insignificant relation between those two variables, the item statistics show slight differences in two those groups. According to the Table 12, it should be noted that many other measures of stress have decreased, except the concern of personal time management (Stress 2).

Table 12 Summarized statistics of control and experimental groups.

	Control group			Experimental group		
Main scale						
Variable	n	mean	sd	n	mean	sd
Stress	49	6.126	1.604	51	5.621	1.772
Sub-scales						
Variables	n	mean	sd	n	mean	sd
Stress1: lack of time for leisure	47	4.809	2.133	50	4.680	2.325
Stress2: lack of time for studies/work	49	3.816	2.233	51	4.020	2.510
Stress3: low satisfaction with achievements	49	6.061	2.331	51	5.588	2.844
Stress4: feeling nervous	49	8.510	1.927	51	7.431	2.265
Stress5: lack of confident	49	6.857	2.776	51	5.882	2.620
Stress6: irritation in daily life	49	6.714	2.814	51	6.098	2.633

The author performed a more detailed correlation analysis of the scale items shown below to gain more detail regarding the priming effect. The Table was shortened to see the relevant correlations that p-values are below 0.1, and the full version of it can be seen in Appendix 7. The analysis shows that the priming effect showed the opposite effect on the participants that the author expected. As seen in Table 13, the priming approach has negatively affected the Stress questions, i.e., those respondents who were in the experimental group indicated a lower stress level regarding their achievements (Stress4 and Stress5 questions) in the Stress Section of the questionnaire.

Table 13 The relation of the scale items and ExpOrContr (Priming) variable.

Variable	Correlation with ExpOrContr	p-value
ExpOrContr	1	NA
ATD5	-0.004	0.972
QoL5	-0.006	0.949
…..	……	…..
COFC1	-0.151	0.137
Stress5	-0.179	0.074
DSP.E3	0.194	0.058 '
QoL6	0.208	0.038*
PEB4	0.222	0.027*
PEB1	0.223	0.026*
COFC5	-0.233	0.025*
Stress4	-0.250	0.012*

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

A possible explanation for this effect is that the participants in the experimental group had to evaluate their problems two times while filling out the questionnaire. The subsequent discovery was an increase in the mean levels of the environmental behavior of the participants (PEB1) from 5.408 to 6.784 and motivation to promote environmentally friendly behavior among others (PEB4) from 4.98 to 6.314.

5.5. The analysis of sub-samples of English and Russian language groups

The research aims to assess whether the variation in social norms, cultural values, quality of life, and attitudes toward sustainable behavior between different countries might give more insights into the barrier that prevent people from acting more sustainably. Among 100 respondents, 35, while filling out the survey, decided to choose Russian as their language proficiency, while others (65) decided to fill out the survey in English.

The approach employed in this study is to analyze the difference of the main constructs between two different data sets by conducting two different types of tests – Wilcoxon-Mann-Whitney and T-test. As has been done before, the variables were tested for normal distribution by applying the Kolmogorov–Smirnov statistical test. Table 14 represents the results of the tests that showed only construct variables that exhibit a significant difference between the two groups. Moreover, the table shows each testing variable's average values and medians.

Table 14 Results of testing for group differences and summarized statistics for the main constructs.

Variable	test type	p-value	English group			Russian Group		
			mean	median	SD	mean	median	SD
Altruism (Additional)	t-test	0.002	5.51	6	2.733	7.43	8	2.944
Affinity Toward Diversity	t-test	0.001	8.44	9	1.430	7.32	7	1.681
Frugality	t-test	0.007	6.82	7	1.758	5.85	6	1.565
Pro-environmental behavior	t-test	0	6.89	7	2.320	4.53	4	2.397
QoL	t-test	0	8.53	9	1.185	7.18	7	1.584
Economic D.	t-test	0.033	4.55	4	1.987	5.46	6	2.031
Political D.	t-test	~0	5.17	5	2.216	3.39	3	2.481
Technological D.	t-test	0	4.92	5	1.788	6.85	7	1.607

Interestingly, most of the variables of sustainable behavior, such as affinity toward diversity, frugality, and pro-ecological behavior, are much higher for respondents who answered in English. Besides, the respondents of the second group estimated their quality of life as lower than the first one. Regarding stress and social norms, the former variable showed no differences between the two types of respondents. In contrast, the dominant social paradigm's higher technological and economic dimensions prevailed in the Russian group.

The author analyzed the difference between two independent samples of each sub-variable to gain more detailed explanations of the variations due to the social and contextual settings. The table below displays the items for the tests with a significance level lower than 0.05. The results indicate a low chance that the observed variables between the two groups have differences due to chance. In Table 14, the variables' median and mean values were also established to ensure that tests were representative.

Table 15 Results of testing for group differences and summarized statistics for items of main constructs with a p-value lower than 0.05.

Variable	test type	p-value	English group			Russian Group		
			mean	median	SD	mean	median	SD
Altruism4	t-test	0.003	7.290	8	2.350	7.429	6	2.839
AltruismAdd1	t-test	0.001	5.016	5	3.047	7.429	9	3.224
AltruismAdd2	Mann-Whitney	0.001	5.968	7	2.951	7.853	10	3.016
ATD1	Mann-Whitney	0.000	7.938	8	2.135	6.057	7	2.520
ATD3	Mann-Whitney	0.024	8.344	9	1.757	7.429	7	2.019
COFC5	Mann-Whitney	0.020	7.153	7	2.066	6.000	7	2.118
Frugality2	t-test	0.023	7.262	8	2.320	7.429	6	2.935
Frugality3	t-test	0.000	6.108	6	2.611	7.429	4	2.130
Indignation5	Mann-Whitney	0.002	7.406	8	2.301	5.343	5	3.171
PEB1	Mann-Whitney	0.001	6.862	7	2.936	4.714	4	2.966
PEB2	Mann-Whitney	0.000	7.323	8	2.629	4.771	4	3.144
PEB3	t-test	0.000	5.781	6	2.548	7.429	4	2.204
PEB4	t-test	0.000	6.492	7	2.868	7.429	3	2.720
SB1	Mann-Whitney	0.031	8.554	9	1.668	6.943	8	3.226
Stress3	t-test	0.014	5.354	5	2.503	7.429	7	2.598
QoL2	Mann-Whitney	0.002	9.369	10	1.206	8.471	9	1.895
QoL3	t-test	0.033	7.369	7	1.782	7.429	7	2.241
QoL5	Mann-Whitney	0.028	8.492	9	1.459	7.400	8	2.379
QoL6	Mann-Whitney	0.000	9.154	10	1.439	7.743	8	2.214
QoL7	Mann-Whitney	0.004	8.215	9	2.154	6.829	7	2.455
QoL8	Mann-Whitney	0.000	8.585	9	1.610	6.200	6	2.362
DSP.E5	t-test	0.013	4.714	5	2.524	7.429	7	2.586
DSP.P2	t-test	0.011	6.102	6	2.203	7.429	8	2.536
DSP.P5	t-test	0.007	4.984	5	2.504	7.429	2	2.749
DSP.P6	Mann-Whitney	0.000	5.969	6	2.594	3.355	3	2.665
DSP.P7	t-test	0.008	4.453	5	2.357	7.429	2	2.582
DSP.T3	t-test	0.002	5.032	5	2.326	7.429	7	2.327
DSP.T4	t-test	0.000	3.906	4	2.335	7.429	6	2.621
DSP.T5	Mann-Whitney	0.000	5.175	5	2.380	8.853	10	1.374

Table 15 provides a foundation to answer the question regarding the dependence of sustainable behavior variables on social norms (Hypothesis 1). The observation from both groups shows a difference in most of the items used to measure the sustainable behavior of the respondents. As in Table 14, the English group, in many aspects, shows a higher level of sustainable behavior. In contrast, regarding the quality of life, the same group was self-estimated as higher than the Russian group. Interestingly, the Russian group tended to have a high commitment to the technological dimension of the dominant social paradigm and a low level of commitment to the political dimension. Moreover, the second group tended to be concerned that ecological issues might be solved by economic

growth. Another finding is that the Russian group was more stressed regarding their achievement when filling out the survey.

5.6. Demographic data analysis

According to the correlation analysis of the demographic variables, it showed that there are only a few variables that are related to the control variables. For instance, there is a tendency for older people to be more committed to the economic and technological dimension of the dominant social paradigm (see Figure 9). Besides, the analysis showed a low but significant between the gender of the respondents and the stress level they possessed – the average stress level among males was 5.02, whereas, among women, the level was 6.2.
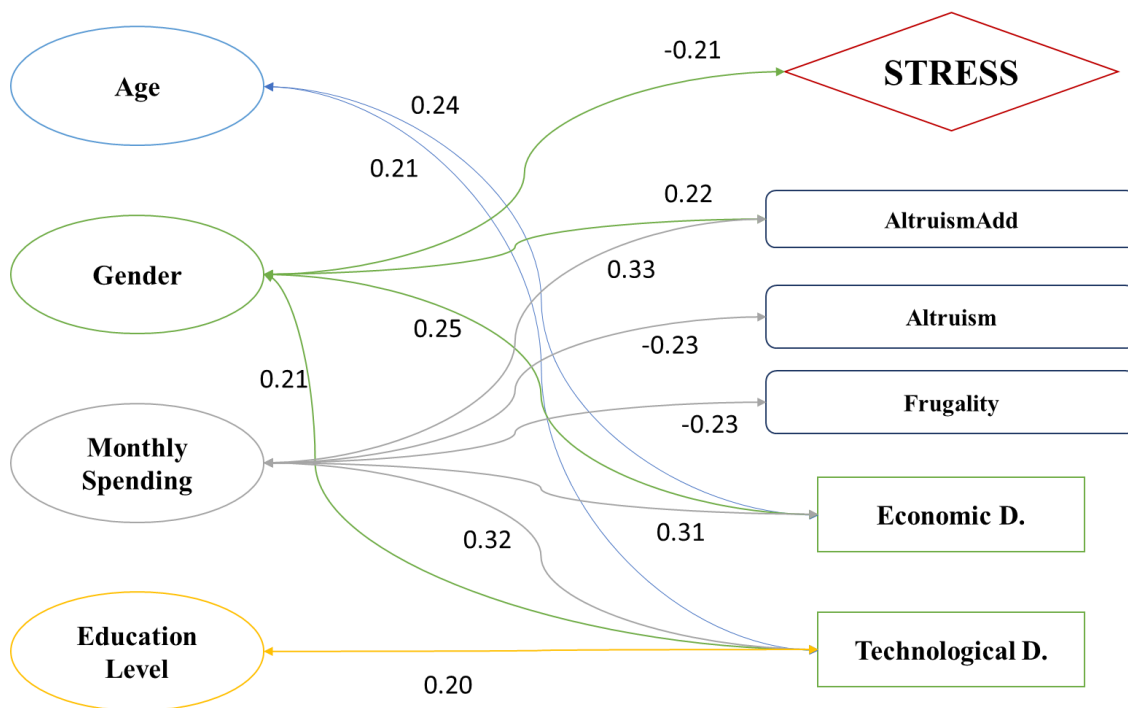
Note: continuous lines represent a significant relationship at 5% (p-value < 0.05)

Figure 9 Model of relations between the demographic variables and items of sustainable behavior.

The analysis of sub-samples showed the same tendency regardless of whether the participants were in the control or experimental group or were filling out the survey in Russian or English. Another finding regarding gender difference was that males were more inclined to be more committed to social norms' economic and technological dimensions. The monthly spending of the respondents also showed a correlation between

some variables of sustainable behavior and variables of social norms. Interestingly, the higher the monthly spending, the less altruistic and frugal the participants were, but the more likely that a participant was willing to help the researcher with additional tasks.

5.7. Models testing

The further step of the data analysis was conducting linear regression models and examining the relationship between sustainable behavior and the quality of life of the respondents. The multiple linear regression approach was used to analyze the direct and latent effect of the stress construct and social norms. The linear regression analysis and analysis of the variances showed the response of the predicted variable to change, and the inclusion or exclusion of each predictor should give insights into the relationship between stress, social norms, quality of life, and sustainable behavior. Initially, the primal focus of the study was predicting the sustainable behavior of the respondents by inspecting each control variable, such as quality of life, stress, and dimensions of social norms. However, the correlation analysis results showed no solid evidence that there would be significant relation between sustainable behavior and stress or all dimensions of the dominant paradigm.

5.7.1. Analysis of sustainable behavior
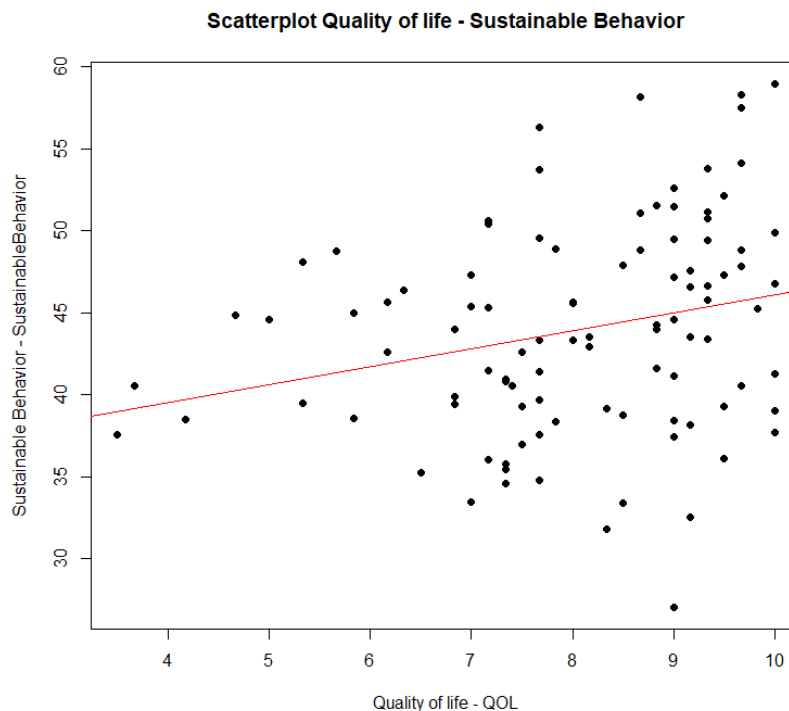
Figure 10 Scatterplot of sustainable behavior and quality of life.

The author tested 5621 models based on the general sample. All those models had a meaningful purpose as combinations of variables may give different insights into the interaction between those variables, that in correlation analysis could not be observed. Those models consist of combinations of nine control variables to investigate the interaction between each construct of dependent variables. The seven main variables of sustainable behavior – altruism, frugality, affinity towards diversity, indignation due to environmental damage, pro-ecological behavior, consideration of future consequences, and equity – and four computed variables that represent sustainable behavior of the respondents – SustainableBehavior, SB2, ClusterSB, and ClusterSB2 – represented dependent variables. QoL, stress, and the three dimensions of social norms were independent variables. The opposite approach was applied for the moderation analysis, in which seventy-nine linear models can be seen in Appendix 5.

The resulting relevant models and factors' coefficients are demonstrated in table 16, 17, and 18. The linear analysis of the predicting models allows us to confirm stress or social norms' direct and indirect impact on sustainable behavior. Among all those models where the goal was to predict the sustainable behavior of the respondents, the models based on the variable SustainableBehavior, computed by summarizing the seven variables of sustainable behavior, showed the highest R-Squared score (0.162) among other models of sustainable behavior. In contrast, the other dependent variables showed lower relevancy in the linear analysis of its models.

According to tables 16 and 17, the model based on predicting the SustainableBehavior variable and considering stress, social norm, and quality of life variables showed a moderate prediction. Only quality of life, as shown in correlation analysis, has a statistically significant relationship with the sustainable behavior variable and showed the highest factor coefficient in the model (from 0.9342 in model S2 to 1.3420 in model S5). The scatterplot below visualizes the relationship between those two variables (See Figure 10).

Table 16 Summary of linear regression models for H1 and H2 tests.

Variable Name	Model S1		Model S2		Model S3	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	36.98	~0***	40.01	~0***	33.632	~0***
SustainableBehavior	*Dependent variable*					
QoL	1.108	0.047*	0.934	0.054 `	1.174	0.031*
Stress	0.32	0.464			0.558	0.167
Economic D.	-0.144	0.727			-0.274	0.476
Technological D.	-0.476	0.327	-0.671	0.072 `	-0.187	0.663
Political D.	-0.074	0.811			-0.008	0.978
Individual contribution (DSP.P1)	0.47	0.285	0.56	0.1736		
Political equality (DSP.P2)	0.419	0.198	0.534	0.067 `		
Power of legislation (DSP.P3)	0.41	0.167	0.378	0.1756		
Personal power (DSP.P4)	0.053	0.839		0.1736		
Number of observations	100		100		100	
R^2 / R^2 adjusted	0.155/0.057		0.156/0.107		0.094/ 0.046	
p-value	0.133		0.012*		0.094 '	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

As can be seen, the variation of the trend is substantial. For instance, the self-assessment variable of sustainable behavior (SB2) does not vary much by the QoL, as shown in the correlation analysis (Table 6). It cannot be concluded that there is a strict dependency between respondents' perceptions of their quality of life and their behavior regarding sustainability (see Figure 11). However, in contrast to other testing variables – SB2, Cluster SB, and Cluster SB2 – the general variable sustainable behavior seems to provide a more in-depth analysis of the main constructs.

Model S4, which considers only one variable, showed that using the quality-of-life variable solely, it is challenging to reach a high level of prediction. However, adding another significant variable – concern regarding political equality (DPS.P2) – the results increased up to 11% (R-squared level). Among 5621 models that were aimed to predict participants' sustainable behavior, only model S6, which consisted of variables – QoL, stress, economic and technological dimensions of social norms, and the first three items of the political dimension – showed the highest prediction level (16%).
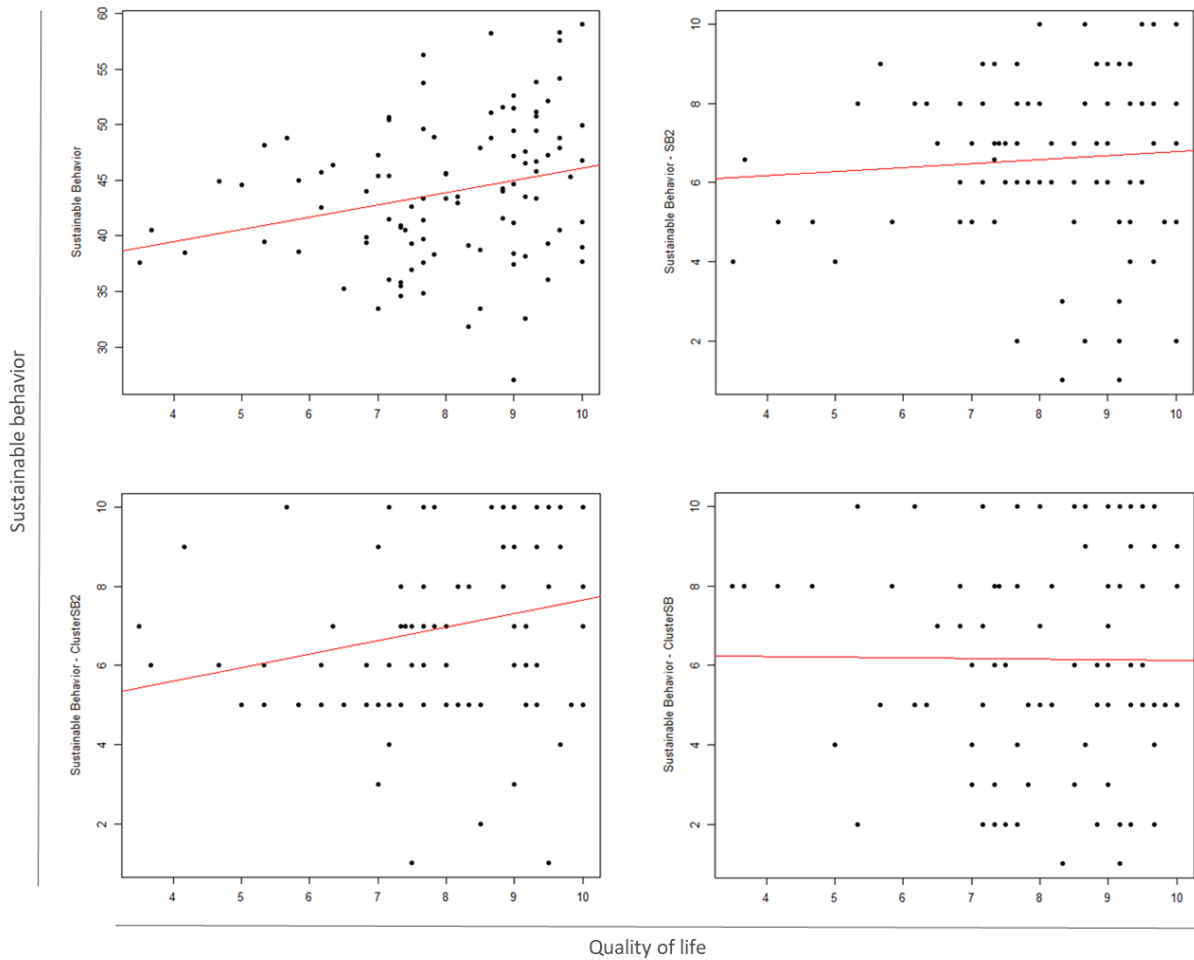
Figure 11 Scatter plots of the correlation analysis of quality of life with different measures of sustainable behavior

Nevertheless, those significance coefficients indicate that stress and economic dimension have much higher p-values than others and excluding those variables would not considerably change the prediction level. Indeed, model S2 showed a prediction level less than model S6, but the adjusted R-squared of this model is higher than the previous one (see Table 12). Thus, excluding stress variable and economic variable of social norms from the model variable analysis makes more sense.

Figure 12 Summary of linear regression models for H1 and H2 tests (part 2).

Variable Name	Model S4		Model S5		Model S6	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	35.148	~0***	35.7023	~0***	28.05861956	~0***
SustainableBehavior	*Dependent variable*					
QoL	1.093	0.011*	1.342	0.004**	1.06	0.042*
Stress					0.287	0.501
Economic D.					-0.116	0.768
Technological D.					-0.582	0.21
Individual contribution (DSP.P1)					0.506	0.231
Political equality (DSP.P2)			-0.606	0.035*	0.492	0.1
Power of legislation (DSP.P3)					0.375	0.184
Personal power (DSP.P4)						
Number of observations	100		100		100	
R^2 / R^2 adjusted	0.064/ 0.054		0.106/0.086		0.162/0.091	
p-value	0.012*		0.007**		0.035*	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

In contrast to the variable SustainableBehavior, other models, considering all variables used in the previous analysis of the sustainable behavior of the respondents, were also established below in Table 17. Models forecasting the ClusterSB variable showed that none of the variables with all possible combinations of the variables did show a statistically non-significant relationship between the models and its explanatory variables.

ClusterSB2, which demonstrated a relationship with the variable QoL (Figure A.), showed slightly better results than the previous clustered variable. However, among 1022 predicting models of CluterSB2, only two – the one with only QoL as the only predicting variable and another with QoL and individual contribution to social problems (DSP.P1) as the predicting variables – showed the highest adjusted R-squared values (0.040 and 0.045, respectively). The other combinations of testing constructs to predict ClusterSB, ClusterSB2, and SB2 variables, even combinations of predictors used in the SustainableBehavior models, did not give the expected level of reliability to conduct further examination of these models.

Table 17 Summary of linear regression models with cluster variables and SB2 for H1 and H2 validation.

Variable Name	Model S-Cluster		Model S-Cluster2		Model S-SB2	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	6.553	0.0361*	4.924	0.0524 `	0.407	0.853
Dependent variable	ClusterSB		ClusterSB2		SB2	
QoL	0.020	0.939	0.165	0.429	0.264	0.150
Stress	-0.098	0.629	-0.182	0.271	0.108	0.454
Economic D.	-0.100	0.601	0.220	0.160	-0.057	0.675
Technological D.	-0.026	0.906	-0.309	0.0935 `	0.144	0.369
Political D.	-0.109	0.447	-0.013	0.911	0.025	0.807
Individual contribution (DSP.P1)	-0.143	0.480	0.213	0.200	0.203	0.163
Political equality (DSP.P2)	0.087	0.561	0.119	0.332	0.071	0.509
Power of legislation (DSP.P3)	0.196	0.153	-0.019	0.861	0.146	0.136
Personal power (DSP.P4)	0.092	0.447	0.044	0.659	-0.017	0.844
Number of observations	100		100		100	
R^2 / R^2 adjusted	0.07748 / -0.02896		0.1021/-0.001488		0.1248/0.02382	
p-value	0.682		0.459		0.286	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

5.7.2. Analysis of the factors of sustainable behavior

The linear analysis of the sustainable behavior construct showed that only quality of life has a significant role in predicting the sustainable behavior of the respondents. Furthermore, there was no evidence that stress or social norms might impact the control variable. However, the analysis of the items of the constructs gave some insights into how individual factors of sustainable behavior might be affected by stress or dominant social paradigm. As expected, considering separately, each factor shows much higher accuracy in predictions. No other combination of independent variables, excluding the demographic variables, gave a more accurate prediction. Among 3577 models that predict each factor, six models with the highest adjusted R-square were described further. Interestingly, some dimensions of social norms might have a positive relation with factors of sustainable behavior, while other dimensions might have an opposite relation with those factors. As seen in Table 18, almost all dimensions of the social paradigm

impacted frugality, consideration of future consequences, and feelings of indignation about unsustainable actions. Stress, in contrast, does not affect the models, as shown in the correlation analysis.

The coefficients in Model SB-Frugality show that quality of life has a statistically insignificant impact (p-value = 0.075) on the whole model compared with other models. This result can be explained by the strong correlation of the Frugality variable with the ATD variable ($r = 0.27$), demonstrating a statistically significant connection with the QoL variable. Notably, participants' faith in the mitigation of environmental problems through political impact (DSP.P3) and attitude of an individual's impact on social problems (DSP.P1) have a higher (coefficients = 0.219 and 0.227) and statistically more meaningful impact on the individual's frugal behavior.

Table 18 Summary of linear regression models with factors of sustainable behavior for H1 and H2 validation (Part 1).

Variable Name	Model SB-Frugality		Model SB-COFC		Model SB-Indignation	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	2.998	0.029*	1.67	0.186	8.942	0***
Dependent variable	Frugality		Consideration of future consequences		Indignation	
QoL	0.209	0.075 `	0.439	~0***	-0.2183	0.023*
Economic D.	-0.178	0.053 `	0.096	0.285		
Technological D.			0.104	0.301	-0.2425	0.001**
Individual contribution (DSP.P1)	0.219	0.037*			0.1475	0.071 `
Political equality (DSP.P2)			0.165	0.013*	0.1513	0.009**
Power of legislation (DSP.P3)	0.227	0.003**			0.0592	0.282
Personal power (DSP.P4)	-0.084	0.218				
Number of observations	100		100		100	
R^2 / R^2 adjusted	0.213/0.168		0.201/0.165		0.207/0.161	
p-value	~0***		~0***		0.001**	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

The model of consequences of future consequences, as other factors' models, is constructed similarly to Model SB-Frugality (see Table 18). Remarkably, the main statistically significant factors are quality of life and the importance of changes in political equality (DSP.P2). The model that predicts indignation shows a similar pattern towards the QoL variable and political aspects of the social norms (DSP.P). Remarkably, the technological dimension of the dominant social paradigm might have a statistically significant (p-value = 0.001) and negative impact (coefficient = - 0.243) on the variable

of indignation. In contrast, the correlation analysis has indicated no direct connection between those two variables. The relation might be explained by a close relationship with another factor of sustainable behavior – pro-ecological behavior.

The analysis of the altruism variable did not show any significant coefficient among testing variables, and the highest adjusted R-squared value among all testing models was 0.005. For these reasons, the author found it more reasonable to test the additional variable of altruism. As expected from correlation analysis, the testing model SB-AltruismAdd demonstrated that trust in the solution of environmental problems through new legislation showed a statistically significant (p-value = 0.005) negative effect (coefficient = -0.366) on the dependent variable. More interestingly, the model coefficients indicated that stress and the economic dimension of dominant social paradigm might also impact the testing variable. However, this conclusion remains questionable because in the case where the model considers only single items in analysis instead of using constructs, it indicated that only variables of social norms influence the predicting variable.

Table 19 Summary of linear regression models with factors of sustainable behavior for H1 and H2 validation (Part 2).

Variable Name	Model SB-ATD		Model SB-PEB		Model SB-AltruismAdd	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	5.8303	~0***	5.4579	0***	6.5116	~0***
Dependent variable	Affinity towards diversity		Pro-environmental behavior		Altruism (Additional)	
QoL	0.2992	0.0161*				
Stress					-0.2939	0.0981 `
Economic D.					0.3301	0.0636 `
Technological D.	-0.1145	0.2112	-0.3479	0.0127*	0.2344	0.2007
Political D.			0.1997	0.0773 `	-0.1548	0.2065
Individual contribution (DSP.P1)						
Political equality (DSP.P2)	0.0683	0.3453	0.2326	0.0576 `	0.1967	0.1553
Power of legislation (DSP.P3)					-0.3662	0.0045**
Personal power (DSP.P4)					0.0683	0.5482
Number of observations	100		100		100	
R² / R² adjusted	0.1138/0.08391		0.09945/0.06909		0.2471/0.1828	
p-value	0.0128*		0.02471*		0.001157*	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

5.7.3. Models testing on two language groups

The author found it reasonable to assess each language group separately and see if the outcome of the analysis of the general sample would differ from the analysis of sub-samples. Curiously, the samples showed different responses depending on the control variables. The variables of social norms prevailed differently depending on the different group's data sets.

Table 20 Summary of linear regression models with factors of sustainable behavior of Rus. group data subset.

Variable Name	Model SB2-Rus.		Model ClusterSB - Rus.		Model SB-Indignation-Rus.		Model SB-Frugality - Rus.	
	Estimates	p-value	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	-1.83	0.371	6.1579	0.009**	8.903	~0***	1.453	0.322
Dependent variable	Sustainable behavior (self-evaluated)		ClusterSB1		Indignation		Frugality	
QoL	0.581	0.002**			-0.259	0.132		
Stress	0.311	0.047*			0.221	0.14	0.215	0.167
Economic D.			-0.339	0.085 `				
Technological D.	-0.381	0.021*			-0.283	0.076 `		
Political D.	-0.226	0.048*			-0.274	0.017*	0.206	0.103
Individual contribution (DSP.P1)	0.586	~0***	-0.3521	0.08 `	0.284	0.045*		
Political equality (DSP.P2)			0.1844	0.237				
Power of legislation (DSP.P3)	0.216	0.023*	0.2716	0.102			0.234	0.018*
Personal power (DSP.P4)			0.2653	0.04*	0.104	0.134		
Number of observations	35		35		35		35	
R^2 / R^2 adjusted	0.591/ 0.5		0.4504/0.3404		0.543/0.429		0.269/0.196	
p-value	~0***		0.008**		0.003**		0.023*	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

Within the H1 and H2 testing, the regression model SB2-Rus. showed that the stress has a statistically significant positive impact (coefficient = 0.3113) on the dependent variable SB2, while technological (DSP.T) and political (DSP.P) variables of social norms displayed a direct negative effect (coefficients = - 0.3808 and -0.2261). Moreover, according to the model, other items of the political dimension - DSP.P1 (obligation

toward social problems) and DSP.P3 (faith in legislations in dealing with environmental problems) – confirmed statistically significant (0.5861 and 0.2164) and positive impact on the sustainable behavior of the respondents. The model revealed the highest adjusted R-square value among the other 511 models predicting self-evaluated variables of sustainable behavior among the Russian group.

As seen in Model ClusterSB1 -Rus., the variable ClusterSB in the small sample can be used as the dependent variable to see how the different combinations of control variables can be applied and ensure the model's best fit within the hypothesis tests. Interestingly, the economic variable also has a strong (coefficient = -0.339) but not a significant relationship (p-value = ~0.09) with the cluster variable.
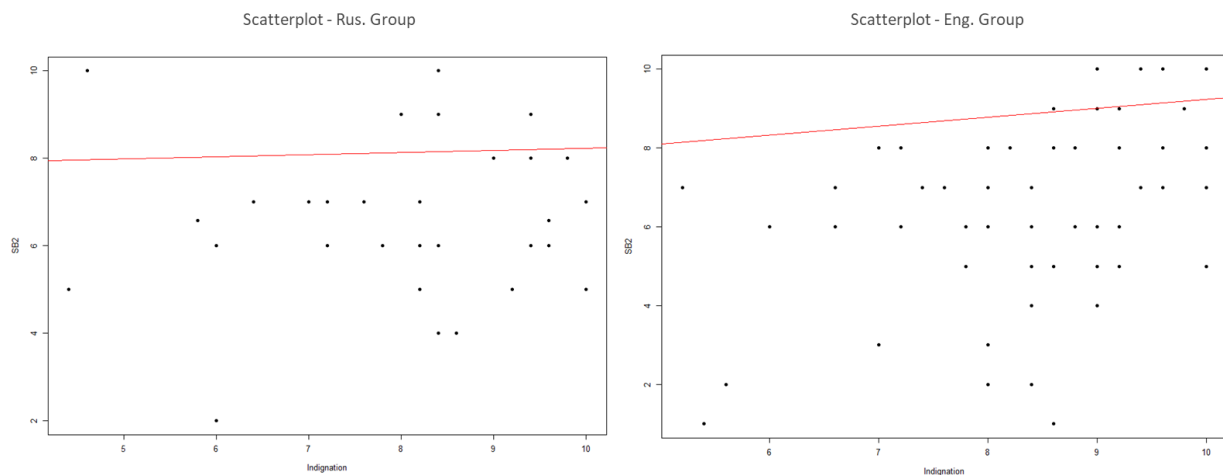
Figure 13 Scatter plots of the correlation analysis of Indignation with SB2 variable between two data subsets.

Another supportive evidence of the direct effect of the political dimension of the social norms on sustainable behavior in the Russian group can be observed by Model SB-Indignation-Rus. and Model SB-Frugality -Rus. Notably, the model SB-Indignation-Rus. shows an almost similar pattern to SB2-Rus. and there was no statistically significant relationship between those two variables (r = 0.097 and p-value = 0.733) in the sub-sample (see Table 20). However, in another sample (Eng. Group), a strong and statistically significant correlation was observed between them (r = 0.421 and p-value < 0.001). The scatterplot below was conducted to visualize the relationship between those two variables (See Figure 13).

The results of the Russian group indicate that the self-estimation of the participants' sustainable behavior was not subject to the factors of sustainable behavior. As seen in the left scatterplot, the people who estimated their sustainable behavior as moderate demonstrated different levels of indignation. Whereas, at the right scatterplot, a relation between those two variables can easily be observed. The analysis of the English group also gave some curious insights (see Table 21). The coefficients of Model SustainableBehavior - Eng. showed that not only does the QoL variable have sufficient effect on the variable of sustainable behavior, but DSP.P2 – the item that measures the importance of election procedures on political equality - also has a statistically sufficient impact on sustainable behavior (p-value = 0.017 and coefficient = 0.905).

Table 21 Summary of linear regression models with factors of sustainable behavior of Eng. group data subset.

Variable Name	Model SustainableBehavior - Eng.		Model COFC - Eng.		Model Frugality - Eng.		Model AltruismAdd - Eng.	
	Estimates	p-value	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	27.034	~0***	-0.422	0.8	5.2	~0***	5.7	0***
Dependent variable	Sustainable Behavior		Consideration of future consequences		Frugality		Altruism (Additional)	
QoL	1.557	0.022*	0.594	~0***				
Economic D.			0.252	0.011*	-0.241	0.059 `	0.49	0.004**
Individual contribution (DSP.P1)					0.266	0.07 `		
Political equality (DSP.P2)	0.905	0.017*	0.238	0.007**				
Power of legislation (DSP.P3)					0.196	0.049*	-0.388	0.008**
Personal power (DSP.P4)					-0.1	0.323		
Number of observations	65		65		65		65	
R^2 / R^2 adjusted	0.155 / 0.124		0.301/ 0.263		0.187 / 0.129		0.186 / 0.16	
p-value	0.009**		~0***		0.019*		0.002**	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

The coefficients of model COFC - Eng. states that, in contrast to Model SB-COFC result, the economic dimension of the social norms and the variable of political equality on par with QoL have a strong positive relationship with the participants' consideration of the future consequences (for DSP.E: p-value = 0.011 and coefficient = 0.252; for DSP.P2:

p-value = 0.01 and coefficient = 0.238). The coefficients of the frugality model of the English group show almost similar patterns to the ones of the Russian group. However, the English group showed that the economic dimension might have a high negative impact (p-value = 0.059 and coefficient = -0.241) on the self-regulated consumer behavior of the respondents. In contrast, the higher commitment to social problems (p-value = 0.07 and coefficient = 0.266) might considerably increase the value of the frugality variable. The linear analysis of the additional variable of altruism of the English group showed that the economic dimension of the social norm has a statistically positive relation with the predicting variable. Besides, the trust in the impact of new legislation on environmental problems surprisingly has a significant negative relation with the independent variable AltruismAdd.

Consequently, the results obtained from the English and Russian subsets and the general sample provide more support for the H1 but no evidence confirming the H2.

5.8. Moderation analysis

As mentioned, the increase in self-evaluation of participants' quality of life strongly connects to environmental behavior and attitudes. Predicting the factors of sustainable behavior is not the most appropriate to investigate the moderation effect or mediation effect on the relationship between sustainable behavior and quality of life. To investigate how stress and social norms might affect the relationship between QoL and sustainable behavior, the author tested 79 predicting models combining stress, three dimensions of social norms, and each testing variable of sustainable behavior (SustainableBehavior, SB2, ClusterSB, ClusterSB2).

Initial analysis showed that individually only a few of them, more precisely – stress, economic and technological dimensions of social norms (except general and cluster variables of sustainable behavior cause these variables are considered as main control variables), showed a more accurate prediction of the QoL variable (p-values < 0.05) (see Table 22) than other variables separately.

Table 22 Linear regression models with one independent variable

Dependent variable	Independent variable(s)	Number of observations	R.squared	Adj.R.squared	p-value
QoL	Stress	100	0.13397	0.12514	~08***
QoL	Economic D.	100	0.02657	0.01664	0.10513
QoL	Political D.	100	0.16784	0.15934	~0***
QoL	Technological D.	100	0.15847	0.14988	~0***
QoL	Sustainable Behavior (self-estimated)	100	0.00554	-0.00461	0.46184
QoL	ClusterSB	100	~0	-0.01013	0.9313
QoL	ClusterSB2	100	0.04906	0.03936	0.02677*
QoL	Sustainable Behavior	100	0.06348	0.05392	0.01145*

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

According to Appendix 5, only the relevant models among 79 are described below, as not all of them were meaningful to the research purpose. Model 1, which consisted of only one variable as a predictor of the quality of life, showed a low level of prediction but with a significant p-value of the independent variable (~0.012). The author added only one control variable to the previous construct in the following three models. Each model showed a much higher R square value than previously with significant p-values. Interestingly, that model 5, consisting of social norm variables (DSP.T and DSP.E), showed more accurate prediction (R square = 0.34) than model 2.

Table 23 Summary of linear regression models for Sub-H1 and Sub-H2 tests (Part 1).

Variable Name	Model 1		Model 2		Model 3	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	5.506	~0***	7.316	~0***	7.729	~0***
QoL	*Dependent variable*					
SustainableBehavior	0.058	0.012*	0.06	0.005**	0.043	0.05*
Stress			-0.323	~0***		
Technological D.					-0.276	~0*
Number of observations	100		100		100	
R^2 / R^2 adjusted	0. 064/ 0. 054		0.202/ 0.185		0.192/ 0.175	
p-value	0.012*		~0***		~0***	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

Model 6, which consists of variables of stress, political and technological aspects of social norms, and sustainable behavior, showed the highest R square value (~ 0.4) with a significant p-value (~0) compared with the five previous ones. Initially, the author assumed that every dimension of the social paradigm would negatively influence participants' sustainable behavior and negatively impact their quality of life. However, in the case of predicting the measure of the quality of life, the linear regression analysis, as with the correlation analysis, showed that the high level of political trustworthiness increases the self-evaluation of the quality of life (see Table 24). The same finding was observed in the linear analysis of sustainable behavior. However, unlike the analysis of the quality of life, the relation between the construct of the political aspect of dominant social paradigm and its sub-items with the predicting variables of sustainable behavior, as with the factors of sustainable behavior, was not entirely clear.

The following three models were conducted to analyze the impact of demographic variables on model 6, which would be the base for the further analysis of the moderation effect of stress and social norms on the relation between quality of life and sustainable behavior. Models 7 and 8 were conducted by adding all demographic factors – age, gender, monthly spending, and academic level. In model 7 and in model 8, different variables that estimated academic level were applied. According to the coefficients, the only variable of monthly spending provided a statistically significant impact on the whole model (coefficient = 0.278382 and p-value= 0.0225 in model 7; coefficient = 0.23583and p-value= 0.05223 in model 8). As the results, model 9 consists of meaningful variables used to validate Sub-Hypotheses 1 and 2.

Table 24 Summary of linear regression models for Sub-H1 and Sub-H2 tests (Part 2).

Variable Name	Model 4		Model 5		Model 6	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	4.735	~0***	6.934	~0***	7.908	~0***
QoL	*Dependent variable*					
SustainableBehavior	0.051	0.016*	0.036	0.068`	0.04	0.034*
Stress					-0.216	0.003**
Political D.	0.237	~0***	0.234	~0***	0.208	~0***
Technological D.			-0.272	~0***	-0.232	~0***
Number of observations	100		100		100	
R^2 / R^2 adjusted	0.217/ 0.201		0.341/ 0.32		0.398/ 0.373	
p-value	~0***		~0***		~0***	

Variable Name	Model 7		Model 8		Model 9	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	7.252	~0***	7.235	~0***	7.301	~0***
QoL	*Dependent variable*					
SustainableBehavior	0.047	0.015*	0.044	0.022*	0.047	0.014*
Stress	-0.191	0.014*	-0.202	0.007**	-0.211	0.004**
Political D.	0.204	~0***	0.206	~0***	0.202	~0***
Technological D.	-0.278	~0***	-0.279	~0***	-0.271	~0***
Age	-0.007	0.663	-0.018	0.283		
Gender	0.146	0.595	0.087	0.745		
Monthly Spending	0.278	0.023*	0.236	0.052`	0.242	0.037*
Academic Qualification	-0.078	0.393				
Education Level			0.16210	0.204		
Number of observations	100		100		100	
R^2 / R^2 adjusted	0.434/ 0.384		0.439/ 0.39		0.425/ 0.395	
p-value	*** ~0		*** ~0		*** ~0	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

The further step of the moderation analysis is testing the interaction between the testing control variable – SustainableBehavior- and the moderators – Stress and two variables of social norms (DSP.T and DSP.P). The first model that tests moderation of the stress states that the interaction variable shows a low coefficient of regression (0.0083) and a p-value higher than 0.05 (p-value = 0.39), and, therefore, there did not exist a significant moderation effect on the relation between the quality of life and sustainable behavior.

The same results were indicated in Model 11, testing the technological dimension of the social norms as the moderator. The regression coefficient of the interaction was -0.051 with a p-value = 0.64 (see Table 25). However, the last testing model showed that the interaction terms between general variable of sustainable behavior and the variable of political dimension of social norms were nearly significant, lower than 0.1. Interestingly, it is highly possible that the effect of sustainable behavior on the quality of life differs for different levels of commitment to the political aspect of daily life. Another observation was the difference in the coefficient of the sustainable behavior of model 10 and Models 1-9. Previously, the sustainable behavior of the respondents was expected to increase the level of QoL, but in Model 12, the coefficient of the independent variable is negative (-0.2214) with a p-value = 0.0021. According to Gatersleben and Poortinga (2001), the quality of life might negatively correlate with sustainable behavior as the latter leads to decreased comfort, freedom, and pleasure. Therefore, the result of the model should make more sense, as the model gives a more accurate forecast than Model 9 (adjusted R-square = 0.4096) and supports the Sub-H1.

Table 25 Summary of linear regression models for Sub-H1 and Sub-H2 tests (Part 3).

Variable Name	Model 10		Model 11		Model 12	
	Estimates	p-value	Estimates	p-value	Estimates	p-value
(Intercept)	9.369	~0 ***	6.128	0.027 *	4.559	0.014 *
QoL	*Dependent variable*					
SustainableBehavior	-0.577	0.179	-0.2097	0.004 **	-0.221	0.002 **
Stress	-0.270	~0 ***	-0.05	0.917	-0.278	0 ***
Technological D.	0.206	~0 ***	0.2006	~0 ***	0.795	0.017 *
Political D.	0.000	0.995	0.0739	0.225	0.11	0.006 **
Monthly Spending	0.233	0.045*	0.2375	0.042*	0.264	0.022 *
Moderator	Stress		DSP.T		DSP.P	
SustainableBehavior x Moderator	0.008	0.386	-0.0051	0.642	-0.013	0.07 `
Number of observations	100		100		100	
R^2 / R^2 adjusted	0.43 / 0.393		0.427/ 0.39		0.445 / 0.41	
p-value	~0 ***		~0***		~0 ***	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

Lastly, contrary to the previous analysis of the moderation effect and instead using the construct of sustainable behavior, the research focuses on the factors of sustainable behavior to confirm the moderating role of stress and social norms. Among all factors of the sustainable behavior that were used to predict QoL, altruism, the feeling of frugality, and pro-ecological behavior, as in the correlation analysis, did not show statistically significant regression with the predicting variable in the linear analysis. For this reason, it was concluded to keep only three factors of sustainable behavior – ATD, COFC, and indignation – in the analysis and to abandon the monthly spending variable as including the variable showed lower accuracy of the prediction. Model 13 showed that all control variables have a significant impact on the dependent variable and the combination of these variables showed a better fit (adjusted R-square = 0.48) than the previous models (see Table 26).

Table 26 Summary of linear regression models for Sub-H1 and Sub-H2 tests (Part 4).

Variable Name	Model 13		Model 14		Model 15		Model 16	
	Estimates	p-value	Estimates	Estimates	p-value	p-value	Estimates	p-value
(Intercept)	8.033	~0 ***	7.718	~0 ***	11.176	~0 ***	5.459	~0 ***
QoL	*Dependent variable*							
Affinity towards diversity	0.151	0.035*						
Consideration of future consequences	0.309	~0 ***	0.307	~0 ***	-0.175	0.492	0.588	~0 ***
Indignation	-0.197	0.029 *						
Stress	-0.18	0.008 **	-0.216	0.002 **	-0.819	0.01 *	-0.215	0.002 **
Technological D.	-0.281	~0 ***	-0.282	~0 ***	-0.276	~0 ***	-0.267	~0 ***
Political D.	0.178	~0 ***	0.204	~0 ***	0.207	~0 ***	0.727	0.002 **
Testing-variable x Moderator	N/A		N/A		Stress		Political D.	
	N/A	N/A	N/A	N/A	0.0827	0.051 `	-0.068	0.023 *
Number of observations	100		100		100		100	
R2 / R2 adjusted	0.512 / 0.48		0.47 / 0.447		0.491/ 0.464		0.498 / 0.471	
p-value	~0 ***		~0 ***		~0 ***		~0 ***	

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05, '`' <0.1

Each factor of sustainable behavior was analyzed separately to analyze the impact of the moderator. Among those factors, only consideration of future consequences showed

moderated relationship with QoL. The results of Model 15 could provide support to Sub-H2 as the interaction variable has almost a high significant coefficient (regression coefficient = 0.0827 and p-value = 0.0509) and the model provides a better model fit (adjusted R-squared value = 0.4636) than Model 14 (adjusted R-squared value = 0.4471). However, the substantial change in the coefficient of the COFC and Stress made the results insufficient to support Sub-H2.

Model 16, in contrast, provides solid evidence to validate the Sub-H1. The coefficient of COFC, other control variables, and the interaction variable are statistically significant. Model 16 tested the political dimension of the social norms on the moderation effect. As seen, the coefficients of both variables - the COFC and DSP.P – have increased (from 0.307 to 0.588 for COFC; from 0.205 to 0.727 for DSP.P), compared with model 14. These results confirmed the sub-hypotheses (Sub-H1) that the dominant social paradigm moderates the relationship between sustainable behavior and quality of life.

6. General Discussion

One focus of the research is whether sustainable behavior could be altered by stress and social norms. To investigate the relationships, three hypotheses have been developed: H1 – investigating the relation of the commitment of each dimension of the dominant social paradigm with sustainable behavior, H2 – detecting the negative impact of stress on the respondents' level of sustainable behavior, H3 – identification the relation between stress and the commitments to the dimensions of the social norms. Another focus was investigating whether stress and social norms impact the quality of life and its relationship with sustainable behavior. To assess the relation, two sub-hypotheses were conducted: SubH1 – the presence of the moderation effect of social norms on the relationship between sustainable behavior and the quality of life, and SubH2 – the relationship between sustainable behavior and quality of life is moderated by stress. The study surveyed 100 respondents and experimented with examining the impact of artificial stress conditions on the respondents' answers. The following sections elaborate on the results of the analyses.

6.1. Dominant social paradigm and sustainable behavior.

Most research into the relationship between sustainable behavior and social norms stated that the interaction between factors of sustainable behavior and social norms is complex. For instance, some researchers assign attributes of altruism and consideration of future consequences to personal norms (which in turn have a strong relationship with social norms). This section describes the findings the author has gained in the analyses of the relationship between three dimensions of social norms, constructs of sustainable behavior, and its main factors. The other observations include the results of linear analyses and the analyses of language sub-samples.

6.1.1. General relation between social norms and sustainable behavior

Four general variables of sustainable behavior were used to test the relation of social norms with sustainable behavior: the participant's evaluation of their sustainable behavior, the conducted construct of sustainable behavior including its main factors, and two cluster variables. The correlation analysis in section 5.2 showed no significant correlation between the dimensions of the dominant social paradigm and the general

variables of sustainable behavior, except with the technological dimension of DSP and the main construct of sustainable behavior (the coefficient = - 0.19 with p-value=0.6). The strong negative correlation between the technological aspect of social norms and the inclination for diversity might explain the latter. The difference between the language datasets in section 5.5. showed that in the dataset with Russian responses, the level of the technological dimension of the social norm was higher than the one in the dataset with English responses. At the same time, the overall score of sustainable behavior was lower. This could also be observed in Table 14, where such variables as a preference for diversity, frugal behavior, and pro-environmental behavior were considerably lower in the Russian responding group.

Regarding the difference in pro-environmental behavior between the two groups, findings from the analyses correspond to the results of some existing scientific articles. For instance, one of the respondents from Russia has voiced the problem of accessibility to waste and recycling facilities. Her comment regarding this matter: "The infrastructure needs to be provided in Russia for sorting garbage. In some regions, there is no place to sort garbage. Many waste and recycling stations are far from my house. If it were up to me, I would bring plastic bottles or glass cans to those places, but due to the lack of support from the state and proper control over garbage sorting, I lose all motivation to do this.". The observed relation is consistent with previous academic research, such as Gatersleben's and Griffin's studies (2001, 2017). The statement above might imply that the cost of following pro-environmental behavior in Russia is higher than in European countries and, therefore, might significantly hurt the quality of life (if a person follows that behavior) or prevent one from acting more pro-environmentally, even though a person has altruistic reasons to do so. Ratner and her colleagues (2021), in their research of the transition to the circular economy in Russia, have also shown interest in examining the Russian group as the absence of consistent governmental support for adopting sustainable consumption makes the behavioral cost of changing behavior higher than in European countries (Ratner et al., 2021).

The more detailed analyses of the components of the main construct of sustainable behavior showed that the pro-environmental behavior and affinity toward diversity variables have a negative and statistically significant relationship with the variable of the technological dimension. These findings partly support the expectation posed by the H1.

According to Kilbourne (1997), the technological dimension bears a shortcut for those who are not motivated to act pro-environmentally and possibly wait until technological development handles environmental issues. The current study supports the assumption that technological optimism might decrease the motivation to act environmentally friendly and decrease the preference towards complexity, variations, and diversity of individuals. However, a potential explanation of the relationship between the commitment to the technological dimension of social norms and tolerance to diversity within scientific literature was not found.

Another finding was regarding the excluded items from the main constructs of the political dimension of the dominant social paradigm. The current study, in contrast to Kilbourne's study (1997), applied a different approach to measure the political dimension of the dominant social paradigm. As all the constructs were tested on Cronbach's alpha level and factor analyses, some of the items were excluded from the constructs to reach an acceptable level of reliability, and the items that measured the political trustworthiness of the respondents were kept as a main construct. However, the analyses of those dropped variables showed a moderate correlation between self-assessment of one's sustainable behavior and the item measuring the person's intention to deal with social problems. In contrast to the results of Kilbourne, the current study showed faith in the new legislation regarding environmental issues and a positive relation with self-regulated consumer behavior. The finding assumes that people with higher trust in the power of political regulation of their residence tend to sacrifice their comfort or pleasure to consume more thoughtfully.

Moreover, a positive relation was also found between the feeling of indignation due to environmental destruction and the trustworthiness of election procedures in attaining political equality. Interestingly, people who are highly committed to the technological aspect of social norms tend to have high faith in election procedures. The analysis of two language datasets (English and Russian) (yet to be found in section 5.5.) shows the same pattern. However, the difference in the feeling of indignation between the two groups has not been detected. Those observations suggest that, on the one hand, an individual's commitment to technological aspects might negatively affect one's willingness to behave more sustainably. On the other hand, interacting with the different contextual aspects of social norms might prompt their environmental concern.

Another piece of evidence supporting this suggestion was found in the analyses of linear regression models S2 and S5 in section 5.7.1. It showed interesting insights regarding the variables of technological dimension and political equality. The presence of the DSP.T variable changes the regression coefficient of another item of the political aspect of the social norms. The effect explains that both variables have a strong correlation (0.25 with a p-value of 0.02). In contrast, the statistical significance (p-value) of those variables within the models remains less than 0.1.

Kilbourne and his colleagues (2005), in their examination of the dominant social paradigm, have proposed that the high chance to change an individual's behavior appears when his/her commitment to their social norms is relatively low. The comparison of their findings on two different datasets (Australia and New Zealand) showed that the relationship described above might vary depending on the values and environmental knowledge. However, this study makes another suggestion regarding the complexity of social norms. Linear models in section 5.7.2. that predicted the main factors of sustainable behavior in two different language groups indicated the statistically significant impact of the dominant social paradigm's political, technological, and economic dimensions on those variables.

Conversely to Kilbourne's argument, the commitments to the economic dimension and political dimension, more precisely, commitment to putting more effort in dealing with social problems and trust in the election procedures in a matter of political equality, have been found to have a positive relationship with some main factors of sustainable behavior and with the self-estimated variable of sustainable behavior within the general sample. These findings support the assumption about the existence of a relationship between social norms and sustainable behavior. However, it is difficult to determine whether the impact of social norms on sustainable commitment will be positive or negative.

6.1.2. Moderation effect of the political aspect of social norms

This study expands the previous research on social norms and sustainable behavior by assessing the impact of social norms on the relation between sustainable behavior and quality of life. Previous studies have described numerous examples where social norms might affect the relationship between the motivation to act pro-environmentally and actual behavior through prompting personal, injunctive, or descriptive norms. For

instance, Onwezen and her colleagues (2013) have analyzed the norm activation model to explore the mediation and moderation of the commitment to behave pro-environmental on the effect of personal norms on behavior. However, those studies have yet to test the impact of social norms on the relationship between sustainable resource consumption and an individual's well-being. The current research provides some insights into the gap in knowledge by assessing the moderation effects of different aspects of social norms on the influence of sustainable behavior on quality of life.

The analyses of models 12 and 16 provided evidence to partially confirm the first Sub-Hypothesis (Sub-H1) by assessing the interaction between variables political dimension of the dominant social paradigm, and sustainable behavior. The regression model 12 showed a minor significant correlation between the interaction variable with the predicting variable. However, in model 16, where the consideration of future consequences was used as an independent variable instead of the main construct of sustainable behavior, the regression analysis revealed the moderating role of the political context of social norms. Interestingly, the correlation analysis of the general sample did not detect a direct relation between the COFC and DSP.P, while both of those variables have a moderate and strong correlation with the variable of quality of life. The possible explanation of why precisely the interaction between consideration of future consequences and the trustworthiness in the government showed a moderation effect, while the interactions with other factors of sustainable behavior do not, might lie within the studies of the norm activation model that was used to predict individual's environmental attitudes and behavior. De Groot and Steg (2009), in their analysis of personal norms, have highlighted outcome efficacy as the moderator of the relationship between personal norms and behavior. Onwezen and her colleagues (2013) had similar research, and the results of both studies showed that the awareness of the consequence of altruistic behavior toward the environment has indirectly affected the individual personal norms and his/her pro-environmental behavior. The results of the current study furthermore emphasize the role of quality of life in forming values and behavioral intentions to act more environmentally friendly. According to Gatersleben and Poortinga (2001), as mentioned before, following sustainable behavior might lead to a decrease in one's quality of life as an individual has to abandon the convenience of life. The author assumes that the person who comprehends the future consequence of his/her actions does it through the prism of social norms and considers the possible decrease of freedom,

comfort, or pleasure. It is suggested that future research investigates the relationship between an individual's focus on future outcomes and other factors of sustainable behavior under experimental conditions where a researcher can control the personal consideration of future consequences and measure the changes in the other measures.

6.2. Stress or mental pressure and sustainable behavior

The correlation analyses of the general sample suggest that the stress variable has no impact on the four main variables of sustainable behavior or the components of the main constructs. However, the analysis of linear model SB2-Rus. Proposes that the stress variable in Russian settings impacts the sustainable behavior of Russian respondents. Regarding the moderation effect of stress on the relationship between sustainable behavior and quality of life, the regression analysis through the two-way interaction of the stress variable does not reveal the moderating role of stress.

Regarding the experimental part of the research, the respondents in the experimental group were asked to describe their current stressful situation and evaluate them according to the extent and severity of the stress. Most experimental group participants displayed moderate sadness and a short-term extension of the stress events. Furthermore, only five respondents indicated their high and long-lasting stress levels. The survey was conducted among the Russian and European populations during the heightened political issues between Ukraine and Russia. Only a few respondents experienced high stress regarding the intense political situation between the countries and its consequences, while others struggled with their studies or work or had personal issues.

Regarding the priming effect in section 5.4., the intervention results demonstrated the opposite cause of the priming effect as it was expected before and failed to increase the mental pressure among participants in the experimental group. The differences between the experimental and control groups through t-tests and Mann-Whitney U-tests showed that the values of stress measures differ while others essential to the purpose of the experiment do not. Surprisingly, the stress level of the control group was considerably higher than those assigned to the experimental group. However, the results of the different tests on the variables that were measuring pro-environmental behavior showed that decreased stress levels might increase people's motivation to promote environmental concern with others. It was assumed that external socio-physical stressors would lead to

the involvement of change in the cognitive assessment of respondents' sustainable behavior. However, the stress rate of the respondents did not reach extreme values that caused a stimuli overload leading to reconsidering their own behavior. Based on the above discussion, it is recommended to use more robust tools to adjust the stress level of the respondents to gain more accurate insights into the impact of stress on sustainable behavior. At the moment, within the research results, it is challenging to verify the correctness of H2 and Sub-H2.

6.3. Stress and social norms

There are only a few academic overviews regarding the connection between stress and social norms. The analysis of the studied relationship reveals that stress strongly correlates with a technological dimension of the dominant social paradigm. However, this relation could be explained by the relation of both variables with quality of life and cannot be attributed to minority stress as the correlation analyses in both language datasets show a less noticeable correlation. The author initially assumed that the political dimension of social norms might have a strong correlation with the stress variable. Notably, another finding was gained from the analyses of items of political dimensions of DSP that were not included in the main constructs (see Figure 8): According to the correlation analyses, political equality and the dominant power of corporations over individuals have a statistically significant relationship with stress. Therefore, the findings imply that mental pressure or stress relates to a person's commitment to the dominant social paradigm. It is recommended to conduct a closer analysis regarding the impact of social norms on stress as new findings in this relationship might shed light on the role of stress in sustainable behavior and attitudes.

7. Limitations and Suggestions for Future Research

Although the research expanded academic knowledge regarding the complex relationship between social norms, sustainable behavior, and stress, the current study should also be considered in light of many limitations. The limitations can be categorized into three groups: sample limitations, research design limitations, and cultural biases. This section aims to describe each of those limitations and give suggestions for further investigation.

As the research was conducted in two different countries – Austria and Russia – the sample with a size of 100 people could not be significantly representative because the ratio of both groups was 3:1. This relevant difference might blush the research outcome as the initial aim of the study is to identify the potential impact of the stress or social norms on the two different cultural settings. However, the limitation of a small number of representatives from Russia who share different viewpoints regarding sustainable behavior might lead to losing sight of the patterns that the research aimed to assess. It is suggested for future research to replicate the current studies across a larger sample size and multiple countries. Another problem regarding the sample is the diversity of the respondents. Most of the respondents were young adults between 18-30 years. From one perspective, the sample fits well with the research purpose to measure the difference between social norms, stress, and sustainable behavior. However, the analyses of middle-aged individuals might give other findings as their commitment to the different aspects of social norms might vary differently.

The second issue regarding the research design lies in three matters: the scope of the research topic, biases of self-reported data, and the issue of experimental tools. The current study covers many aspects of life: personal attitudes, behaviors, well-being, achievements, etc. The depth of the research might be negatively affected by the broad focus of the study as the participants had to take more time to measure multiple facets of their life than was expected initially. The concepts of social norms and sustainable behavior are multifaceted and require many tools to evaluate each dimension. The complexity of the survey and its length might also prevent the respondents from providing accurate self-assessments. The other issue of the research design is self-reported data that can be biased by selective memory or exaggeration. Collecting data through self-reports might not be accurate, mainly when the actual behavior of the

respondents should be observed rather than their values and attitudes. Some studies regarding pro-environmental behavior and social norms were conducted in controlled environments such as hotels where researchers could ask participants to self-report their attitudes and measure respondents' consumption. The last issue regarding the research design was the priming approach. The technique applied to induce stress failed to change the stress or mental state. On the contrary, the priming part, which asked participants to describe and evaluate their current stressful situation, compromised the responses collected in the stress section lately. Initially, it was assumed that the stress stimulus would increase the tension in the stress condition and increase the respondents' stress. As there is a relatively low number of previous studies applying priming tools in survey experiments, further research should be suggested to adapt multiple stress priming tools and reconsider the sequence of measuring tools to avoid inconsistencies.

Finally, the contextual difference of the notion of sustainable behavior in Russia might be considerably different from that in European countries. The notion of sustainability is relatively new in Russia, and the lack of infrastructure and environmental knowledge made it hard for respondents in the Russian group to accurately self-measure their sustainable behavior.

8. Conclusion

This research aimed to contribute to the existing academic studies on sustainable behavior through in-depth analyses of the factors affecting individual behavior, attitudes, and norms in two different cultural settings. In this study, the quantitative analysis suggests a significant connection between sustainable behavior and its main factors with different dimensions of the dominant social paradigm, referred to as social norms. The strongest connection in this relation was observed between the commitment to technological and political aspects of life and some factors of sustainable behavior, such as affinity towards diversity, feeling of indignation due to environmental destruction, and pro-environmental behavior. Moreover, the more comprehensive analysis showed that these social dimensions act as a moderator in the relationship between sustainable behavior and quality of life. More precisely, the moderating role of trustworthiness in the political system of the respondents reflects that a high level of political commitment might strengthen the impact of the future orientation of the respondents on their quality of life. In other words, confidence in the governments and authorities gives more incentives for a person to think about long-term development as the goals, in their perspective, tend to be more feasible and, therefore, lead to a higher self-assessment of quality of life.

Besides, the negative correlation between stress and quality of life corresponds to the current literature review. The study has also revealed that, contrary to expectations, stress or mental pressure has not shown a significant association with the factors of sustainable behavior. However, it has a significant correlation with different dimensions of social norms. According to the results, it might be assumed that stress can increase people's technological optimism regarding environmental issues and, at the same time, can be a consequence of a low commitment to the political system of the country of residence. Besides, it was observed that the impact of stress on people's perception of environmental and social problems was not subject to cultural or socio-contextual settings. Nevertheless, the stress expressed by the respondents has not been high enough to alter either the individual's behavior or the relationship between sustainable behavior and quality of life.

The conceptual framework applied to the study is based on the works of Corral-Verdugo (2006, 2011, 2013), Kilbourne (1998, 2001, 2004), Fleury-Bahi and Navarro (2017), Steg

and De Groot (2019), and Gatersleben (2001) that focused on the examination of the relationship between pro-environmental behavior, values, worldviews, and quality of life. Even though those studies provided essential insights into those concepts, among the existing studies, there needed to be a quantitative investigation of the impact of different aspects of life and stress on sustainable behavior. The current study addresses the gap in the academic literature by discovering which factors might significantly impact an individual's behavior to act more sustainably. Additionally, the research aimed to answer the further impact of those factors on the quality of life and what role it plays in the relationship between sustainable behavior and the well-being variable. The data employed in this study was received through a survey of 65 respondents from European countries and 35 from Russia. The data has a unique feature as it was collected during the post-pandemic (COVID-19) recovery period and the acceleration of the energy crisis due to the political conflict between Ukraine and Russia. Those factors provided a better condition for the study by allowing the author to measure the different stress levels and quality of life among the respondents and test whether the relevant theories work in the new setting.

The thesis contributes to academic knowledge on sustainable behavior, stress, social norms, and quality of life that helps social psychology practitioners to design new frameworks for public interventions. Although the current research applies the dominant social paradigm concept to measure one's social norms, the author is confident that the implication of the categorization by economic, political, and technological aspects gave different insights in contrast to the previous examinations of the impact of social norms on sustainable behavior. However, the research still held limitations regarding the insufficient sample size, research designs issue, and cultural biases. Those limitations might cast some doubt on the validity and reliability of the findings. Nevertheless, those limitations provide suggestions for future research by expanding national datasets to observe the direct and indirect links between mental state, behavior, and norms. New findings would provide a new approach that helps environmental psychology practitioners better understand interactions between human beings and change individuals' attitudes and actions into more sustainable ones.

List of references

Amel, E. L., Manning, C. M., & Scott, B. A. (2009). Mindfulness and Sustainable Behavior: Pondering Attention and Awareness as Means for Increasing Green Behavior. Ecopsychology, pp. 14-25. doi:10.1089/eco.2008.0005

Arnocky, S., Milfont, T. L., & Nicol, J. R. (2015). Time Perspective and Sustainable Behavior Evidence for the Distinction Between Consideration of Immediate and Future Consequences. Environment and Behavior, 46(5), pp. 556-582. doi:10.1177/0013916512474987

Aronson, E., Wilson, T., & Sommers, S. (2019). *Social Psychology.* United States of America: PEARSON.

Bamberg, S., Hunecke, M., & Blobaum, A. (2007). Social context, personal norms and the use of public transportation: Two field studies. Journal of Environmental Psychology, 27(3), pp. 190-203. doi:10.1016/j.jenvp.2007.04.001

Bilotta, E., Vaid, U., & Evans, G. W. (2019). Environmental Stress. In J. I. de Groot, & L. Steg, Environmental Psychology: An Introduction, pp. 37-43. Hoboken: John Wiley & Sons Ltd.

Bonnes, M., Scopelliti, M., & Fornara, F. (2019). Urban Environmental Quality. In L. Steg, & J. I. De Groot, Environmental Psychology: An Introduction, pp. 113-122. John Wiley & Sons Ltd.

Cao, Y. (2014). Sustainable Behavior, Perceived Globalization Impact, World-Mindedness, Identity, and Perceived Risk in College Samples from the United States, China, and Taiwan. *ECOPSYCHOLOGY*, pp. 218-233. doi:DOI: 10.1089/eco.2014.0035

Cella, D. F. (1994). Quality of life: Concepts and definition. *Journal of Pain and Symptom Management, 9*(3), pp. 186-192. doi:10.1016/0885-3924(94)90129-5

Cialdini, R. B. (2007). Influence: The Psychology of Persuasion. New York: Harper Collins.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey, The handbook of social psychology, pp. 151–192. McGraw-Hill .

Cialdini, R., Demaine, L., Sagarin, B., Barrett, D., Rhoads, K., & Winter, P. (2006). Managing social norms for persuasive impact. *SOCIAL INFLUENCE, 1*(1), pp. 3-15. doi: 10.1080/15534510500181459

Contzen, N., Mosler, H.-J., & Kraemer-Palacios, S. (2019). Environmental Issues in Low- and Middle-Income. In L. Steg, & J. I. De Groot, Environmental Psychology: An Introduction, pp. 330-340. John Wiley & Sons Ltd.

Corral-Verdugo, V., & Pinheiro, J. (2006). Sustainability, future orientation and water conservation. *Revue européenne de psychologie appliquée*, pp. 191-198. doi:10.1016/j.erap.2005.09.002

Corral-Verdugo, V., Bonnes, M., Tapia-Fonllem, C., Fraijo-Sing, B., Carrus, G., & Frı´as-Armenta, M. (2009). Correlates of pro-sustainability orientation: The affinity towards diversityq. *Journal of Environmental Psychology, 29*, pp. 34-43. doi:10.1016/j.jenvp.2008.09.001

Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social-affective engagement and goal flexibility. Nature reviews. Neuroscience, 13(9), pp. 636–650. doi:10.1038/nrn3313

De Groot, J. I., & Thøgersen, J. (2019). Values and Pro-Environmental Behaviour. In L. Steg, & J. I. De Groot, Environmental Psychology: An Introduction, pp. 167-178. John Wiley & Sons Ltd.

De Young, R. (1996). Some Psychological Aspects of Reduced Consumption Behavior: The Role of Intrinsic Satisfaction and Competence Motivation. *Environment and Behavior, 28*(3), pp. 358-409. doi:10.1177/0013916596283005

Demarque, C., & Girandola, F. (2017). Commitment and pro-environmental behaviors: Favoring positive human-environment interactions to improve quality of life. In G. Fleury-Bahi, E. Pol, & O. Navarro, Handbook of environmental psychology and quality of life research, pp. 197–210. Switzerland: Springer International Publishing. doi:10.1007/978-3-319-31416-7

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. The Journal of Abnormal and Social Psychology, 51(3), pp. 629–636. doi:10.1037/h0046408

Dunlap, R., & Van Liere, K. (1984). Commitment to the Dominant Social Paradigm and Concern for Environmental Quality. *Social Science Quarterly, 65*(4), pp. 1013-1028. Retrieved from https://www.researchgate.net/publication/260419263_Commitment_to_the_Dominant_Social_Paradigm_and_Concern_for_Environmental_Quality

Fallowfield, L. (2009). What is quality of life? *What is...?*, pp. 1-8. Retrieved from http://www.bandolier.org.uk/painres/download/What%20is%202009/What_is_QOL.pdf

Félonneau, M.-L., & Causse, E. (2017). Pro-environmentalism, Identity Dynamics and Environmental Quality of life. In G. Fleury-Bahi, E. Pol, & O. Navarro, Handbook of Environmental Psychology and Quality of Life Research, pp. 211-228. Switzerland: Springer International Publishing. doi:10.1007/978-3-319-31416-7

Fleury-Bahi, G., & Ndobo, A. (2017). Spatial Inequalities, Geographically-Based Discrimination and Environmental Quality of Life. In G. Fleury-Bahi, E. Pol, & O. Navarro, Handbook of environmental psychology and quality of life research, pp. 329-343. Switzerland: Springer International Publishing. doi:10.1007/978-3-319-31416-7

Fleury-Bahi, G., Pol, E., & Navarro, O. (2017). Introduction: Environmental Psychology and Quality of Life. B G. Fleury-Bahi, E. Pol, & O. Navarro, *Handbook of Environmental Psychology and Quality of Life Research*, pp. 1-8. Switzerland: Springer International Publishing. doi:10.1007/978-3-319-31416-7

Gatersleben, B. (2001). Sustainable household consumption and quality of life: the acceptability of sustainable consumption patterns and consumer policy strategies. *International Journal of Environment and Pollution, 15*(2), pp. 200-216. doi:10.1504/IJEP.2001.000596

Gatersleben, B., & Griffin, I. (2017). Environmental Stress. B G. Fleury-Bahi, E. Pol, & O. Navarro, *Handbook of Environmental Psychology and Quality of Life Research*, pp. 469-484. Switzerland: Springer International Publishing. doi:10.1007/978-3-319-31416-7

Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review. International Journal of Psychology, 49(3), pp. 141-157. doi:10.1002/ijop.12034

Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A Room with a Viewpoint: Using Social Norms to MoA Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels. Journal of Consumer Research, 35(3), pp. 472–482. doi:10.1086/586910

Haslam, S. A., Reicher, S. D., & Birney, M. E. (2016). Questioning authority: New perspectives on Milgram's 'obedience' research and its implications for intergroup relations. Current Opinion in Psychology, 11, 6–9. Current Opinion in Psychology, 11, pp. 6-9. doi:10.1016/j.copsyc.2016.03.007

Hennecke, M., Bleidorn, W., & Deniss, J. (2014). A Three–Part Framework for Self–Regulated Personality Development across Adulthood. European Journal of Personality, 28(3), pp. 289-299. doi:10.1002/per.1945

Hopwood, C. J., Schwaba, T., & Bleidorn, W. (2021). Personality changes associated with increasing environmental concerns. Journal of Environmental Psychology. doi:10.1016/j.jenvp.2021.101684

Iwata, O. (2002). Coping style and three psychological measures associated with environmentally responsible behavior. *Social Behavior and Personality An International Journal, 30*(7), pp. 661-669. doi:10.2224/sbp.2002.30.7.661

Jans, L., & Fielding, K. (2019). The Role of Group Processes in Environmental Issues, Attitudes, and Behaviours. In L. Steg, & J. I. De Groot, Environmental Psychology: An Introduction, pp. 228-237. John Wiley & Sons Ltd.

Kahneman, D. (2011). Thinking, Fast and Slow. Farrar, Straus and Giroux.

Keizer, K., & Schultz, P. W. (2019). Social Norms and Pro-Environmental Behaviour. In L. Steg, & J. I. de Groot, Environmental Psychology: An Introduction, pp. 179-178. Hoboken: John Wiley & Sons Ltd.

Keizer, K., Lindenberg, S., & Steg, L. (2008). The Spreading of Disorder. Science, 322(5908), pp. 1681-1685. doi:10.1126/science.1161405

Kilbourne, W. (2004). Sustainable communication and the dominant social paradigm: can they be integrated? *Marketing Theory, 4*(3), pp. 187-208. doi:10.1177/1470593104045536

Kilbourne, W. E., & Polonsky, M. J. (2005). Environmental Attitudes and their Relation to the Dominant Social Paradigm Among University Students In New Zealand and Australia. Australasian Marketing Journal (AMJ), 13(2), pp. 37-48. doi:10.1016/S1441-3582(05)70076-8

Kilbourne, W., Beckmann, S., Lewis, A., & Van Dam, Y. (2001). A multinational examination of the role of the dominant social paradigm in environmental attitudes of university students. *ENVIRONMENT AND BEHAVIOR, 33*(2), pp. 209-228. doi:10.1177/00139160121972954

Kilbourne, W., Prothero, A., & McDonagh, P. (1997). Sustainable Consumption and the Quality of Life: A Macromarketing Challenge to the Dominant Social Paradigm. *Journal of Macromarketing, 17*(1), pp. 4-24. doi:10.1177/027614679701700103

Lahey, B. B. (2009). Public health significance of neuroticism. American Psychologist, 64(4), pp. 241–256. doi:10.1037/a0015309

Lastovicka, J., Bettencourt, L., Hughner, R., & Kuntze, R. (1999). Lifestyle of the Tight and Frugal: Theory and Measurement. *26*(1), pp. 85-98. doi:10.1086/209552

Lazarus, R. S. (1966). *Psychological stress and the coping process.* New York: McGraw Hill.

Lea, M., Spears, R., & de Groot, D. (2001). Knowing me, knowing you: Anonymity effects on social identity processes within groups. . Personality and Social Psychology Bulletin, 27, pp. 526–537. doi:10.1177/0146167201275002

Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. Journal of Personality and Social Psychology, 75(1), pp. 5-18. doi:10.1037/0022-3514.75.1.5

Manning, C. (2009). *The Psychology of Sustainable Behavior, Tips for empowering people to take environmentally positive action.* Minnesota Pollution Control Agency.

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McDonald, R. I., & Crandall, C. S. (2015). Social norms and social influence. Current Opinion in Behavioral Sciences, 3, pp. 147-151. doi:10.1016/j.cobeha.2015.04.006

Milfont, T., Bain, P., Kashima, Y., Corral-Verdugo, V., Pasquali, C., Johansson, L.-O., Einarsdóttir, G. (2018). On the Relation Between Social Dominance Orientation and Environmentalism: A 25-Nation Study. Social Psychological and Personality Science, 9(7), pp. 802-814. doi:10.1177/1948550617722832

Morewedge, C. K., & Kahneman, D. (2010). Associative processes in intuitive judgment. Trends in Cognitive Science, pp. 435-440. doi:10.1016/j.tics.2010.07.004

Moser, G. (2009). Quality of life and sustainability: Toward person–environment congruity. *Journal of Environmental Psychology*, pp. 351-357. doi:10.1016/j.jenvp.2009.02.002

Musick, M., & Wilson, J. (2003). Volunteering and depression: The role of psychological and social resources in different age groups. *Social Science and Medicine*, pp. 259-269. doi:10.1016/S0277-9536(02)00025-4

Oldfield, J. (2001). Russia, Systemic Transformation and the Concept of Sustainable Development. *Environmental Politics, 10*(3), pp. 94-110. doi:10.1080/714000556

Onwezen, M. C., Antonides, G., & Bartels, J. (2013). The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. Journal of Economic Psychology, 39, pp. 141-153. doi:10.1016/j.joep.2013.07.005

Pampel, F. C. (2014). The Varied Influence of SES on Environmental Concern. Social Science Quarterly, 95(1), pp. 57-75. doi:10.1111/ssqu.12045

Panno, A., Giacomantonio, M., Carrus, G., Maricchiolo, F., Pirchio, S., & Mannetti, L. (2018). Mindfulness, Proenvironmental Behavior, and Belief in Climate Change: The Mediating Role of Social Dominance. Environment and Behavior, 50(8), pp. 864-888. doi:10.1177/0013916517718887

Passafaro, P., & Bonnes, M. (2011). Distinguishing the sources of normative influence on proenvironmental behaviors: The role of local norms in household waste

recycling. Group Processes & Intergroup Relations, 14(5), pp. 623-635. doi:10.1177/1368430211408149

Pirages, D.C. and Ehrlich, P.R. (1974) Ark II: Social Response to Environmental Imperatives.

Pol, E. (2002). The Theoretical Background of the City-Identity-Sustainability Network. *Environment and Behavior, 34*(1), pp. 8-25. doi:10.1177/0013916502034001002

Post, S. (2005). Altruism, Happiness, and Health: It's Good to Be Good. International Journal of Behavioral Medicine, 12(2), 66-77. doi:10.1207/s15327558ijbm1202_4

Ribeiro, Í., Pereira, R., Freire, I., de Oliveira, B., Casotti, C., & Boery, E. (2018). Stress and Quality of Life Among University Students: A Systematic Literature Review. *Health Professions Education, 4*(2), pp. 70-77. doi:10.1016/j.hpe.2017.03.002

San Francisco, CA: Freeman.

Schultz, P. W., Khazian, A. M., & Zaleski, A. C. (2008). Using Normative Social Influence to Promote Conservation Among Hotel Guests. Social Influence, 3(1), pp. 4-23. doi:10.1080/15534510701755614

Schultz, P. W., Messina, A., Tronu, G., Limas, E. F., Gupta, R., & Estrada, M. (2016). Personalized normative feedback and the moderating role of personal norms: a field experiment to reduce residential water consumption. Environment and Behavior, 48(5), pp. 686–710. doi:10.1177/0013916514553835

Schwartz , C., Meisenhelder, J., Ma, Y., & Reed, G. (2003). Altruistic social interest behaviors are associated with better mental health. *Psychosom Med*, pp. 778-785. doi:10.1097/01.psy.0000079378.39062.d4

Shafer, W. E. (2006). Social Paradigms and Attitudes Toward Environmental Accountability. Journal of Business Ethics, 65, pp. 121-147. doi:10.1007/sl0551-005-4606-2

Somerville, L. H. (2013). The Teenage Brain: Sensitivity to Social Evaluation. Current Directions in Psychological Science, 22(2), pp. 121–127. doi:10.1177/0963721413476512

Spears, R., & Postmes, T. (2013). Group Identity, Social Influence and Collective Action Online: Extensions and Applications of the SIDE Model. In S. S. Sundar, The Handbook of the Psychology of Communication Technology, pp. 23–46. Wiley Blackwell.

Standard Of Living By Country 2021. (2021). Retrieved September 31, 2021, from World Population Review: https://worldpopulationreview.com/country-rankings/standard-of-living-by-country

Steg, L., & Gifford, R. (2005). Sustainable transportation and quality of life. Journal of Transport Geography, 13, pp. 59-69. doi:10.1016/j.jtrangeo.2004.11.003

Steg, L., & Nordlund, A. (2019). Theories to Explain Environmental Behaviour. In L. Steg, & J. I. De Groot, Environmental psychology: An introduction, pp. 217-227. John Wiley & Sons Ltd.

Steg, L., Van Den Berg, A. E., & De Groot, J. I. (2019). Environmental Psychology: History, Scope, and Methods. In L. Steg, & J. I. De Groot, Environmental psychology: An introduction, pp. 1-11. John Wiley & Sons Ltd.

Suárez, E., Corral-Verdugo, V., Gil-Giménez, D., & Hernández, B. (2020). Determinants of Frugal Behavior: The Influences of Consciousness for Sustainable Consumption, Materialism, and the Consideration of Future Consequences. Frontiers in Psychology, 11, pp. 1-12. doi:10.3389/fpsyg.2020.567752

Tapia-Fonllem, C., Corral-Verdugo, V., & Fraijo-Sing, B. (2017). Sustainable Behavior and Quality of Life. B G. Fleury-Bahi, E. Pol, & O. Navarro, *Handbook of Environmental Psychology and Quality of Life Research*, pp. 173-184. Switzerland: Springer International Publishing. doi:10.1007/978-3-319-31416-7

Tapia-Fonllem, C., Corral-Verdugo, V., Fraijo-Sing, B., & Durón-Ramos, M. (2013). Assessing Sustainable Behavior and its Correlates: A Measure of Pro-Ecological, Frugal, Altruistic and Equitable Actions. *Sustainability, 5*(2), pp. 711-723. doi:10.3390/su5020711

Taylor, D., Bramoweth, A., Grieser, E., Tatum, J., & Roane, B. (2013). Epidemiology of insomnia in college students: relationship with mental health, quality of life, and substance use difficulties. *Behavior therapy, 44*(3), pp. 339-348.

Utsey, S., Bolden, M., & Brown, C. (2001). Assessing quality of life in the context of culture. B J. Ponterotto, L. Suzuki, & P. Meller, *Handbook of Multicultural Assessment: Clinical, Psychological, and Educational Applications*, pp. 191–216. San Francisco: Jossey-Bass/John Wiley & Sons Ltd.

Uzzell, D., & Moser, G. (2006). On the quality of life of environments. *European Review of Applied Psychology*, pp. 1-4. doi:10.1016/j.erap.2005.02.007

Van Den Berg, A. E., Joye, Y., & Vries, S. d. (2019). Health Benefits of Nature. In L. Steg, & J. I. de Groot, Environmental Psychology: An Introduction, pp. 55-64. Hoboken: John Wiley & Sons Ltd.

Van der Werff, E., Steg, L., & Keizer, K. (2013). I Am What I Am, by Looking Past the Present: The Influence of Biospheric Values and Past Behavior on Environmental Self-Identity. Environment and Behavior, 46, pp. 626-657. doi:10.1177/0013916512475209

Vignoles, L. V., Regalia, C., Manzi, C., & Golledge, J. (2006). Beyond self-esteem: Influence of multiple motives on identity construction. Journal of Personality and Social Psychology, 90(2), pp. 308–333. doi:10.1037/0022-3514.90.2.308

Wells, N. M., & Lekies, K. S. (2006). Nature and the Life Course: Pathways from Childhood Nature Experiences to Adult Environmentalism. Children, Youth and Environments, 16(1), pp. 1-24.

White, K., Habib, R., & Hardisty, D. (2019). How to SHIFT Consumer Behaviors to be More Sustainable: A Literature Review and Guiding Framework. *Journal of Marketing, 83*(3), pp. 22-49. doi:10.1177/0022242919825649

World Health Organization (2021). WHOQOL User Manual. World Health Organization, Department of Mental Health and Prevention of Substance Abuse, Geneva, pp. 11. Retrieved September 31, 2021, from https: www.who.int/tools/whoqol

Appendices

Appendix 1. The List of Questions Used in the Survey.

Section 1. Experimental section

- Shortly describe the stressful situation that you recently experienced in 5-20 words.
- Please indicate the extent to which the statements apply to the stressful situation that you have just described: I feel sad about it.
- Please indicate the extent to which the statements apply to the stressful situation that you have just described: The stress that I described is long-term.
- The level of stress described corresponds to

Section 2. Sustainability

2.1 Affinity towards diversity

- I enjoy being with people of every social class
- I enjoy working/studying with people of difference cultural backgrounds
- The more the variety of cultural backgrounds surrounds me, the better for me
- I feel comfortable to live outside of my home country of my residence
- I enjoy working/studying with people that are older or younger than me

2.2. Indignation due environmental damage

- I feel annoyed when I see someone throws their cigarette buts or their trash on the floor
- I feel bad when I see someone gets hurt
- I feel bad when I see someone harms an animal, person or plant
- I feel annoyed when I watch news regarding pollution
- I feel annoyed when I see my friend wasting too much water

2.3. Pro-ecological behavior

- I usually collect and recycle used paper or plastics
- I usually bring empty bottles, ink cartridges, or something that can be recycled to a recycling bin
- I usually buy convenience food and products in refillable packages

- I usually encourage other people to think about environmental issues

2.4. Altruism

- I feel better if I can assist or help people who fall or get hurt
- I feel better if I can support people in need even if I don t know them
- I feel better if I can donate blood, money, or provide other humanitarian support
- I feel better if I can visit and help the sick, people with disabilities, elderly people, or orphans at hospitals/homes

2.5. Frugality

- I usually do not buy new things if old ones function (car, TV, fridge, etc.)
- I usually do not buy more food than needed
- I usually buy organic goods
- I prefer to walk or ride a bike rather than using a car
- I consider my consumption behavior as sustainable

2.6. Consideration of future consequences

- My behavior and attitude are not only influenced by immediate outcomes
- It upsets me to be late for appointments
- I do find it important to think about negative future outcomes
- When I want to achieve something, I set goals and consider specific means for reaching those goals
- I meet my obligations to friends and authorities on time
- I believe that a person s day should be planned ahead each morning

2.7. Sustainable Behavior

- I am familiar with the term of sustainable behavior
- I consider my behavior as sustainable

2.8. Altruism – additional

- How likely is it that you would like to meet with me (the author) after this survey for 15 minutes and help with an experiment conduct?
- How likely is it that you would like to give me (the author) extra 10 minutes to help me with another survey?

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Section 3. Quality of life and Stress

3.1. Quality of life

- I have good relations with friends, colleagues, neighbors, and family
- I have an opportunity to get a good education
- I experience nice, enjoyable and exciting things almost everyday
- I have the same opportunities as other people around me
- I am in a good health state
- I have an access to adequate health care
- I have enough money to buy and do the things that are necessary and pleasing
- I feel safe and protected from crime and accidents on the streets and at home

3.2. Stress

- I don t usually have time for leisure
- I don t have time for my work/studies
- I feel that I haven t achieved my goals for the past few months/weeks
- In the past few months, I felt nervous and stressed
- In the past few months, I did not feel confident about my ability to handle personal problems
- In the past few months, I struggled to control irritations in my life

Section 4. Social norms

4.1. Dominant social paradigm – Economic dimension

- Economic goals are more important than environmental goals
- I focus too much on economic measures of wellbeing (economic growth, GDP, inflation rate, etc.)
- If the economy continues to grow, everyone benefits
- Individual behavior should be determined by economic self-interest
- The environmental and social issues could be solved by economic growth

4.2. Dominant social paradigm – Technological dimension

- Advancing technology provides us with hope for the future
- The advantages of technology outweigh its bad effects

- The lack of natural resources in the future due to human impacts of the environment will be solved by technology
- When environmental or social problems are bad enough, technology will solve them
- Advancing technology is out of our control

4.3. Dominant social paradigm – Political dimension

- The average person should have more input in dealing with social problems
- Political equality can be attained only by major changes in election procedures
- Most environmental problems can be solved with new legislations
- Corporation interests have a weaker political impact than individuals
- I trust the parliament of the country of my residence
- I trust the legal system of the country of my residence
- I trust the politicians of the country of my residence

Section 5. Demographic data.

- Please, indicate with which gender you associate yourself.
- Please, state your age (in full years)
- Please indicate your current education level
- Your academic qualification/s
- How much money do you usually spend every month (including spending on your rent, petrol, etc.)?
- Country of citizenship:
- Indicate whether the country where you live differs from the one where you are a resident.
- If you choose "yes" in the previous question please indicate your country of residence

Appendix 2. List of Introduction Texts in the Survey.

Survey Introduction.

Sustainable behavior is one of the concepts that can encourage sustainable consumption among people. The research examines individual sustainable behavior. You will be asked to answer questions regarding your habits and attitudes towards sustainability, quality of life, and commitment to your social norms. Please be assured that your responses will be kept confidential.

The study should take you max. 15 min. to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the principal researcher, please e-mail Manh Thong Do (Tom) at 61903850@modul.ac.at.

Random assignment of the participants

Please pick a number between 1 and 10.

Notes: Those who chose even numbers were assigned to the experimental group.

Section 1. Experimental section

Shortly describe the stressful situation that you recently experienced in 5-20 words. Example: Two days ago, when I was driving, I got into a car accident.

Section 2. Sustainability

Sustainability is the set of actions that lead to protecting and saving our planet's socio-physical resources, considering the integrity of animal and plant species and well-being of the future and current generations (Corral-Verdugo et al., 2012). Please, share your sustainability habits and attitude towards it within this section.

Section 3. Quality of life and Stress

This section focuses on measuring your Quality of Life and Stress Level. Please indicate how strongly you agree with each statement using the following scale:

Section 4. Social norms

In this section, you will be addressed questions that aim to assess the economic, technological, and political aspects of social norms. Please, share some facts and your attitudes towards environmental issues from different perspectives.

Section 5. Demographic data.

Finally, please, provide some general information about yourself.

End Message.

Should you have any questions regarding the research, please contact Manh Thong Do (Tom) at 61903850@modul.ac.at .

P.S. There were some questions that asked you to help me (the author) after the survey. Many thanks again, your help has already been provided and no further action from your side is needed.

Appendix 3. Factor analysis (Part 1)

Variables	Items	PC1	PC2	PC3	PC4
Affinity towards diversity	ATD1	0.731	-0.290	0.162	0.589
	ATD2	0.798	-0.239	0.106	-0.401
	ATD3	0.814	-0.287	-0.141	-0.175
	ATD4	0.526	0.634	-0.548	0.097
	ATD5	0.400	0.758	0.500	-0.049
Indignation due environmental damage	Indignation1	0.800	-0.058	-0.090	-0.456
	Indignation2	0.585	0.598	-0.350	0.395
	Indignation3	0.605	0.554	0.457	-0.136
	Indignation4	0.685	-0.452	-0.370	-0.022
	Indignation5	0.622	-0.530	0.407	0.372
Pro-ecological behavior	PEB1	0.813	-0.399	-0.084	0.415
	PEB2	0.816	-0.321	0.381	-0.293
	PEB3	0.661	0.699	0.228	0.153
	PEB4	0.837	0.149	-0.470	-0.238
Altruism	Altruism1	0.771	0.549	0.232	0.226
	Altruism2	0.866	-0.053	0.186	-0.461
	Altruism3	0.775	-0.548	0.156	0.273
	Altruism4	0.830	0.058	-0.555	0.017
Frugality	Frugality1	0.437	0.825	-0.020	0.339
	Frugality2	0.738	0.005	-0.530	-0.108
	Frugality3	0.665	-0.445	0.353	0.459
	Frugality4	0.698	0.212	0.508	-0.454
	Frugality5	0.769	-0.280	-0.246	-0.074
Consideration of future consequences	COFC1	0.704	0.239	-0.308	-0.319
	COFC2	0.674	-0.126	0.248	-0.525
	COFC3	0.583	0.198	-0.499	0.511
	COFC4	0.774	0.011	0.188	0.129
	COFC5	0.414	-0.659	0.355	0.394
	COFC6	0.085	0.770	0.566	0.216
Quality of life	QOL1	0.524	0.277	0.738	-0.011
	QOL2	0.723	-0.060	0.249	0.517
	QOL3	0.693	0.296	0.024	-0.562
	QOL4	0.381	0.782	-0.330	0.257
	QOL5	0.804	-0.232	-0.036	-0.011
	QOL6	0.756	-0.308	-0.335	0.123
	QOL7	0.790	0.017	-0.344	-0.104
	QOL8	0.656	-0.303	0.146	-0.121
Stress	Stress1	0.616	0.444	-0.514	0.375
	Stress2	0.557	0.687	-0.049	-0.403
	Stress3	0.554	0.350	0.711	0.234
	Stress4	0.733	-0.451	0.035	0.155
	Stress5	0.807	-0.322	0.022	-0.247
	Stress6	0.828	-0.314	-0.113	-0.060

Appendix 3. Factor analysis (Part 2)

Variables	Items	PC1	PC2	PC3	PC4
Dominant social paradigm – Economic dimension	DSP.E1	0.758	-0.063	-0.555	0.250
	DSP.E2	0.430	0.900	0.022	-0.061
	DSP.E3	0.845	-0.162	-0.190	-0.236
	DSP.E4	0.762	-0.077	0.451	0.450
	DSP.E5	0.808	-0.178	0.283	-0.380
Dominant social paradigm – Technological dimension	DSP.T1	0.586	0.788	-0.054	-0.169
	DSP.T2	0.716	0.002	-0.417	0.546
	DSP.T3	0.846	-0.338	-0.189	-0.169
	DSP.T4	0.839	-0.197	0.042	-0.406
	DSP.T5	0.654	-0.017	0.696	0.293
Dominant social paradigm – Political dimension	DSP.P1	0.307	-0.345	0.842	-0.060
	DSP.P2	0.439	0.541	-0.196	-0.130
	DSP.P3	0.054	0.689	0.278	0.657
	DSP.P4	0.069	-0.692	-0.286	0.574
	DSP.P5	0.914	0.002	-0.060	-0.002
	DSP.P6	0.907	-0.044	-0.094	-0.101
	DSP.P7	0.912	-0.091	-0.030	0.103

Appendix 4. Correlation matrix between main constructs and demographic variables

Variables	Age	Gender	Academic Qualification	Monthly Spending	Education Level
ATD	-0.087	0.114	0.008	-0.157	0.060
ATD p-value	0.3874	0.2577	0.9391	0.1177	0.5501
Indignation	-0.077	-0.182	-0.051	-0.143	0.047
Indignation p-value	0.4436	0.0699	0.6171	0.1545	0.6432
PEB	-0.043	-0.119	-0.081	-0.158	-0.021
PEB p-value	0.6725	0.2382	0.4224	0.1154	0.8357
Altruism	-0.106	-0.054	0.053	-0.230	-0.084
Altruism p-value	0.2923	0.5906	0.6008	0.0215*	0.4047
Frugality	-0.062	0.033	-0.033	-0.228	0.026
Frugality p-value	0.5373	0.7445	0.742	0.0227*	0.7936
COFC	0.018	0.009	-0.040	0.168	0.047
COFC p-value	0.8574	0.9307	0.6922	0.0947	0.6422
AltruismAdd	0.024	0.217	-0.024	0.333	0.104
AltruismAdd p-value	0.81	0.03*	0.8094	0.0007***	0.3015
QOL	-0.106	-0.021	-0.098	0.031	0.034
QOL p-value	0.2924	0.8344	0.3315	0.7606	0.7406
Stress	-0.016	-0.210	0.137	0.012	-0.012
Stress p-value	0.876	0.0358*	0.1729	0.9054	0.9044
DSP.E	0.235	0.244	0.092	0.306	0.180
DSP.E p-value	0.0184*	0.0144*	0.3651	0.0019**	0.0725
DSP.T	0.208	0.214	0.079	0.316	0.201
DSP.T p-value	0.0376*	0.0329*	0.4333	0.0013**	0.0453*
DSP.P	-0.044	-0.022	0.020	0.041	-0.072
DSP.P p-value	0.6621	0.826	0.8416	0.6819	0.4759
Sustainable Behavior (self-e.)	0.024	0.097	0.045	0.014	0.174
Sustainable Behavior (self-e.) p-value	0.8093	0.3361	0.655	0.8936	0.0839
Sustainable Behavior	1.000	-0.096	-0.060	-0.045	0.012
Sustainable Behavior p-value	NA	0.340	0.554	0.654	0.9087
Gender	0.445	1.000	0.297	0.113	0.211
Gender p-value	0***	NA	0.0027**	0.264	0.0354*
Monthly Spending	0.282	0.113	0.233	1.000	0.267
Monthly Spending p-value	0.0044**	0.264	0.0198*	NA	0.0072**
Age	1.000	0.445	0.455	0.282	0.360
Age p-value	NA	0***	0***	0.0044**	0.0002***
Academic Qualification	0.455	0.297	1.000	0.233	0.473
Academic Qualification p-value	0***	0.0027**	NA	0.0198*	0***
Education Level	0.360	0.211	0.473	0.267	1.000
Education Level p-value	0.0002***	0.0354*	0***	0.0072**	NA

Appendix 5. Linear regression models predicting Quality of Life (Part 1)

Dependent Variable	Independent Variable(S)	R-Squared	Adj.R-Squared	P-Value	Signif. Codes
QOL	Stress + DSP.E	0.144	0.127	0.001	***
QOL	Stress + DSP.E + DSP.T + DSP.P	0.372	0.345	0.000	***
QOL	Stress + DSP.E + DSP.T	0.254	0.230	0.000	***
QOL	Stress + DSP.E + DSP.T + DSP.P + SB2	0.386	0.354	0.000	***
QOL	Stress	0.134	0.125	0.000	***
QOL	DSP.E	0.027	0.017	0.105	
QOL	DSP.P	0.168	0.159	0.000	***
QOL	DSP.T	0.158	0.150	0.000	***
QOL	SB2	0.006	-0.005	0.462	
QOL	Stress + DSP.T	0.244	0.228	0.000	***
QOL	Stress + DSP.P	0.257	0.242	0.000	***
QOL	Stress + SB2	0.149	0.131	0.000	***
QOL	DSP.E + DSP.T	0.165	0.148	0.000	***
QOL	DSP.E + DSP.P	0.206	0.190	0.000	***
QOL	DSP.E + SB2	0.033	0.014	0.192	
QOL	DSP.T + DSP.P	0.317	0.303	0.000	***
QOL	DSP.T + SB2	0.173	0.156	0.000	***
QOL	DSP.P + SB2	0.170	0.153	0.000	***
QOL	Stress + DSP.E + DSP.P	0.278	0.255	0.000	***
QOL	Stress + DSP.E + SB2	0.160	0.134	0.001	***
QOL	Stress + DSP.T + DSP.P	0.369	0.349	0.000	***
QOL	Stress + DSP.T + SB2	0.267	0.244	0.000	***
QOL	Stress + DSP.P + SB2	0.265	0.242	0.000	***
QOL	DSP.E + DSP.T + DSP.P	0.319	0.297	0.000	***
QOL	DSP.E + DSP.T + SB2	0.180	0.154	0.000	***
QOL	DSP.E + DSP.P + SB2	0.209	0.185	0.000	***
QOL	DSP.T + DSP.P + SB2	0.326	0.304	0.000	***
QOL	Stress + DSP.E + DSP.T + SB2	0.278	0.248	0.000	***
QOL	Stress + DSP.E + DSP.P + SB2	0.286	0.256	0.000	***
QOL	Stress + DSP.T + DSP.P + SB2	0.383	0.357	0.000	***
QOL	DSP.E + DSP.T + DSP.P + SB2	0.327	0.298	0.000	***
QOL	Stress + DSP.E + DSP.T + DSP.P + SustainableBehavior	0.402	0.370	0.000	***
QOL	SustainableBehavior	0.063	0.054	0.011	*
QOL	Stress + SustainableBehavior	0.202	0.185	0.000	***
QOL	DSP.E + SustainableBehavior	0.080	0.061	0.017	*
QOL	DSP.T + SustainableBehavior	0.191	0.175	0.000	***
QOL	DSP.P + SustainableBehavior	0.217	0.201	0.000	***
QOL	Stress + DSP.E + SustainableBehavior	0.206	0.181	0.000	***
QOL	Stress + DSP.T + SustainableBehavior	0.284	0.261	0.000	***
QOL	Stress + DSP.P + SustainableBehavior	0.312	0.290	0.000	***
QOL	DSP.E + DSP.T + SustainableBehavior	0.199	0.174	0.000	***

Appendix 5. Linear regression models predicting Quality of Life (Part 2)

Dependent Variable	Independent Variable(S)	R-Squared	Adj.R-Squared	P-Value	Signif. Codes
QOL	DSP.E + DSP.P + SustainableBehavior	0.244	0.221	0.000	***
QOL	DSP.T + DSP.P + SustainableBehavior	0.341	0.320	0.000	***
QOL	Stress + DSP.E + DSP.T + SustainableBehavior	0.296	0.266	0.000	***
QOL	Stress + DSP.E + DSP.P + SustainableBehavior	0.323	0.295	0.000	***
QOL	Stress + DSP.T + DSP.P + SustainableBehavior	0.398	0.373	0.000	***
QOL	DSP.E + DSP.T + DSP.P + SustainableBehavior	0.342	0.315	0.000	***
QOL	Stress + DSP.E + DSP.T + DSP.P + ClusterSB1	0.372	0.339	0.000	***
QOL	ClusterSB1	0.000	-0.010	0.931	
QOL	Stress + ClusterSB1	0.134	0.116	0.001	***
QOL	DSP.E + ClusterSB1	0.027	0.007	0.264	
QOL	DSP.T + ClusterSB1	0.159	0.142	0.000	***
QOL	DSP.P + ClusterSB1	0.169	0.152	0.000	***
QOL	Stress + DSP.E + ClusterSB1	0.145	0.118	0.002	**
QOL	Stress + DSP.T + ClusterSB1	0.244	0.221	0.000	***
QOL	Stress + DSP.P + ClusterSB1	0.258	0.235	0.000	***
QOL	DSP.E + DSP.T + ClusterSB1	0.165	0.139	0.001	***
QOL	DSP.E + DSP.P + ClusterSB1	0.207	0.182	0.000	***
QOL	DSP.T + DSP.P + ClusterSB1	0.318	0.296	0.000	***
QOL	Stress + DSP.E + DSP.T + ClusterSB1	0.254	0.223	0.000	***
QOL	Stress + DSP.E + DSP.P + ClusterSB1	0.278	0.248	0.000	***
QOL	Stress + DSP.T + DSP.P + ClusterSB1	0.369	0.342	0.000	***
QOL	DSP.E + DSP.T + DSP.P + ClusterSB1	0.319	0.290	0.000	***
QOL	Stress + DSP.E + DSP.T + DSP.P + ClusterSB2	0.383	0.350	0.000	***
QOL	ClusterSB2	0.049	0.039	0.027	*
QOL	Stress + ClusterSB2	0.162	0.145	0.000	***
QOL	DSP.E + ClusterSB2	0.078	0.059	0.019	*
QOL	DSP.T + ClusterSB2	0.191	0.174	0.000	***
QOL	DSP.P + ClusterSB2	0.199	0.183	0.000	***
QOL	Stress + DSP.E + ClusterSB2	0.175	0.149	0.000	***
QOL	Stress + DSP.T + ClusterSB2	0.264	0.241	0.000	***
QOL	Stress + DSP.P + ClusterSB2	0.277	0.254	0.000	***
QOL	DSP.E + DSP.T + ClusterSB2	0.195	0.169	0.000	***
QOL	DSP.E + DSP.P + ClusterSB2	0.240	0.216	0.000	***
QOL	DSP.T + DSP.P + ClusterSB2	0.337	0.316	0.000	***
QOL	Stress + DSP.E + DSP.T + ClusterSB2	0.271	0.240	0.000	***
QOL	Stress + DSP.E + DSP.P + ClusterSB2	0.299	0.270	0.000	***
QOL	Stress + DSP.T + DSP.P + ClusterSB2	0.382	0.356	0.000	***
QOL	DSP.E + DSP.T + DSP.P + ClusterSB2	0.337	0.309	0.000	***

Appendix 6. Results of cluster analyses

Table 27 Final Cluster Centers of the variable ClusterSB

	ClusterSB									
	1	2	3	4	5	6	7	8	9	10
ATD	6.92	7.44	7.6	8.33	8.54	8.88	8.93	9.06	9.27	9.41
Indignation	4.05	5.87	3.72	7.36	7.51	5.69	7.44	5.92	9.56	8.17
PEB	6.08	7.5	3.93	7.53	7.33	4.88	6.6	6.1	9.8	8.89
Altruism	4.13	5.27	6.45	6.95	7.75	5.7	3.5	5	9.15	6.35
Frugality	7.9	7	7.56	7.88	8.52	7.69	7.08	7.02	8.8	7.88
COFC	3.92	7.39	6.93	4.6	7.8	8.18	7.67	5.22	9.2	7.87
Number of Cases in each Cluster	4	12	5	5	18	11	5	17	5	18

Table 28 Final Cluster Centers of the variable ClusterSB2

	ClusterSB2									
	1	2	3	4	5	6	7	8	9	10
ATD1	2	2	5	5	7	7	8	8	8	8
ATD2	10	10	6	9	8	9	9	9	9	9
ATD3	8.5	7	4.5	9	6.83	8.41	7.73	8.86	8.43	8.92
Indignation1	9	3	9	4	8.7	9.82	8.8	7.43	9.57	9.67
Indignation2	10	3	8	10	9	9	9	10	9	10
Indignation3	10	9	10	10	9	10	9	9	10	10
Indignation4	7.5	3	6	1.5	6.39	9	7.4	4	8.57	8
Indignation5	4	4	3	1.5	7.04	7.71	5.4	2.57	7.14	8.54
PEB1	5	9	3	5	6	6	2	3	9	9
PEB2	2	9	3	6	8	5	3	4	9	9
PEB4	3	2	1	3	6	7	2	2	7	8
Altruism1	5	6	5	9	8	9	8	9	7	9
Altruism2	8	2	2	6	8.26	8.94	7.8	9	5.71	8.67
Altruism3	9	2	3	6	7	9	7	8	5	9
Altruism4	1.5	1	3.5	7	7.04	8	5	8.14	3	8.17
Frugality1	2	2	3	9	8	8	8	6	8	8
Frugality2	6	6	6	9	7	6	6	4	6	9
Frugality3	5	4	8	2	7	3	4	3	5	8
Frugality4	1.5	9	4	9.5	6.78	4.41	7.07	2.71	7.43	8.42
Frugality5	6	7	7	9	6	5	6	4	6	8
COFC1	8	5	7	6	4.57	7.06	5.6	7.71	5.57	7.88
COFC2	9	9	8	8	7	7	8	7	7	9
COFC4	10	9	8	6	7	8	8	7	9	9
Number of Cases in each Cluster	2	1	2	2	23	17	15	7	7	24

Appendix 7. The relation of the scale items and ExpOrContr (Priming) variable (the full version).

Variables	Correlation	p-value	Variables	Correlation	p-value
ExpOrContr	1.000	NA	ATD2	0.071	0.480
ATD5	-0.004	0.972	AltruismAdd2	0.075	0.466
QOL5	-0.006	0.949	DSP.E5	0.076	0.459
QOL7	0.007	0.948	COFC2	-0.075	0.459
Altruism2	0.010	0.921	Indignation2	-0.076	0.451
QOL2	0.012	0.906	ATD1	-0.077	0.449
DSP.E1	-0.014	0.890	DSP.P3	0.081	0.427
QOL8	0.016	0.875	DSP.P6	0.082	0.427
Indignation3	-0.016	0.872	DSP.T2	0.085	0.415
AltruismAdd1	0.021	0.842	QOL1	-0.084	0.408
DSP.T3	-0.021	0.842	Altruism1	-0.086	0.397
QOL3	-0.021	0.837	ATD3	-0.086	0.397
DSP.E4	0.022	0.834	Frugality2	-0.087	0.387
DSP.T5	-0.025	0.809	Indignation5	0.090	0.374
PEB3	-0.027	0.788	Stress3	-0.091	0.366
Stress1	-0.029	0.778	DSP.E2	-0.096	0.359
QOL4	-0.029	0.777	DSP.P7	0.102	0.327
DSP.T1	-0.031	0.760	Frugality1	-0.105	0.297
Indignation4	0.033	0.749	PEB2	0.112	0.267
COFC4	0.034	0.736	Stress6	-0.114	0.261
DSP.P4	0.036	0.729	Altruism3	0.119	0.239
Frugality4	0.038	0.709	COFC6	-0.120	0.235
Altruism4	-0.039	0.708	DSP.T4	-0.135	0.187
Stress2	0.043	0.670	SB2	-0.140	0.165
ATD4	0.044	0.664	COFC1	-0.151	0.137
COFC3	-0.049	0.631	Stress5	-0.179	0.074
DSP.P1	-0.050	0.627	DSP.E3	0.194	0.058
DSP.P5	0.052	0.616	QOL6	0.208	0.037
Frugality5	-0.052	0.605	PEB4	0.222	0.027
SB1	-0.053	0.598	PEB1	0.223	0.026
Indignation1	0.061	0.547	COFC5	-0.233	0.025
DSP.P2	-0.064	0.541	Stress4	-0.250	0.012
Frugality3	0.066	0.515			

Appendix 8. Correlation coefficients of main variables in sub-samples.

Table 29 Correlation coefficients of variables in Russian sub-sample.

Scales	ATD	Indignation	PEB	Altruism	Frugality	COFC	AltruismAdd	QoL	Stress	DSP.E	DSP.T	DSP.P
ATD	1	-0.269	-0.14	0.345	0.353	0.349	0.245	0.292	0.133	-0.162	-0.059	0.038
p-value	NA	0.118	0.423	0.042*	0.037*	0.04*	0.157	0.089	0.446	0.353	0.737	0.829
Indignation		1	0.342	0.208	0.088	-0.07	0.06	-0.038	-0.499	0.26	-0.228	-0.087
p-value		NA	0.044*	0.231	0.616	0.69	0.734	0.829	0.002**	0.131	0.187	0.619
PEB			1	-0.124	0.063	-0.152	-0.121	-0.041	-0.313	-0.054	0.057	0.122
p-value			NA	0.479	0.718	0.384	0.489	0.813	0.067	0.759	0.746	0.487
Altruism				1	0.182	0.283	0.177	0.097	-0.109	0.213	-0.336	0.017
p-value				NA	0.295	0.1	0.31	0.579	0.532	0.219	0.048*	0.924
Frugality					1	-0.025	0.585	-0.003	0.004	0.281	-0.031	0.205
p-value					NA	0.885	0***	0.987	0.981	0.102	0.858	0.238
COFC						1	0.218	0.189	0.405	0.045	0.047	0.104
p-value						NA	0.209	0.278	0.016*	0.8	0.787	0.554
AltruismAdd							1	0.157	0.344	0.123	-0.099	-0.029
p-value							NA	0.367	0.043*	0.481	0.57	0.867
QoL								1	0.216	-0.295	0.059	-0.015
p-value								NA	0.213	0.085	0.737	0.932
Stress									1	-0.278	0.18	-0.063
p-value									NA	0.106	0.301	0.718
DSP.E										1	0.068	0.138
p-value										NA	0.697	0.43
DSP.T											1	0.485
p-value											NA	0.003**
DSP.P												1
p-value												NA

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05

Table 30 Correlation coefficients of variables in English sub-sample.

Scales	ATD	Indignation	PEB	Altruism	Frugality	COFC	AltruismAdd	QoL	Stress	DSP.E	DSP.T	DSP.P
ATD	1	0.465	0.11	0.378	0.101	-0.002	0.197	0.121	0.225	-0.052	-0.049	-0.138
p-value	NA	0***	0.383	0.002**	0.424	0.986	0.115	0.338	0.071	0.683	0.698	0.271
Indignation		1	0.489	0.384	0.293	0.206	0.42	0.196	-0.001	0.147	-0.055	-0.096
p-value		NA	0***	0.002**	0.018*	0.101	0.001***	0.118	0.993	0.244	0.662	0.446
PEB			1	0.441	0.539	0.346	0.546	0.387	0.216	0.016	0.002	-0.043
p-value			NA	0***	0***	0.005**	0***	0.002**	0.084	0.898	0.988	0.733
Altruism				1	0.069	0.082	0.28	0.203	0.063	0.067	0.107	0.144
p-value				NA	0.584	0.514	0.024*	0.104	0.619	0.598	0.397	0.252
Frugality					1	0.212	0.53	-0.003	0.112	-0.043	-0.228	-0.158
p-value					NA	0.09	0***	0.979	0.376	0.736	0.068	0.209
COFC						1	0.176	0.225	0.347	0.039	0.192	0.064
p-value						NA	0.16	0.072	0.005**	0.757	0.126	0.614
AltruismAdd							1	0.426	-0.041	0.126	0.113	0.172
p-value							NA	0***	0.746	0.319	0.372	0.171
QoL								1	0.042	-0.046	0.29	0.176
p-value								NA	0.738	0.715	0.019*	0.16
Stress									1	-0.411	-0.269	-0.362
p-value									NA	0.001***	0.03*	0.003**
DSP.E										1	0.192	0.179
p-value										NA	0.125	0.153
DSP.T											1	0.582
p-value											NA	0***
DSP.P												1
p-value												NA

Note: significance codes: '***' <0.001, '**' <0.01, '*' <0.05