Sustainable Behavior and Its Antecedents: A Systematic Literature Review

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Abstract The demand for organizations to assume greater environmental responsibility has increased in recent years. This demand comes from different segments: clients, suppliers, governments, and the general public. However, many organizations face challenges with the human resources needed to implement environmental initiatives, making it necessary to understand which factors can positively influence the sustainable behavior of those involved in the process. In this perspective, this study aims to raise the theoretical references available on the theme of sustainable behavior of individuals, to better understand the precedents. Techniques of systematization of literature review were used next to the searches made in two scientific databases: *Web of Science* and *Scopus*. Upon all the selections made using filters, the search returned 34 articles, published between 2008 and 2017, which were subsequently analyzed so as to identify similarities and major differences between them. It was found that most studies rely on a psychological perspective to understand the precedents of sustainable behavior. Besides that, values, beliefs, and worldviews are still perceived as the main influencers.

Keywords Sustainable behavior · Antecedents · Implement of environmental initiatives

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W. Leal Filho et al. (eds.), *Universities and Sustainable Communities: Meeting the Goals of the Agenda 2030*, World Sustainability Series,
https://doi.org/10.1007/978-3-030-30306-8_14

1 Introduction

The issue of sustainability has been increasingly debated by society in general, mainly because there seems to be a consensus that the climate on the planet is changing and that therefore something else needs to change as well. However, the results are still not as noticeable in regard to people's behavior. Sustainable behavior has costs, and not always people are willing to pay them, or know how to. According to Juárez-Nájera et al. (2010, p. 2), sustainable behavior can be understood as:

> a set of effective, deliberate, and anticipated actions accepting the responsibility for the conservation and preservation of physical and cultural resources. These resources include the integrity of animal and plant species, as much as individual and social well-being, and safety of present and future human generations.

In this sense, this study aims to raise the theoretical references on the subject of sustainable behavior of individuals to understand their antecedents. The importance of this theme resides on the fact that, in addition to people being the driving force in actions and programs that envisage results favorable to sustainability, questions about what leads an individual to engage in such initiatives remain obscure. A better understanding of this subject can help in the elaboration of policies and in the operation of sustainable actions and programs, taking into account the antecedents of the sustainable behavior which, after all, is expected of individuals. This behavior in turn will lead to the success of said actions and programs, and to the change of routine habits, leading the way to more effective and long-lasting outcomes, as in the case of sustainable consumption.

To this end, this study analyzed 34 scientific articles, using the systematic review of literature techniques, and went through several stages of selection of articles, originating from two scientific databases: *Web of Science* and *Scopus*. The articles analysed were published between 2008 and 2017. The analysis is followed by the presentation of the theoretical references used, the methodological procedures, the findings, and their final discussion.

2 Theoretical References

The main areas of knowledge so far devoted to studying human behavior in relation to sustainability are economics and psychology. While economics argues that individuals opt (in a rational way) for cooperating for sustainable ends according to their own interests (that is, depending on the personal return that such decision might bring them in the future, which does not necessarily refer to financial returns, but may be connected to prestige, or social approval to which that individual feels entitled), psychology has been concerned with relating the psychological variables with

sustainable behavior, arguing that the individual can present sustainable behavior as long as they have values and beliefs that collaborate. Meanwhile, even psychology, which defends the need of values and beliefs as the antecedents of referred behavior, argues that for it to occur some requirements are made necessary (Juárez-Nájera et al. 2010).

The Norm-Activation Model, one of the most accepted theories to explain this type of behavior, relates 2 necessary requirements: an individual's awareness of the consequences of their actions (emphasizing that their actions can directly affect the well-being of other individuals), and the awareness of their responsibility in acting. These two requirements activate kept personal moral norms, and as a consequence, sustainable behavior is likely to occur. The awareness present in the cited requirements is formed from the process of acculturation of an individual, and the experiences the individual has as they get through life.

In general, the importance of raising awareness on the benefits of implementing sustainability refers to the idea that the internalization of community norms makes the need of vigilance by authorities and/or managers to be minimal, and so individuals tend to feel less coerced. Juárez-Nájera et al. (2010, p. 6) emphasize the importance of this process by arguing that in addition to a unilateral educational process, this makes the process more participatory, and thus the acceptance of people is greater in relation to their responsibilities and their expectations that positive outcomes may be greater:

> People internalize the group's norms because they have participated in their creation, saw the value to them and their community, and because the norms have become part of the meaning of community, hence sharing with others helps maintain trusted relationships.

Another factor that shows a direct impact on the individual's ability to carry out a course of action is Bandura's (1999) concept o self-efficacy, according to which the individual forms a conviction about their ability to mobilize all possible (cognitive and material) resources to reach a determined goal. The success of this mobilization depends then on the specificity of the task to be undertaken and the context in which it occurs. Therefore, the belief of efficacy on the part of the individual can be developed because it is contextualized. The notion that it is impossible to accomplish a task, or that it shows a small probability of success, can negatively impact one's actions and generate a great repercussion in the processes of implementation of sustainability programs (Meijers and Stapel 2011).

3 Method and Materials

3.1 Scientific Literature Review

Considering that the main objective of this project was to carry out a broad theoretical review of the theme of commitment of higher education institutions' stakeholders with sustainability, the first four months were used to collect bibliography to this end.

As this analysis has the purpose of, among others, finding gaps in the literature and to propose new theoretical contributions for the future, it was decided to determine what type of materials to be used and that these would be scientific articles, once this type of materials is usually more specific and up-to-date. Thus the research was carried out on the following scientific databases: *Web of Science—Social Sciences Citation Index* (*WoS-SSCI*) and *Scopus*. The choice of such databases was due to their coverage of peer-reviewed journals, and their wide acceptance in the scientific milieu.

In keywords used to perform the searches were: *sustainable* behavior* (and) *psychological**, which were collated from the topics of articles (including their titles, abstracts, and keywords). These terms were selected due to the extent to which they select the literature on the subject, and the symbol (*) was used after the term *sustainable*, so that it could search for, besides the exact word, also its possible variations.

One of the main difficulties to accomplish the task at hand was the excess of articles found in the databases under each chosen keyword, what was already expected given the comprehensiveness of the theme. Thus, it was necessary to further filter them in order to arrive to a more reasonable number of documents for the proposed analysis. As regards the period stipulated for the research of the literature on the subject under analysis, it was decided to limit it to a period of 10 (ten) years, from 2008 to 2017. In addition, it was also decided to filter materials published in journals in the business area.

Three hundred and fourty one (341) articles were initially found in the *Web of Science* citation index, and seven hundred and fourty five (745) in the *Scopus* database. The 2 chosen filters used in the scientific databases were: the categories related to social sciences and business (and only articles were selected), upon the use of which one hundred and sixty eight (168) articles were obtained in the first database, and two hundred and ninety six (296) in the second one. Additional filtering was performed to eliminate duplications and JCR from journals, which were selected by having a JCR greater than 1.3 in order to prioritize articles from high impact and good reputation journals and subsidize the current study with considered high quality research. Beside a high JCR, the journals needed to have an H-index value greater than 24, all of them therefore located in the Q1 *qualis*.

Table 1 Results of the systematic literature selection process

Scientific databases	We-of-Science	Scopus	Total accepted
Seleção inicial	341	745	1.086
After filters used in the extraction	168	296	464
Databases	23	11	34

Source The author

After these steps we proceeded to the collection of data and coding phase, in order to be sure that the materials that really mattered to the research would be used, further determining the final quantity of articles used.

3.2 Extraction and Analysis of Articles

With regard to the collection of data and the results of the first filtrations, the amount of bibliographic materials (scientific articles) described in Table 1 was found.

After the initial filtering in the above mentioned scientific databases, the software *Start* version 3.0 (*State of the Art through Systematic Review*) was used to organize systematic literature review from the articles initially selected. The software itself, based on criteria involving similarity of terms and authors, separated the articles in quadrants by criterion of similarity and with the studied subject. Therefore, the articles classified in quadrants 3 and 4 automatically disqualified, resulting in a rejection of 115 articles. In ddition, the software identified 16 articles in duplicate. After this stage there were 333 articles left. In the following stage, the JCR (*Journal Citation Reports*) of the journals in which the articles had been published was used as criterion. We opted to accept articles published in journals with a JCR with value equal or superior to 1,3. Two hundred and sixteen (216) articles published in journals with a JCR inferior to 1,3 were identified and rejected. Besides a high JCR, the journals had a H-index value higher than 24, all located in the classification of journals criterion called *qualis* Q1 (first quartile of the citation of the journals consulted in *Scimago*). Only one hundred and seventeen (117) articles were then left. The following stage was dedicated to reading the abstracts and the analysis of the approaches used in the articles in relation to the theme, to be sure that they corresponded to the objectives of the current project. After this reading, we reached the final number of thirty four (34) articles.

3.3 Findings and Discussion

The thirty four (34) articles analyzed came from twenty six (26) journals. The journal with the greatest number of published articles used was the *Journal of Environmental*

Psychology, with a JCR of 1.72, and 3 (three) articles. Figure 1, relates the journals with the highest number of published articles used in this study.

By and large, after the first reading of the articles selected (ater all filtering stages), it is observed that the implementation of programs and actions is still one of the major obstacles in the theme of sustainability. Some authors argue that a great many of these difficulties are due to the behavior of people directly involved in these actions and programs, since the factors that influence the involvement of the actors in the process are actually still being questioned. Due to these questionings, many studies proposed to investigate the antecedents of the so-called sustainable behavior (Juárez-Nájera et al. 2010).

Issues such as the lack of a deep understanding of what sustainability is already have shown to be a major obstacle for managers in the process of implementing sustainability (Cebrián et al. 2015). Yet, this does not necessarily mean that individuals with more advanced educational levels more frequently present behaviors considered as sustainable (Kollmuss and Agyeman 2002).

In this perspective, it becomes important to also analyze the contribution of studies carried out by higher education institutions regarding the implementation of their sustainability programs, considering that education has proved to be an important antecessor of sustainable behavior. Thus, among the articles collected, 2 articles were highlighted due to the theme involved in each one. The first article (Pathways

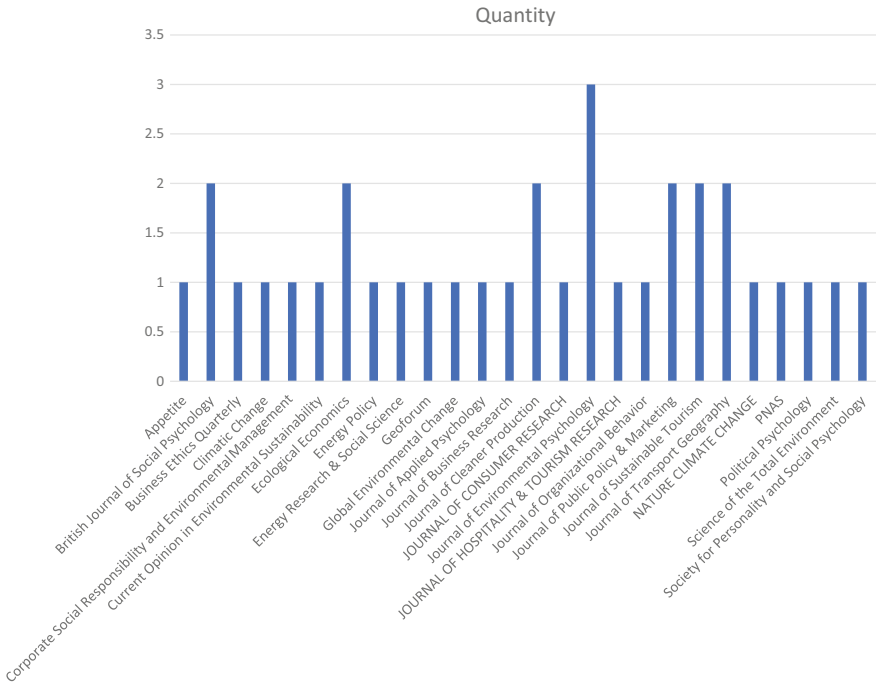

Fig. 1 Journals with articles used in this study. *Source* The author

to Cleaner Production in the Americas II: Application of a Competency Model to Experiential Learning for Sustainability Education) caught our attention for involving partnerships between American and Latin-American universities in the theme of sustainability (Mcpherson et al. 2016). The second article (Institutional and Societal Challenges in Sustainability Science and Explore the Potential of Uniting Education, Research and Societal Contributions to Form a Systematic and Integrated Response to the Sustainability Crisis) was deemed important due to linking sustainability within universities with the multidisciplinarity of various areas and subjects of study within universities (Yarime et al. 2012). The 2 articles were summarized with the purpose of synthesizing the main concepts and information relevant to the data collection.

The selected researches deal with sustainable behavior of individuals bringing the spotlight to antecessors and influences.

The level of analysis of the articles, in general, are summarized at: the subjective level (considering well-being and satisfaction with the past, flow and happiness in the present, and hope and optimism for the future); micro or individual level (that is, positive traits, such as love capacity, courage, aesthetic sensibility, perseverance, forgiveness, spirituality, high talent, and wisdom); and macro or institutional level (that is, positive civic virtues and institutions that help move individuals into better citizenship, such as responsibility, altruism, civility, moderation, tolerance, and a strong sense of work ethics).

Over time, the understanding that there is a positive relationship between positive feelings of employees and their performance became obvious. For this motive, although these studies do not specifically focus on the professional field, understanding how individual's sustainable behavior occurs can help organizations achieve their goals towards sustainability, what in turn has been motivating many researchers to work in this area. Such analyzes can help not only with the selection of employees who have the desirable personal characteristics and a positive attitude towards sustainable behavior, but also in the creation of programs that can capacitate these employees to gain this type of behavior.

According to these studies, 2 characteristics are intrinsically linked to sustainable behavior: self-efficacy and resilience. The definition of self-efficacy more often used is the one proposed by Bandura, which considers perceptual judgement of an individual in the belief of "how well they can execute courses of action necessary to deal with specific situations" (Bandura 1999, p. 122). Another broader definition states that: "self-efficacy refers to an individual's belief (or confidence) in their ability to mobilize motivation, cognitive resources, and the courses of action necessary to execute with success a specific task within a specific context" (Stajkovic and Luthans 1998, p. 66). Again, the key to definition is the specificity of task and context, as these interfere directly in the individual's perception about the difficulty of the proposed task. This characteristic exerts a great influence due to the individual's perception that sustainable objectives are difficult to achieve, and the perception that an individual's action will not make *the difference* in the final results.

In the case of resilience, understood as "the capacity of individuals to deal with success in face of significative changes, adversity, or risk, this capacity changes along time and is reinforced by protective factors, in the individual and the environment" (Stewart et al. 1997, p. 22). This characteristic, as a consequence of the perception of the difficulty in executing sustainable behavior is extremely important, as it can cause the individual to continue presenting the behavior even in face of the difficulties encountered throughout the process.

Griskevicius et al. (2012) understand sustainable behavior from an evolutionary perspective. In their study, the authors propose that many modern environmentalist tendencies and social problems are caused or exacerbated by 5 evolutionary tendencies: (1) propensity for genetic self-interest; (2) motivation for relative rather than absolute status, (3) propensity to unconsciously copy others, (4) a predisposition to myopia, and (5) propensity to disconsider impalpable concerns. An evolutionary approach suggests that, just as the forces of natural selection can mold morphological characteristics, such as the shape of our hands, the same forces can also shape psychological tendencies.

According to this conception, human beings evolved to reap more rewards for themselves, ultimately triggering the transfer of the inherent onus to others (Hawkes 1992). Natural selection does not care about survival of the species; what matters is the replication of someone's genes, which often comes at the expense of the survival of other genes (Dawkins and Krebs 1978). Although there is a variation in the transfer of the onus to others depending on the person (Van Lange et al. 1997), individuals are willing to make selfish choices in the face of social dilemmas, particularly when interacting with strangers in large groups.

Human beings have also evolved to cooperate with people who cannot return favors directly. The evolution of this type of aid is usually explained in the light of reciprocity theories (Nowak and Sigmund 2005). Indirect reciprocity postulates that organisms can develop the capacity to cooperate with non-reciprocal strangers because this may help establish a reputation as a good cooperator. Reputation concerns are particularly powerful when people strongly identify with a group and its members. For example, the strength of people's community identification predicts their willingness to help solve social dilemmas (Hardy and Van Vugt 2006), and this identification presupposes a willingness to punish cheaters and reward desirable behaviors in other members of the community (Brewer and Kramer 1986).

In addition, human beings have also evolved to copy and instinctively imitate the behavior of others. Psychologists have long recognized that human beings exhibit this tendency (Asch 1956), and it is believed that such behavior has brought them evolutionary benefits. Imitation is an underestimated contributor to environmental problems because many of these problems result from conflict between what people believe they should do versus what they actually see others doing (Cialdini et al. 1990). For example, although home residents say that their neghbors' behavior has little affect on their conservation behavior, studies show that neighbors' behavior is many times the strongest predictor of real energy savings (Nolan et al. 2008). In fact, the neighbors' behavior is many times a substantially stronger predictor than financial incentives (Nolan et al. 2008). When people notice that their neighbors

are not saving, they increase their own energy consumption, even when they were previously conserving energy (Schultz et al. 2007).

Many studies set out to understand sustainable behavior based on the standard consumption of individuals. The new findings in this field of study point out to a new important dimension in the study of sustainable goods, where the mental conception of the consumer must be studied (abstract versus concrete), as well as the benefits associated with sustainable products (economy versus self-transcendence). The main message of these studies consists in the demonstration of how mental representation plays a critical role in determining how consumers react to benefits resulting from pro-environmental and sustainable actions, which can help sustainability awareness programs, as one can propose actions with more concrete results.

3.4 Final Considerations

This study presents the findings, mapping and analysis of publications in the scientific databases *Web of Science* and *Scopus* on the theme of the sustainable behavior of individuals, considering antecedents for this behavior to occur. These findings include the analysis of 34 articles published in 26 journals with a JCR equal or higher than 1.3.

It was perceived that most studies are based on psychological perspective to understand the guiding lines of sustainable behavior, and that values, beliefs, and world-views are still perceived as the main influencers, from more recent perceptions based on the evolutionary perspective of human beings. These findings help, above all, to understand how this theme is evolving, and where the omissions still in need to be further addressed reside.

Many studies have analyzed the behavioral perspective of individuals in relation to specific issues of sustainability, such as: recycling, energy consumption, consumption in general, etc. However, the antecedents listed tend to influence sustainable behavior in general. In addition, the studies that have dealt with aspects that could influence the reduction of consumption on the part of individuals, defend the adoption of policies issued by governments and a closer watch of market trends, given that these are conflicting interests (market and society), where one tends to motivate the increase of consumption and the other to reduce it. Governments should then act as mediators in this process. Such scientific advances show that topics involving sustainability should not only be studied from the point of view of the individual as the sole responsible for actions that interfere in the environment. The individual is influenced all the time, and it is not always that psychological individual motivations can change this process, even if consumption is addressed individually.

The studies were carried out based on surveys, or using the theoretical test model. However, those researchers that considered empirical analyzes obtained data from cross-sections, with the exception of one only study. In general, the limitations of the researches carried out consist in the comprehensiveness of the same, since they

are restricted to certain locations, not taking into account the differences that can be found in different regions with respect to culture and other customs.

In addition, in some cases there was a low return of respondents, which raises the question as to the extent to which the findings of these studies can be generalized to entire populations. Another limitation found in these studies was the use of measurement of behavior based on self-reporting. Research based on self-reporting may present biases as to the trustworthiness of responses, once people tend to present response that is compatible with the research's intention, due to the individuals concern with people's judgement of their behavior.

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