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Personality and sustainable environmental behavior

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This article puts the construct of sustainability into an economic-psychological context and examines behavioral conditions of sustainable, environmentally conscious consumer decisions. Individual dispositions of such behavior have so far been discussed primarily in the context of attitude research or the segmentation of target groups in terms of socio-demographic and milieu-related characteristics. In recent years, further individual psychological characteristics, such as personality, have increasingly been taken into account in order to explain and predict environment-related behavior. With reference to the theoretical Big Five Approach (BFI-S) and data from the Socio-Economic Panel (SOEP), it can be shown that specific dimensions of personality - such as agreeableness and openness as significant predictors - are closely related to environmentally conscious, sustainable consumption decisions. Other trait dimensions (conscientiousness and neuroticism) as well as demographic characteristics (age and gender) play a subordinate role in relation to individual sustainability behavior.

Der vorliegende Beitrag stellt das Konstrukt Nachhaltigkeit in einen wirtschaftspsychologischen Zusammenhang und beleuchtet verhaltensbezogene Bedingungen nachhaltiger, umweltbewusster Konsumententscheidungen. Individuelle Dispositionen eines solchen Verhaltens sind bislang vor allem im Kontext der Einstellungsforschung oder der Segmentierung von Zielgruppen hinsichtlich soziodemografischer und milieubezogener Merkmale diskutiert worden. Seit einigen Jahren werden zunehmend weitere individualpsychologische Merkmale, wie etwa die Persönlichkeit, berücksichtigt, um umweltbezogenes Verhalten erklären und vorhersagen zu können. Unter Bezug auf den persönlichkeits-theoretischen Big Five-Ansatz (BFI-S) und Daten des Sozio-ökonomischen Panels (SOEP) kann gezeigt werden, dass spezifische Dimensionen von Persönlichkeit, etwa Verträglichkeit und Offenheit als signifikante Prädiktoren, in einem engen Zusammenhang zu umweltbewussten, nachhaltigen Konsumententscheidungen stehen. Andere Eigenschaftsdimensionen (Gewissenhaftigkeit und Neurotizismus) wie auch demografische Merkmale (Alter und Geschlecht) spielen im Zusammenhang mit dem individuellen Nachhaltigkeitsverhalten eine untergeordnete Rolle.

Relevance of the sustainability concept in business psychology

Sustainability is increasingly becoming the focus of attention of business, science and the public and has developed into an intensively discussed field in business psychology over the last two decades. Thus, it comes as no surprise that sustainability is increasingly being considered in relation to psychological findings. A modern economic-psychological perspective on the market and market players - companies as well as consumers - therefore requires a consideration of the concept of sustainability on two fundamental levels:

- First – aspects of sustainable corporate management: At the corporate level, it can be seen that sustainability strategies are not exclusively focused on corporate financial targets, but increasingly

aim to maximize the positive impact on environmental and social standards. The communication of sustainability as well as the identification of interfaces for sustainable development is a public issue and part of strategic corporate communication. The environmental and social positioning of products and services should - according to the intention of companies - be perceived positively by consumers and the public as a whole and have a positive effect on the return on assets (RoA) (i.a. Bittner-Fesseler, Schmidt & Tennert 2018, p. 35 ff., p. 101 ff.).

- Second – individual dispositions of sustainable consumer behaviour: This mainly concerns self-interest and moral obligations in the context of sustainable behavior. Against this background it is not surprising that business psychology is also dealing with the

concept of sustainability and is increasingly analyzing the characteristics and behavioral characteristics of consumers. This primarily involves attitudes towards environmental awareness, sustainable purchasing behavior in individual segments (food, clothing, furniture, etc.) or the segmentation of target groups in terms of socio-demographic and milieu characteristics. The concrete behavioral science boundary conditions of sustainable, environmentally conscious decisions have so far been discussed primarily from the perspective of attitudinal research, motivational research, or in consideration of personal norms. Furthermore, other individual psychological characteristics, such as personality, have been taken into account for several years (i.a. Balderjahn 2013, p. 199 ff.; Hirsh 2010, p. 283 ff.; Spörrle & Bekk 2015, p. 286 ff.).

From an individual point of view, sustainability is often considered to be important. Strictly environmentally conscious consumer behavior, however, is difficult to achieve. The LOHAS target group – Lifestyle of Health and Sustainability – which was intensively discussed about ten years ago, oriented its lifestyle towards the ideal of sustainability, which is ultimately expressed in the consumption preferences for ecological or regional products of this target group. The LOHAS target group represents a lifestyle that wants to promote health and sustainability through its consumer behavior and targeted product selection. LOHAS want to strategically use their „power“ as consumers to force companies to adopt responsible production and sustainable, environmentally friendly manufacturing processes. However, this positioning was viewed critically from the outset, which means that it is rather an illusory sustainability to merely acquire a clear conscience and individual advantages in terms of health (Tennert 2008, p. 4). The basic psychological mechanisms of a sustainable lifestyle - changes in values, attitudes, and behavior - often remain unclear in such target group analyses and mono-causal in their argumentation. Moch (2020, p. 246) therefore speaks of *narratives with naivety potential* if individuals are to shape the economy and society directly, purposefully and efficiently: If consumers were to make „environmentally conscious decisions,“ so he argues, „these individual decisions in aggregated form would be a powerful lever for the transformation of sustainability.“ (ibid.). However, Moch points out the divergence between environmental awareness and actual behavior and that this cognitive positioning must be seen in close relation to the real behavioral effort (e.g. additional effort, inconvenience, reduction of wealth, change of daily routines, costs of information procurement) (see Moch 2020, p. 253). This is why actual changes in mobility behavior, changes in eating habits or in leisure and vacation behavior are so difficult to implement.

Sustainable consumption and environmental behavior are determined by many external and individual factors, such as age, milieu affiliation, individual values, important reference persons or even

the environment in which one was socialized. However, differences in sustainable consumption behavior – e.g., how intensively people are concerned with social or ecological products – can to a certain extent also be described by differences in characteristics inherent in the individual, e.g. differences in personality between people. The article thus first gives an overview of sustainability from the consumer’s point of view and then discusses the role of personality traits in connection with sustainable environmental and consumer behavior. The following question is therefore of central importance for a personal psychological consideration of sustainable consumption behavior: To what extent does personality influence sustainable environmental and consumer behavior? Characteristics such as openness, agreeableness or empathy can, in addition to situational factors, have an influence on whether an individual’s consumption activities are ecologically or socially oriented or whether this consumer demonstrates an individual environmental awareness.

Sustainability from a consumer perspective

Sustainable consumption is understood as an umbrella term for various actions that are carried out in compliance with moral or ethical standards such as justice or fairness (Balderjahn 2013, p. 199 ff.). Sustainable consumer behavior is a combination of self-interest and socially consensualized obligations for other persons, future generations, other countries, or the environment as a whole (pro-social motives). Sustainable consumption behavior thus exists when individuals do not merely base their consumption or service decisions on self-centered motives, but also take into account ecological or social (other-oriented) motives (ibid.; Kirchgässner 2000, p. 16; 188 ff.). In these cases, consumption or service decisions are made more or less on grounds of conscience. Sustainability motives guide and justify a decision to purchase only those products or services that are considered correct, fair, and just. However, sustainable consumption behavior is not a holistic phenomenon. Instead, the concrete, everyday consumption patterns (extensive, limited, habitualized decision-making processes) (Wolff & Moser 2015, p. 31 ff.) have different sustainability references: Ecological and social aspects represent criteria that vary in importance and relevance for individuals. In the case of food, for example, the individual relevance for sustainability can be significantly higher than for clothing, furniture, or leisure activities.

In order to explain and classify sustainable consumption behavior, different sub-areas of sustainable consumption must be identified and differentiated in terms of different purchasing behavior processes. This also includes an *individual psychological perspective* on consumer actions, for example with regard to the cognitive processing of information or the influence of personality on concrete decisions. Reasons for sustainable decisions can, for example, be seen in the assumption that a product has comparatively little

impact on the environment, that fair and humane working conditions are provided or that animals are (generally) protected from torture. However, these motives for environmentally and socially compatible consumption interact depending on the usage situation and personal relevance. There are thus indications that ecological and social consumption and service decisions are of an interacting and transactional nature, but nevertheless represent independent phenomena from an analytical perspective. A distinction can be made between three different forms of sustainable consumption decisions (Balderjahn 2013, p. 201):

- environmentally friendly consumption (consumer activities with a view to protecting the environment and conserving resources)
- socially compatible consumption (consumer actions with a view to responsibility for other people, compliance with occupational health and safety conditions, etc.)
- animal-friendly consumption.

Sustainable consumption therefore means satisfying one's own needs without compromising the living opportunities of others in the present or of future generations. This can be effected, for example, by renouncing certain products. Sustainable consumption therefore implies the obligation of the individual to contribute to ensuring that future generations also have adequate living conditions. Sustainable consumption can be defined as „contributing to the satisfaction of the needs of the present generation without jeopardizing the ability of future generations to satisfy their needs“ (Hansen & Schrader 2001, p. 22). As an aspect of social action, sustainable consumption not only focuses on meeting personal needs, but also on ecological and social aspects. There are two levels to consider: on the one hand the spatial level, because the current generation is to be understood in this context as the global totality of all human beings, on the other hand the temporal level, because even those not yet born are part of this concept (Spörrle & Bekk 2015, p. 286).

Courses of action for sustainable decisions

As mentioned earlier, consumers have various options for action to reduce environmental pollution and social problems through active and conscious decisions. Sustainable consumption styles thus require individual action processes. Explanatory approaches for sustainable

consumption can be found both at the macro level (society, institutions, social and economic conditions) and at the micro level (individual determinants of behavior including individual psychological conditions). Both levels can be linked with each other and are in a reciprocal, transactional relationship (see Gatesleben & Velk 1998, p. 146 quoted after Balderjahn 2013, p. 203).

- Macro level: This level includes factors such as the economic system, social conditions, technologies, media, and culture. Consumer needs, consumption, and usage opportunities as well as the individual abilities to translate the sustainability claim into actual behavior are described as key determinants of individual decisions and sustainable consumption styles. Individual needs influence the assessment of benefits and thus the preference for sustainable products. They are linked to personal values, norms, attitudes, and knowledge. The resulting consumption intention can be strengthened or modified by the factors of ability and opportunity for sustainable consumption.
- Micro level: Individual skills at this level comprise temporal, spatial, cognitive, and physical resources that need to be invested when using sustainable products and services. Opportunities are factors that enable consumers to achieve a sustainable consumption style. All three factors – needs, abilities, and opportunities – jointly define a person's individual scope of action when purchasing sustainable products or using sustainable services. Decisions include both the preferences in terms of the expected satisfaction of needs and the perceived (intangible and material) costs of sustainable products and services. The (sustainability) options that are then taken by the person depend on infrastructural, social, and personal conditions (Fig. 1).

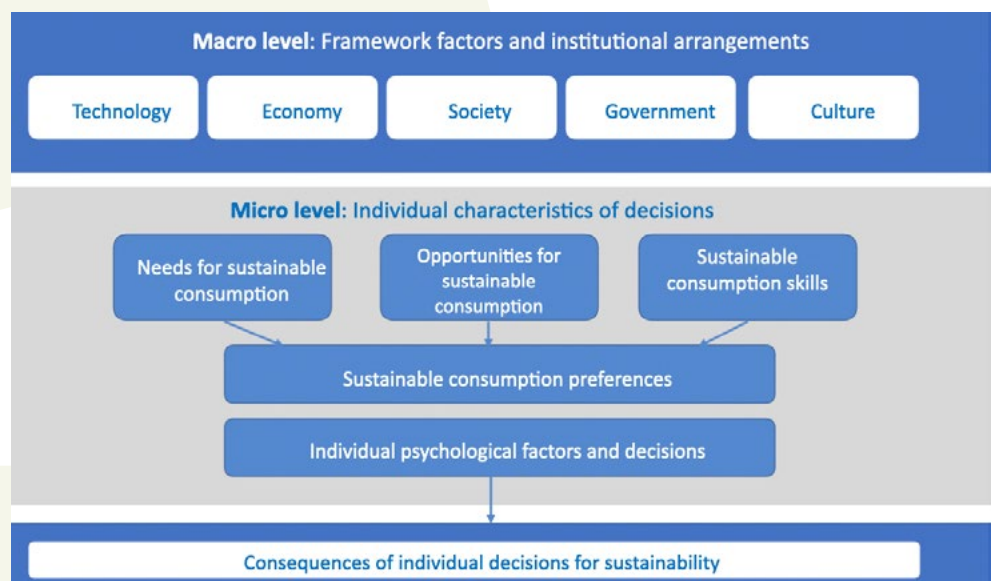


Figure 1: Macro and micro level of sustainable consumer behavior (Tennert 2020 quoted after Balderjahn 2013, p 204)

Research is primarily concerned with the explanation of sustainable consumption decisions. So far, this has mainly been achieved by referring to attitude-based models (Stroebe 2014, p. 237 ff.). Important theoretical points of reference include the Theory of Planned Behavior (Ajzen 1991, p. 179 ff.) and the Norm Activation Model by Schwartz (1977). According to the theories, environmentally friendly behavior is largely determined by environmental awareness, the degree of personal control and moral standards. In line with the theory of planned behavior, an attitude towards sustainable behavior is formed as a process of rational weighing up of advantages and disadvantages of the respective consumption consequences. Based on the above described macro and micro processes, the focus is now placed on aspects of the micro level with regard to central personality dimensions, which are related to sustainable consumer behavior and environmental awareness.

Influence of personality on consumer and environmental behavior

Individual behavior has a great influence on ecological conditions: many ecological challenges are direct consequences of human actions. This requires a consideration of the psychological factors that influence sustainable environmental and consumer behavior. Previous research has focused primarily on values, attitudes, norms, and socio-demographic characteristics as predictors of environmental concerns. Recent years have seen a trend towards analyzing individual preferences and values more strongly from a microanalytical perspective. One area of this development involves the analysis of personality traits using the Big Five approach. The individual feature dimensions can be used to explain and predict specific value orientations and environmental actions. Personality is understood as a „complex set of unique psychological traits that influence an individual's characteristic behavior in many situations and over a long period of time“ (Gerrig & Zimbardo 2010, p. 504). Kandler & Riemann (2014, p. 52) view personality in a similar way: It is regarded as the totality of all characteristics that reflect relatively stable patterns of feeling, thinking, striving and behaving and by which a person is more or less different from others in a particular reference population. Following this interpretation of personality, interest in ecology, social values, and individual environmental awareness (in the sense of conscious mindfulness) should also be considered part of the personality of human beings. In the context of the discourse on sustainability, the study of personality serves two main goals: first, to develop an understanding of the structure, origins and relationships of personality and second, to predict behavior on the basis of the respective personality structure. Individual personality differences are usually described by means of a small set of core characteristics, through which a wide range of stable differences in a person's typical thought patterns, emotions and actions can be derived. Core characteristics are often referred to as central properties or behavioral tendencies that have a high consistency across different situations and a high stability over time.

Since the 1990s, psychology has focused on concepts that describe a person's personality on the basis of factor-analytical dimensions. The Big Five approach has gained a reference status in this respect because it has proven to be robust to both cultural differences and sample differences (Rössler 2011, p. 144). The basic assumption of the Big Five approach, a trait theory of personality (Ostendorf & Angleitner 2004; McCrae & Costa 2008; Kandler & Riemann 2015), is that personality differences between individuals, which are expressed through differences in behavior and experience, can be traced back to five central personality dimensions or temperament factors: Neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. The Big Five are subdivided into different subdimensions or facets. These subdimensions determine habitual interpersonal behavioral orientations and interindividually varying patterns of attitude, experience, and motivation. The Socio-Economic Panel SOEP records the Big Five as a short scale with 15 items (BFI-S) (see Schupp & Gerlitz 2014). The instrument was developed and used in the context of the SOEP and is based on the Big Five Inventory (BFI). The measurement instrument is shown in the figure below and is part of the main questionnaire of the SOEP main survey.

No.	I am someone who...	Polarity	Dimension
1	works thoroughly.	+	Conscientiousness
2	is communicative, talkative.	+	Extraversion
3	is sometimes a little rough on others.	-	Agreeableness
4	is original, brings in new ideas.	+	Openness
5	often worries.	+	Neuroticism
6	is restrained.	-	Extraversion
7	can fogive.	+	Agreeableness
8	is rather lazy.	-	Conscientiousness
9	is outgoing and sociable.	+	Extraversion
10	appreciates artistic experience.	+	Openness
11	easily gets nervous.	+	Neuroticism
12	completes tasks effectively and efficiently.	+	Conscientiousness
13	treats others in a considerate and friendly manner	+	Agreeableness
14	has a vivid imagination.	+	Openness
15	relaxed, can handle stress well.	-	Neuroticism

Figure 2: The short scale measures the Big Five in the Socio-Economic-Panel (GESIS, Schupp & Gerlitz 2014)

Personality traits include more specific characteristics and behavioral patterns, which are assumed to be more strongly influenced by situational, social, and cultural factors and therefore less stable across situations and over time than personal core characteristics. Some approaches in personality psychology regard such features as characteristic adaptations of the five personality traits, i.e. as

products of interactions with individual experiential environments, which consequently develop only after the core characteristics. Value orientations, attitudes and interests are often cited as typical examples of such characteristic adaptations (McCrae & Costa 2008, p. 159 ff.). The term *value* is often used to describe evaluations or objectives of abstract entities, such as a principle or a standard (for example, equality and responsibility), whereas the term *attitude* is rather used to describe the personal evaluation of a specific thing, object, or another person. Compared to value orientations and attitudes, *interests* are more behavior-oriented. They represent motivations for activities with regard to a specific subject matter or in relation to a particular object of experience. The personality of an adult person can thus be described by a small set of personality traits in the sense of the Big Five and more precisely individualized through a set of more specific psychological characteristics that are systematically related to the five core characteristics. In this respect, personality traits can be distinguished conceptually from ideological values (for example, the right-left-continuum of political attitudes), attitudes to environmental issues (for example, support for or opposition to diesel cars), and interests and behavior (for example, ecological or social commitment). However, given the wide range of personality traits, it is to be expected that such traits will have quite systematic links with ecological, social or political value orientations, attitudes, interests and behavior, as individuals do not discard established behavioral tendencies as soon as they approach the sphere of sustainability and the environment.

Empirical examination and interpretation of the results

Based on the Socio-Economic Panel SOEP (2005, n = 2,690), Hirsh showed that both agreeableness and openness to experience are significant predictors of increased environmental awareness and thus of sustainable consumption behavior (Hirsh 2010, p. 246 ff.). The data analysis was based on the responses of participants of the Socio-Economic Panel at several measurement dates. While the full SOEP sample is considerably larger, Hirsh's study is based on only a subset where information on personality traits and environmental behavior was available. The respondents were given a 15-item version of the Big Five Inventory (BFI-S), which reflects the personality traits neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (see Figure 2). Each main dimension was represented by three items in the questionnaire, by means of which the respondents had to rate their agreement on a scale of 1 (= does not apply at all) to 7 (= applies completely). Although the SOEP data set does not contain explicit standard scales for measuring individual environmental behavior, there are several specific items that depict the respondents' individual environmental attitudes. Thus, the SOEP data include three items that can be used as latent environmental factors. These are the indicators of individual environmental awareness, individual importance of environmental protection and concern for the environment. It can be assumed that these indicators are stable temporal dispositions of a person regarding individual en-

vironmental behavior.

The generated latent environmental factor was closely related to each of the environment-related indicators: individual environmental awareness ($\beta = .62$), individual importance of environmental protection ($\beta = .94$) and concern for the environment ($\beta = .64$). Environmental concern, in turn, was significantly predicted by individual differences in big-five personality traits. In particular, greater environmental awareness was significantly associated with a higher degree of tolerance ($\beta = .22$), openness to experience ($\beta = .20$), neuroticism ($\beta = .16$) and conscientiousness ($\beta = .07$). In contrast, no significant association with extraversion was observed ($\beta = .02$). Age, gender, and household income were added to the *covariance structure model* to investigate the importance of demographic variables for the prediction of individual environmental behavior. The inclusion of sociodemographic variables did not fundamentally change the relationships between personality and individual environmental behavior, although the overall fit of the model decreased slightly. Nevertheless, some significant correlations were observed, with individual environmental behavior being positively associated with age ($\beta = .13$) and negatively associated with household income ($\beta = -.06$). Moreover, women showed a higher degree of relevance to environmental issues than men ($\beta = .07$). This finding is also consistent with other studies.

Even if men sometimes prove to have a better knowledge of environmental issues than women, hardly any differences between the sexes can be observed with regard to concrete environment-related behavior (Spörrle & Bekk 2015, p. 292; Balderjahn 2013, p. 205 ff.). Women are more concerned about social or environmental issues than men, and women also show a slightly greater willingness to act in an environmentally friendly manner with regard to specific environmental behavior. The (minimal) differences regarding male and female respondents can be explained by the different socialization of both sexes. Moreover, the effect can be fitted into the argumentation on personality, so that personality can be interpreted here as a mediator for sustainable behavior. The dimension of agreeableness, which has a positive correlation with sustainable attitudes and behavior, is of particular relevance here. Another explanation could be that women pay more attention to health and safety risks and thus also perceive more risks related to environmental problems and adapt their behavior accordingly. Age also plays a role - albeit a very moderate one - when it comes to sustainability: Adolescents tend to have more environmentally friendly attitudes than older age groups; however, there is a divergence between attitudes and behavior. Although younger persons have a greater knowledge of environmental issues and more environmentally friendly attitudes than older generations, middle-aged and older persons are more inclined to buy or recycle environmentally friendly products when it comes to concrete behavior (see also: Moch 2020).

A previous study by Hirsh also found that concern for the environ-

ment was more pronounced in those individuals who had an agreeable and open personality structure (Hirsh & Dolderman 2007, p. 1583 ff.). This finding could be replicated on the basis of different populations (SOEP, student populations in Germany and Canada). The study by Hirsh (2010, p. 246) thus additionally supports the importance of these two personality traits in predicting sustainable behavior and individual environmental behavior, respectively. Both agreeableness and openness are associated with the higher personal value of self-transcendence, which reflects increased self-confidence and concern for others (Olver & Mooradian 2003, p. 112). Agreeableness also corresponds to a higher degree of empathy, making it more likely that environmentally friendly motives and consumer actions are actively supported. Individuals who show a lower level of agreeableness generally tend to be more selfish and less concerned about the well-being of others. Openness, on the other hand, is associated with increased cognitive engagement and more flexibility in thinking about environmental issues (relevant in this context: involvement and need for cognition NFC) (Rössler 2011, p. 172 ff.). This might also correspond with a broader argumentative perspective on the subject. Less open-minded individuals probably show a more conservative view of things and think less about environmental aspects. A rather unexpected finding illustrates the effect of neuroticism: Neuroticistic individuals show a higher level of environmental conservation and protection aspects. This finding can be explained by the fact that neuroticistic individuals tend to perceive negative environmental aspects in a particularly strong form, which is reflected in concern and fear for the environment. The consequences of environmental destruction are experienced less intensively by emotionally stable individuals. Hirsh's study also revealed that conscientiousness as a personality dimension plays a small but important role in the context of individual environmental perception (Hirsh 2010, p. 247). The importance of conscientiousness for sustainable environmental behavior is consistent with studies that link this characteristic to higher social investment and prudent compliance (Lodi-Smith & Roberts 2007, p. 68 ff.). Very conscientious individuals are expected to follow social guidelines and norms for appropriate environmental action, while less conscientious individuals are more willing to compromise and cut back on sustainable environmental behavior.

Summary and outlook

In summary, it can be said that certain individual manifestations in personality traits such as agreeableness and openness to experience show systematic ties with specific sustainability-oriented basic attitudes and an increased awareness of environmental issues. A more open, agreeable person is more inclined to engage in sustainability-oriented consumer activities. This finding is consistent with theoretical models that relate environment-oriented attitudes to higher levels of empathy and self-transcendence. Individuals who are more sensitive and less self-centered are thus more likely to have a personal connection to nature, which in turn explains their environmentally friendly attitudes and behavior. In addition, an emotional affini-

ty for the environment can obviously support sustainable consumer behavior. Other characteristics dimensions (conscientiousness and neuroticism) play a rather subordinate, though not negligible role in connection with individual sustainability behavior.

Previous conceptual considerations and empirical studies have focused primarily on the relationship between personality and the ecological dimensions of sustainability (environmental protection, concern for the environment, individual environmental awareness). The social dimension of sustainability in terms of fairness, social working and production conditions, and the reduction of inequality and poverty has so far hardly been addressed by studies. This provides starting points for further research. Future studies should include more extensive personality intents (e.g. NEO-PI-R) and more items to measure environmental and sustainable consumption behavior. Against this background, the use of SOEP data to investigate the relationship between personality and environmental awareness must be viewed ambivalently. First, the large sample of the SOEP longitudinal study allowed a more detailed structural analysis of the relevant variables. Second, the sample was representative of the larger population in terms of age and gender distribution, while many preliminary studies included only student populations with a narrow age range. Thirdly, the survey waves make it possible to investigate personality predictors with regard to individual environmental behavior over long periods of time. Despite the strengths there are also certain limitations: Although the BFI-S provides a good measure of the broad Big Five factors, it does not allow the assessment of lower order personality traits. It is possible that certain aspects of the individual Big Five domains are more closely linked to environmental concerns than others. The measures of relevance to the environment were also derived from the available positions. Based on the SOEP data, they reflect only a small part of possible environmental attitudes and sustainable consumption patterns. Nevertheless, the empirical studies support the importance of personality traits in relation to environmental attitudes and sustainable consumer behavior.

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