

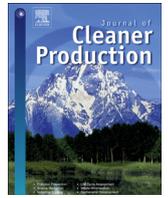
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How consumers' respect for nature and environmental self-assets influence their car brand experiences

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ABSTRACT

This paper provides a novel perspective on sustainability research by exploring how two pro-environmental characteristics of consumers – respect for nature and environmental self-assets – influence their brand experiences. The study uses survey data collected on a car brand that incorporated eco-friendly advances. The results show that respect for nature has an impact on how respondents experience the eco-friendliness of brands and that eco-friendly brand experiences in turn influence general brand experiences. The findings also suggest that the effects of the two pro-environmental characteristics depend on the education level of the consumer: eco-friendly brand experiences of highly educated consumers are affected by their respect for nature, whereas those of consumers with lower education levels are affected by environmental self-assets.

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1. Introduction

The importance of environmental protection in general and environmental products specifically is broadly accepted by the general public and supported by many governments, who have introduced new regulations and funding opportunities to stimulate environmental initiatives (e.g., Majuri, 2016; Liu et al., 2017; Sakr and Sena, 2017). In response, suppliers from diverse industries have developed and launched eco-friendly products, i.e., products that are significantly improved in terms of material use, energy use, and/or pollution caused (Driessen et al., 2013). While recent research results already indicate that consumer interest in eco-friendly products is growing (Paparoidamis and Tran, 2019; Prakash et al., 2019), consumer acceptance of eco-friendly products still remains a problem in many cases (Osburg et al., 2016; Liu

et al., 2017; Shim et al., 2018). This highlights the need for a better understanding of consumer decision-making concerning eco-friendly products, especially in the automotive sector, which has seen many eco-friendly innovations lately (Romm, 2006; Chu et al., 2018; Biressegioglu et al., 2018; Tarigan, 2019).

Recent research in the marketing domain has shown that understanding consumer behavior requires a holistic approach toward how consumers see a product or brand, which is captured in the concept of brand experiences (Brakus et al., 2009; Andreini et al., 2018; Jiang et al., 2018). Brand experiences are the feelings, thoughts, and intentions that consumers form about a brand. These feelings, thoughts, and intentions are based on all the interactions that the consumers have had with the brand. More formally, brand experience is defined as the “sensations, feelings, cognitions, and behavioral responses evoked by brand-related stimuli that are part of a brand's design and identity, packaging, communications, and environments” (Brakus et al., 2009, p. 52). Brand-related experiences can occur in different situations and environments, for

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example, when selecting, purchasing, or consuming products, or indirectly when seeing advertisements on the internet or other communication channels (Brakus et al., 2009; Schmitt, 2012). Brand experiences are especially important in situations where consumers have to make purchase decisions as they help consumers quickly assess complex product or service attributes and benefits based on their earlier experiences with the brand. Thus, consumers can easily differentiate brands with competitive offerings, and positive experiences tend to strengthen their loyalty to a favorite brand (Baker and Hart, 2007). Consumers often select a familiar brand that they trust and that they have experienced to be the most positive in competitive and confusing markets (Mohr et al., 2010; Keller, 2013). In the automotive industry, brands are the main signals consumers use to differentiate between car brands (Oltra and Jean, 2009).

One important factor that influences consumers' acceptance of eco-friendly products is their pro-environmental values, which can have an even stronger impact than environmental knowledge (Unal et al., 2018). However, in the sustainable business literature, there is very little discussion on how consumers' pro-environmental values influence their brand experiences and consequently direct their consumption (Paço et al., 2019).

This paper studies how two pro-environmental consumer characteristics influence individuals' brand experiences. The first characteristic is a pro-environmental value, respect for nature (Shepherd et al., 2009; United Nations, 2018). The second characteristic is environmental self-assets, which is a self-evaluation of one's capability to act when facing an environmental issue (Sonenshein et al., 2014). The influence of individuals' pro-environmental characteristics and views on their general and eco-friendly brand experiences remains largely unexplored. Drawing on the literature on brand management, self-assets related to environmental issues, and respect for nature, this paper develops a conceptual model that is tested empirically in the automotive industry. The findings contribute to understanding how consumers' general brand experience (GBE) and eco-friendly brand experience (EBE) impact the way they perceive car brands and how pro-environmental values influence these brand experiences.

The theoretical notion of brand experiences is first discussed below. This is followed by a section explaining how eco-friendliness is associated with brand experiences in the case of car brands. The paper then discusses how pro-environmental consumer characteristics can influence the way consumers perceive and experience car brands. The subsequent sections describe the conceptual framework and the research method. Finally, the paper presents the results of the analysis, discusses the findings, practical implications, and limitations of the research, and offers suggestions for future research.

2. Theoretical background

2.1. Brand experiences and eco-friendliness

Brand experiences are subjective responses consumers have to brand-related stimuli created either by the company (e.g., through products and product information in sales and marketing) or by other sources and stakeholders (e.g., news and information shared in social media) (Fournier, 1998; Schmitt, 2012). Consumers' brand experiences influence how they assess the reputation of a brand (Kuenzel and Halliday, 2010). A strong brand experience reduces consumers' search efforts and even increases consumer satisfaction (Saxton and Dollinger, 2004). A brand that is experienced to be positive reinforces consumers' identities, supports their self-esteem, and, as a result, strengthens the relationships that consumers form with the brand (Aaker et al., 1995; Stokburger-Sauer

et al., 2012; Fritz et al., 2017). Positive brand experiences and a strong brand heritage generate positive feelings toward a brand and help build consumer commitment (Rose et al., 2016). Although some of the above insights about brand experiences have been reported in the context of cars (Pecot et al., 2018), it is not clear if they remain valid in the context of eco-friendliness.

In the context of eco-friendliness, the link between brands and pro-environmental behavior can be explained using the concept of self-identity. Brands include symbolic messages that consumers use when forming their self-identities (Aaker et al., 1995; Stokburger-Sauer et al., 2012), and the self-identity of a person is a significant determinant of carbon-offsetting behavior (Whitmarsh and O'Neill, 2010). Self-identity is the label one gives to oneself (Sparks and Shepherd, 1992) to differentiate oneself from others and to align oneself with the values and behaviors of one's social networks (Christensen et al., 2004). Self-identity predicts individual behavior in the case of pro-environmental action; that is, individuals who consider themselves as pro-environmental are more likely to behave accordingly than those who do not consider themselves as pro-environmental (Mannetti et al., 2004). For instance, those individuals who consider themselves "carbon offsetters" have stronger intentions to offset than others (Whitmarsh and O'Neill, 2010).

In the context of eco-friendly products, it is important to recognize that the perceived eco-friendliness of a brand can be an important signal to a consumer and aid the consumer in the product-selection process in purchasing situations (Dangelico and Vocalelli, 2017; Issock et al., 2018; Schaeffer et al., 2018). This research therefore distinguishes between two types of brand experiences: general brand experience (GBE) and eco-friendly brand experience (EBE). GBE refers to experiences that consumers have with brands based on perceptions they have made on the four different dimensions as proposed and defined by Brakus et al. (2009): affective, behavioral, intellectual, and sensory. Parallel to that, EBE is formally defined as the eco-affective, eco-behavioral, eco-intellectual, and eco-sensory experiences consumers have of brands, referring respectively to the way in which the brands create eco-friendly emotions, help consumers behave in an eco-friendly way, makes users think about the state of the environment, and communicate that they are not harmful to the environment (Saari et al., 2017). For example, the way car manufacturers report about the emissions of new cars, c.f. the Dieselgate (Parloff, 2018) that shook the automotive industry, can influence consumers' experience of eco-friendliness. Thus, EBE can become an important element in the evaluation of cars prior to purchase or lease.

2.2. Eco-friendliness in the automotive industry

The automotive industry presents an interesting context to study eco-friendly products and their brand experiences. Consumers' non-green product requirements and existing habits have been found to decrease the importance of green criteria among consumers (Young et al., 2010). Currently, in the automotive industry, the pressure to adopt green solutions to help reduce human emissions of carbon dioxide (CO₂), even at the consumer level, has increased due to intense restrictions by regulators and especially after the release of the latest Special Report on Global Warming published by the Intergovernmental Panel on Climate Change IPCC (2018). The interest in less polluting cars is evident in the increased consumer demand for them over the last decade.

A car is more than a means of transport for consumers; it is also associated with feelings of sensation, superiority, power, social status, and self-esteem, which reflect the symbolic and affective value that cars have in the minds of consumers (Steg, 2005; Baltas and Saridakis, 2009). Consumers are interested in car brands that

they experience as trustworthy and innovative and that have emotional appeal (Payne et al., 2009).

Even though automotive companies have been investing in the development of eco-friendly cars powered by alternative fuels, they still encounter major barriers in scaling up the production of electric vehicles (Romm, 2006). For instance, the charging infrastructure in most countries is underdeveloped or non-existent, there are technical restrictions on alternative vehicles, and companies still lack knowledge on how to promote the large-scale production and marketing of eco-friendly vehicles (Biresseolioglu et al., 2018).

Research on eco-friendly consumer behavior in the context of the automotive industry has shown that consumers with strong pro-environmental values tend to be interested in purchasing an eco-friendly car (Baltas and Saridakis, 2013) and that more than 66% of prospective car buyers are willing to pay a moderately higher price for more eco-friendly vehicles (Hetterich et al., 2012). In a study on the adoption of eco-friendly cars in five key market areas globally, Chu et al. (2018) found that with the exception of China, consumers in Germany, USA, Japan, and South Korea have a sustainability orientation that impacts their values and expectations regarding sustainable consumption and eco-friendly products. Kim et al. (2019) further found that the willingness to pay more for eco-friendly vehicles is very high among consumers in South Korea. Earlier research has also indicated that socio-psychological factors have a strong influence on the acceptance and adoption of eco-friendly vehicles (Bakker and Trip, 2013). Environmental awareness and concern have also been found to have an impact on consumers' willingness to pay for eco-friendly vehicles (Sangroya and Nayak, 2017; Wang et al., 2017). However, few studies have focused on how consumers experience the eco-friendliness of car brands. Scholars have also called for more research on consumers' interest in adopting eco-friendly vehicles (Chu et al., 2018).

2.3. Respect for nature and environmental self-assets

Values are an organized system of guiding principles that can influence consumers' experiences, which in turn impact their purchasing behavior, use, and disposal of products (Schultz and Zelezny, 1999; Stern, 2000; Shepherd et al., 2009). However, current research suggests that this is not always the case, as, for example, remanufactured products have different dynamics (Michaud and Llerena, 2011; Jiménez-Parra et al., 2014).

Pro-environmental values that motivate people to support sustainable development include the concept of respect for nature, which the United Nations (UN) has recognized in their definition of sustainable development goals (Shepherd et al., 2009; United Nations, 2018). Focusing specifically on values that precede attitudes and actions, Shepherd et al. (2009) conceptualize respect for nature as a psychological value that captures the degree to which a person thinks it is important to be prudent with respect to managing natural resources and species, in line with the principles of sustainable development.

Pro-environmental values, like respect for nature, are currently of great interest in consumer markets, especially in the automotive industry, which has been targeting the reduction of CO₂ emissions in new car models to meet the criteria set, for example, by the EU (European Commission, 2018) and globally by the IPCC (2018). As the pressure, driven by legislation, to reduce CO₂ emissions and to adopt innovative green solutions in car models increases, environmentally conscious consumers will start demanding more eco-friendly solutions. So far, environmental considerations have not been found to be the most important criterion for new car buyers (Lane and Potter, 2007; Loureiro et al., 2012). For the majority of car

buyers, the main purchasing criteria still are the price, security, and fuel consumption (Oltra and Jean, 2009). Given the above differences in pro-environmental motivations between car buyers, a pro-environmental value like respect for nature is likely to differ substantially between consumers in the car market.

However, consumers can be doubtful of the quality of a product or its functionality if it includes recycled parts or if it is remanufactured (Debo et al., 2005). This has been found to result from the lack of additional information on the eco-friendliness and quality of remanufactured products (Atasu et al., 2008; Jiménez-Parra et al., 2014). From their study on remanufactured products, Michaud and Llerena (2011) found that if consumers do not get environmental information on a new product that includes remanufactured or recycled parts, they are willing to pay less for it because they think that the product has poor quality. However, when informed about the eco-friendliness of a product, people are often willing to pay more for the product. Nevertheless, in the case of highly polluting products, consumers may refuse to buy the products altogether (Michaud and Llerena, 2011).

Whereas respect for nature reflects the pro-environmental values that are important to a person, the concept of environmental self-assets reflects a person's own evaluation of his/her ability to deal with environmental issues. Environmental self-assets refer to people's knowledge about environmental issues and their experience in handling environmental issues in their personal lives. Sonenshein et al. (2014, p. 9) defined self-assets as "self-evaluations that endow the self with the psychological capabilities for acting on an issue". In their study on self-evaluations of everyday experiences and their influence on the individuals' personal psychological capabilities for acting on an environmental issue, Sonenshein et al. (2014) referred to three different types of self-assets: value, experience, and knowledge. Value assets refer to having the correct values to be an issue supporter, and the values can be ethical or more issue related. Knowledge assets refer to the positive self-evaluations a person can have about the level of knowledge they have regarding the issue at hand. Finally, experience assets are the evaluations of the self as an individual who has practice in supporting the issue (Sonenshein et al., 2014).

Respect for nature and environmental self-assets can be considered as important antecedents that explain personal eco-behavioral intentions: what knowledge is cognitively most accessible to individuals, how people evaluate different aspects of a situation (e.g., in a purchasing situation), and what kinds of alternatives do they consider in purchasing situations (Steg et al., 2011). By considering both respect for nature and environmental self-assets, this study captures both what is important to consumers with respect to sustainable development, as well as their own assessment of their sustainability-relevant abilities. Individuals carry a certain amount of respect for nature, which is linked to the general sustainable development values they have (Shepherd et al., 2009), and they may have a view of how much their self-assets could help save the environment (Sonenshein et al., 2014). Combining the two types of pro-environmental consumer characteristics may create some overlapping constructs. Therefore, the dimensionality of the pro-environmental consumer characteristics will be explored in this study.

3. Conceptual model and hypotheses development

The following conceptual model describes how consumers' respect for nature and environmental self-assets influence EBE and how EBE in turn influences GBE (Fig. 1).

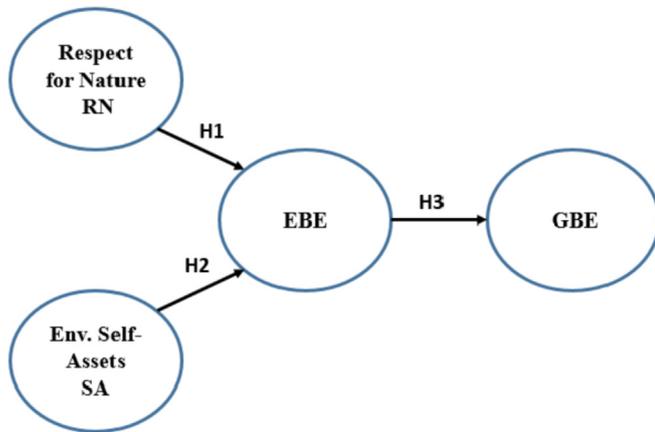


Fig. 1. Conceptual model.

3.1. Respect for nature

Shepherd et al. (2009, 2013) conceptualized respect for nature as a construct that focused on the pro-environmental values that lead people to promote sustainable development. These values provide a solid foundation for research on the psychology underlying ecological economics (Shepherd et al., 2009). Individuals with respect for nature question the products that are harmful to the environment, while they are supportive of sustainable patterns of production and consumption that are reflected in the green or eco-friendly features of products (Stern, 2000). In other words, consumers who respect nature perceive the eco-friendliness of a car brand differently. Those with high respect for nature are more receptive of the eco-friendliness of a car brand that has made significant progress in eco-friendly innovations and thus are more likely to experience the brand as eco-friendly. Therefore, the first hypothesis of this paper is as follows:

H1. Consumers' respect for nature influences their EBE positively.

3.2. Environmental self-assets

According to Sonenshein et al. (2014), those who score high on environmental self-assets behave in a significantly more issue-supportive manner than self-critics who have self-doubts. Environmental self-assets combine the value, experience, and knowledge assets of a consumer (Sonenshein et al., 2014). Value assets pertain to how deeply a consumer cares for environmental issues, knowledge assets refer to how knowledgeable a consumer is about environmental issues, and experience assets concern how experienced a consumer is in using the knowledge at influencing others. When consumers are knowledgeable about environmental issues and can differentiate between technologies and products that harm the environment, they are able to make conscious choices and act accordingly (i.e., they do not use these technologies or products) (Young et al., 2010). In the context of a car brand that has made significant advances in eco-friendliness, it is likely that consumers with high environmental self-assets will acknowledge the difference between the harmfulness of conventional petroleum-fueled cars and the eco-friendliness of electric vehicles. Consumers with high environmental self-assets may be more receptive, understanding, and responsive toward eco-friendly car brands and thus more likely to experience the brand as eco-friendly. Accordingly, the second hypothesis is the following:

H2. Consumers' environmental self-assets influence their EBE

Table 1

Distribution of respondents in the sample ($n = 159$) by age group.

Age group	Percentage
16–17	11.9%
18–24	22.6%
25–34	20.8%
35–44	28.9%
45–54	11.9%
55–64	3.8%

positively.

3.3. General brand experience (GBE) and eco-friendly brand experience (EBE)

Brand experience as conceptualized by Brakus et al. (2009) has four dimensions: intellectual, affective, behavioral, and sensory. To explore how an existing framework can be extended by including a sustainability-related construct (Saari and Mäkinen, 2019), a validated brand experience scale has been used for the measurement of EBE. At the eco-intellectual level, consumers can assess the environmental performance of a product, which in turn can affect the assessment of the general features of the product, such as the recyclability of materials (Young et al., 2010). The positive experience of a brand at the eco-sensory level can lead consumers to appreciate the look and feel of that brand's product at a GBE level (Vallet et al., 2013). With regard to the affective dimension, a positive EBE can enhance positive feelings toward the brand in general (Hartmann and Apaolaza-Ibanez, 2012). Finally, the possibility to use a product without producing a negative environmental impact may lead consumers to appreciate the use of the product even on a general level (Yankelovich and Meer, 2006). Thus, EBE can spill over to consumers' general experience of the brand. The third hypothesis is therefore as follows:

H3. Consumers' EBE positively influences their GBE.

4. Data and method

4.1. Sample

The conceptual model developed in this paper was tested in the automotive industry. Data were collected by interviewing visitors of the Auto 2016 Car Show in Helsinki in November 2016. The visitors represented different age groups (See Table 1).

In terms of gender, 85% of the respondents ($n = 159$) were male and 15% were female. This distribution is similar to that of an earlier study involving a special interest group of car enthusiasts—individuals who are the most critical and receptive of car brand-related experiences (Wiedmann et al., 2011). The respondents owned different car brands; therefore, most of the major car brands were represented.

While selecting a car brand for the survey, the authors of this study focused on finding an incumbent company that had been introducing more eco-friendly car models and was competing with new entrants on the car market with their new models (e.g., hybrid and electric vehicles). Toyota was selected for its widely marketed eco-friendly car models (Majid and Russell, 2015).

4.2. Measurements and analysis

All the measured constructs included at least three items measured on a 7-point Likert scale and the eighth option was “Do

Table 2
Overview of the constructs.

Constructs	Measurement Items	Literature
Respect for Nature (RN)	<ul style="list-style-type: none"> - Sometimes some natural resources need to be sacrificed for important developments (P1). - Current patterns of production only require minor adjustments to protect the welfare of the natural environment (P2). - People only need to make minor changes to their current consumption out of respect for nature (P3). - It is the obligation of a society to vigorously protect the natural environment for the benefit of future generations (P4). 	Shepherd et al. (2009); Shepherd et al. (2013)
Environmental Self-Assets (SAs)	<ul style="list-style-type: none"> - I am knowledgeable about environmental issues (P5). - I stay up-to-date on environmental issues (P6). - I am experienced at influencing the environmental opinions of others (P7). - I care deeply about environmental issues (P8). 	Sonenshein et al. (2014)
General Brand Experience (GBE)	<p>Affective:</p> <p>This brand induces feelings and sentiments (T1).</p> <p>This brand is an emotional brand (T5).</p> <p>I have strong emotions for this brand (T12).</p> <p>Sensory:</p> <p>I find this brand interesting in a sensory way (T4).</p> <p>This brand appeals to my senses (T10).</p> <p>This brand makes a strong impression on my visual senses (T14).</p> <p>Behavioral:</p> <p>I engage in physical actions and behaviors when I use this brand (T7).</p> <p>This brand is action oriented (T9).</p> <p>This brand results in bodily experiences (T15).</p> <p>Intellectual:</p> <p>This brand stimulates my curiosity and problem solving (T3).</p> <p>I engage in a lot of thinking when I encounter this brand (T8).</p> <p>This brand makes me think (T17).</p>	Brakus et al. (2009)
Eco-Friendly Brand Experience (EBE)	<ul style="list-style-type: none"> This brand makes me think about environmental pollution (T2). This brand makes an eco-friendly impression (T11). This brand creates eco-friendly emotions (T13). This brand makes me behave in an eco-friendly way (T16). 	Saari et al. (2017)

not know". The "Do not know" responses were treated as missing data. All the scales were based on existing scales available in the literature (Table 2). The scales were also tested in a pilot study with student samples from Austria and Finland in October 2016.

The measurement items for respect for nature were based on the study by Shepherd et al. (2009). These measures are considered universal, and they specifically focus on values that precede attitudes and actions. For environmental self-assets, the study uses a scale that reflects the three different types of self-assets: value, experience, and knowledge (Sonenshein et al., 2014). The respondents were asked to report how knowledgeable and how up-to-date they were about environmental issues, how experienced they were at influencing others' environmental opinions, and if they cared deeply about environmental issues.

EBE was measured with items on eco-intellectual, eco-sensory, eco-affective, and eco-behavioral aspects (Saari et al., 2017; Saari and Mäkinen, 2019). The set of items measuring GBE were taken from a brand experience scale (Brakus et al., 2009).

While only 8% of the respondents were Toyota owners, ownership of the focal brand could potentially influence the results. To ensure that this was not the case, the model was first tested with a dataset that did not include Toyota owners ($n = 146$). The results were consistent with the results of the full sample, suggesting that ownership of the focal brand did not significantly influence the results.

The data was analyzed using partial least squares structural equation modeling (PLS-SEM). PLS-SEM is an analysis method that is often used when the theory is less developed. It matches the exploratory nature of this study (Hair et al., 2012, 2016). PLS-SEM is useful for exploring different influences on key target constructs (Sarstedt et al., 2017), and it is widely used in management and business research, for example, related to international marketing (Henseler et al., 2009). In this study, the hypotheses in the

conceptual model were tested using PLS-SEM, with the help of the tool SmartPLS (version 3.2.8) (Ringle et al., 2015). To determine the dimensionality of the antecedent items and how the items loaded on the underlying factors, principal component analysis (PCA) was used.

5. Results

5.1. Dimensionality of the antecedent items

Because of potential overlap between the items for both pro-environmental consumer characteristics, respect for nature and environmental self-assets, their dimensionality was scrutinized. The Kaiser-Meyer-Olkin measure for sampling adequacy was .620 for the student sample and .700 for the Auto 2016 car show sample, both of which indicate that factor analysis with the samples is meaningful and that a PCA can be conducted (Janssens et al., 2008). PCA was first conducted in the pilot phase with the student sample. This was followed by the assessment of how the items loaded on the components with the auto show data and compared the results with the student sample. On the basis of the PCA results, the items were grouped into the two constructs identified in the theory: respect for nature (P1–P4) and environmental self-assets (P5–P8) (Table 2).

5.2. Hypothesis testing

PLS-SEM was used to analyze how the two pro-environmental consumer characteristics influence GBE and EBE. The appropriateness of constructs and their suitability to the properties of the constructs were verified by evaluating the composite reliability (CR), average variance extracted (AVE), indicator loadings, and discriminant validity of the constructs. The PLS-SEM model was

Table 3
Composite reliability (CR) and average variance extracted (AVE).

Construct	CR	AVE
EBE	0.819	0.539
Env. Self-Assets	0.851	0.588
GBE	0.908	0.457
Respect for Nature	0.757	0.513

analyzed in two stages: first, the reliability of the measures and discriminant validity of the constructs were assessed (Hair et al., 2016). Then the conceptual model was tested by examining the item loadings. The path mode was selected as the inner weighting scheme in the PLS-SEM algorithm.

CR is used to assess construct reliability (Fornell and Larcker, 1981). All the constructs in the model were reliable as the CR values were well above the recommended threshold of 0.7 (Hair et al., 2010) and thus indicated convergent validity. The threshold for AVE is 0.5, and this was fulfilled by all the constructs (only one value was slightly below but it rounded up to .5), which suggests that over half the variance was explained by the constructs. (See Table 3).

The Cronbach's alpha coefficients for EBE, GBE, and self-assets were clearly above 0.70, which is the threshold for established constructs. The value for respect for nature was slightly lower than 0.60, but given the exploratory nature of the research, the value is acceptable. In PLS-SEM models, CR is a more accurate measure than Cronbach's alpha (Hair et al., 2010), and the CR values for the constructs in the model were clearly above the recommended value of 0.70, ranging from 0.76 to 0.90.

In the first version of the model, item P4 had a negative loading, and it was dropped from the model. In the final modified model, the loadings were over 0.70 for most of the items, which is an indication that over 50% of the variance in a specific variable can be described by the items in the constructs (Hair et al., 2016). Some of the item loadings were above 0.6; however, none were below 0.4, which is one of the thresholds mentioned in the literature for removing an item from a model (Janssens et al., 2008) (See Table 4).

Discriminant validity was assessed using the Heterotrait-Monotrait ratio (HTMT) of the correlations (Henseler et al., 2015). The HTMT value is obtained from the results of the bootstrapping procedure in SmartPLS. When the constructs in the path model have a HTMT value lower than 0.85, they can be considered conceptually distinct. The HTMT values were clearly below 0.85 for all the correlations between the constructs. In addition, to ensure discriminant validity, the Fornell-Larcker criterion was determined. This criterion indicates discriminant validity when the square root of the AVE is greater than the square of the latent variable correlations, which was true in this case (Table 5).

The PLS-SEM model estimation yielded path coefficients for each of the hypothesized relationships in the conceptual model. The size of the path coefficients is shown in the structural model (Fig. 2).

The significance of the path coefficients was determined through bootstrapping with 5000 samples. A p -value < 0.05 was used to determine the significance of the path coefficients (see Table 6 for results). For the entire dataset, results showed that consumers' respect for nature (RN) had a positive impact on their EBE, in support of H1 (RN \rightarrow EBE = 0.233, $p = 0.002$). However, hypothesis H2 (SA \rightarrow EBE = 0.148, $p = 0.109$) was not supported: environmental self-assets did not have a significant effect on EBE. Finally, the largest impact was from EBE to GBE, indicating that H3 was supported (EBE \rightarrow GBE = 0.529, $p = 0.000$).

To explore the conditions under which the relationships hold, the impact of the respondents' education was assessed by

Table 4
Measurement model.

Construct	Item	Outer Loading	SD
Respect for Nature	P1	0.816	0.144
	P2	0.695	0.174
	P3	0.624	0.195
Env. Self-Assets	P5	0.718	0.271
	P6	0.795	0.299
	P7	0.828	0.240
	P8	0.721	0.291
	P9	0.721	0.291
EBE	T2	0.533	0.116
	T11	0.650	0.073
	T13	0.865	0.032
	T16	0.838	0.026
GBE	T1	0.407	0.085
	T3	0.677	0.055
	T4	0.779	0.040
	T5	0.675	0.064
	T7	0.604	0.062
	T8	0.669	0.068
	T9	0.569	0.064
	T10	0.768	0.040
	T12	0.607	0.063
	T14	0.794	0.038
	T15	0.743	0.040
T17	0.721	0.042	

SD = Standard deviation.

Table 5
Discriminant validity using the Fornell-Larcker criterion.

	EBE	SA	GBE	RN
EBE	0.7345			
SA	0.1442	0.7669		
GBE	0.5292	0.1842	0.6759	
RN	0.2306	-0.0152	0.1467	0.7162

The diagonal elements (in bold) are the square root of AVEs.

RN = Respect for Nature; SA = Env. Self-Assets.

conducting a multi-group analysis. Data were divided into two subgroups according to the level of education. Clear differences were observed in the influence of the antecedents on EBE depending on the respondents' educational background. For those with a lower education (higher secondary, primary, or vocational education; $n = 63$), respect for nature did not have a significant impact on EBE. However, what is noteworthy, is that for these respondents environmental self-assets had a significant influence on EBE ($p = 0.005$). On the other hand, for respondents with a university education (bachelor or masters level; $n = 90$), respect for nature had a significant influence on EBE ($p = 0.003$), while environmental self-assets did not have a significant impact on EBE (See Table 7).

6. Discussion

The results support the hypothesis that EBE has a significant positive impact on GBE, which implies that consumers' EBE spills over to their general experience of the brand. In addition, the results showed that pro-environmental consumer characteristics can explain the differences in EBE for a brand that has made advances in eco-friendliness. Consumers with different pro-environmental characteristics experience brands differently. Specifically, education level seems to moderate the effects of pro-environmental characteristics on EBE. The environmental self-assets of respondents with a university education did not have a significant influence on their EBE. This may be attributed to consumers' conscious acknowledgement of the damaging effect that car usage has on the state of the environment even if the cars are eco-friendly

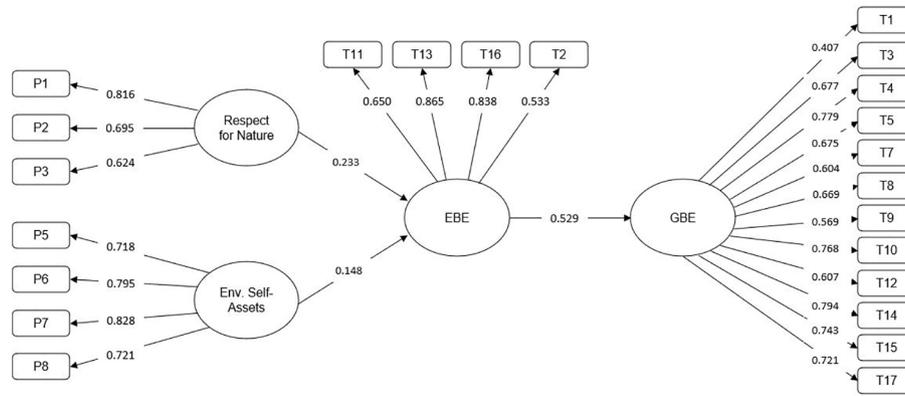


Fig. 2. Structural model with path coefficients for the complete dataset (N = 159).

Table 6
Path coefficients and p-values of the model tested with the complete dataset (n = 159).

Hypothesis	Path	Coefficient	p-value	Support for Hypothesis Sig. level p < 0.05
H1. Consumers' respect for nature influences their EBE positively.	RN -> EBE	0.233	0.002	Supported
H2. Consumers' environmental self-assets influence their EBE positively.	SA -> EBE	0.148	0.109	Not supported
H3. Consumers' EBE influences their GBE positively.	EBE -> GBE	0.529	0.000	Supported

Table 7
Path coefficients and p-values for respondents with a secondary, primary or vocational education (LowerEdu) (n = 63) and respondents with a university education (HigherEdu) (n = 90).

Hyp.	Path	LowerEdu			HigherEdu		
		Co-efficient	p-value	Support for Hypothesis Sig. level p < 0.05	Co-efficient	p-value	Support for Hypothesis Sig. level p < 0.05
H1.	RN -> EBE	0.085	0.622	Not supported	0.275	0.003	Supported
H2.	SA -> EBE	0.335	0.005	Supported	0.191	0.392	Not supported
H3.	EBE -> GBE	0.607	0.000	Supported	0.478	0.000	Supported

RN = Respect for Nature; SA = Env. Self-Assets.

models. Pro-environmental values are linked to the individuals' self-evaluations (Whitmarsh and O'Neill, 2010; Sonenshein et al., 2014; Uba and Chatzidakis, 2016). Individuals with a higher education level understand that environmental issues are highly complex, and their resolution calls for very high involvement and action, which may be very difficult to implement in everyday life (Sonenshein et al., 2014). In other words, highly educated consumers with high environmental self-assets did not experience the brand in this study as eco-friendly. They were possibly more skeptical about the eco-friendliness of the brand. Today, even though consumers receive a lot of information about the negative effects of petrol-powered cars on the environment, globally, car use has not decreased. Instead, many consumers justify the environmental damage caused by their car use and maintain a coherent sense of themselves by using neutralization mechanisms such as denying personal responsibility, defending the necessity of car usage, claiming relative acceptance, individuality, and even entitlement (Uba and Chatzidakis, 2016). This also supports earlier research on the impact of education on pro-environmental behavior. Pro-environmental behavior is affected by many factors, and an important influencer is the knowledge and education an individual has. Those with a higher level of education are generally more concerned about the environment; however, education alone does not necessarily lead to more pro-environmental behavior (Gifford, 2014). In addition, the perceived control that one has over

a situation, norms and habits, goals, emotions as well as demographic factors can have an impact on pro-environmental views and consumption behavior.

Whereas environmental self-assets seem to evoke skepticism among highly educated consumers, respect for nature seems to make highly educated consumers perceive the brand as more eco-friendly. We posit that this may be due to the fact that respect for nature makes highly educated consumers more sensitive to and appreciate the eco-friendly aspects of a brand. Similarly, in an earlier sample of university students (Sonenshein et al., 2014), the informants acknowledged climate change and viewed it as being a broad and overwhelming issue that was complex and difficult to solve. They were also inclined towards being pessimistic and skeptical about the possibility to educate others on such a complex issue. Our finding is in line with earlier studies on the social bases of environmental concern, which have shown that highly educated individuals are more sensitive to environmental issues (Jones and Dunlap, 1992). The level of education can have an impact on how interested individuals are in purchasing eco-friendly vehicles that are run on alternative fuels (e.g., electricity, biodiesel, gas, hydrogen) so that these are more attractive to consumers with a higher level of education. Tarigan (2019) found that in Norway, higher education has a significant impact on willingness to purchase an eco-friendly vehicle and that individuals with a higher education are willing to support eco-friendly vehicles when their

expectations about the price and safety of the car are satisfied. Further, it has been suggested that providing consumers with more information about the carbon emissions of vehicles can make them more interested in eco-friendly alternatively fueled vehicles (Bergman et al., 2017; Daziano et al., 2017).

In this study, the environmental self-assets of the respondents with a lower education had a significant influence on their EBE; however, their respect for nature did not have any impact on their EBE. A possible explanation for this finding is that less educated consumers need environmental self-assets to be appreciative of the eco-friendliness of a brand. Environmental self-assets may help them process the information about eco-friendliness in a positive way. Consumers with more environmental self-assets are up-to-date and knowledgeable about environmental issues and even care about them. In the environmental education literature, people with a lower level of education have been described to be less conscious of environmental problems (Liefländer et al., 2013).

A reason why respect for nature did not have a significant effect on the EBE of less educated respondents could be that respect for nature does not enthrall less educated consumers like it does higher educated consumers. Instead, it may make them suspicious about the eco-friendliness of brands.

The findings of this study are consistent with previous research regarding green consumption in that pro-environmental consumer characteristics have an impact on consumers (Young et al., 2010). In addition, eco-friendly brand experiences are important when promoting sustainable consumption among consumers, as it can increase the demand for eco-friendly products and brands. Consumers have been responding to companies' green initiatives in varied and reserved ways, which seems to indicate that the short-term perspective of traditional new product development (NPD) initiatives has not been fully successful in launching new green products, given the performance of the products (Driessen and Hillebrand, 2013) and the brand experiences. This could mean, in the context of car brands, that if there were more eco-friendly car models that the users could trust to be less polluting, they would consider themselves to be behaving in an eco-friendly manner by using the car.

Thus, the recommendations and managerial implications of this study would be to focus on the eco-friendly experiences that consumers associate with eco-friendly car brands. Companies producing green products with eco-friendly brand experiences should reinforce the sustainable consumption behavior of consumers, increase the demand for eco-friendly products, and promote sustainable development in the industry (Hennigs et al., 2017; Saari et al., 2017; Moorhouse and Moorhouse, 2018). Companies should understand the different market segments for eco-friendly products and accordingly tailor their environmental communication (Bögel et al., 2018; Tarigan, 2019). If companies provide more precise environmental information on their operations and are more transparent about, for example, the sustainability of their supply chains, they could improve the effectiveness of their environmental communication significantly. Such green marketing messages may also generate more trust among consumers (e.g., Klöckner, 2015; Saari et al., 2018). Recently, sustainability experiences of the consumers have been integrated with brands in the fashion industry (Moorhouse and Moorhouse, 2018), in the travel and tourism industry (Hennigs et al., 2017), and even in the automotive industry (Baltas and Saridakis, 2013) to gain competitive advantages. However, charging and alternative fuel station networks need to be developed so that the driving ranges are not too short (Byun et al., 2018) and then eco-friendly vehicles could become realistic options for average consumers.

Despite its insightful results, this study is not without limitations. First, the sample size is rather small ($n = 159$) and confined to

one country, where the car show was held. In addition, the study only uses one car brand. Hence, the results are not directly generalizable. However, given the exploratory nature of the study, the sample is sufficient to test the model and theory (Hair et al., 2012, 2016). Further, brand experiences exist before consumers buy or use a branded product, and visitors at an auto show may be already engaged in the automotive industry and may have had varied brand experiences of different car brands. The study should be seen as evidence that differences in pro-environmental consumer characteristics affect how consumers experience a car brand. Second, our survey questionnaire is short and contains positively formulated measurement items that may potentially induce respondents' desire to conform and thus result in biased findings. However, psychometric studies show that negatively formulated measurement items can be omitted from questionnaires if the question is already covered by a positive statement (Stanton et al., 2002). This advice was followed in order to create a short survey that respondents were willing to fill out at the auto show. Studies have also noted that alternating between positive and negative statements can confuse respondents and thus have an unpredictable impact on their response style (Barnette, 2000; Baumgartner and Steenkamp, 2001; Dodeen, 2015). Many brand measurement scales do not incorporate negative statements (Lehmann et al., 2008). Concise measurement scales, such as the one used in this study, are considered more practical and easy to use than longer scales (Stanton et al., 2002; Nenkov et al., 2008).

Future studies could investigate EBE and its impact on GBE for other stakeholders and other car brands. Our study focused on analyzing the impact of respondents' respect for nature and environmental self-assets on the EBE generated by a car brand. However, other factors can also impact consumers' EBE. Consumers' EBE is likely to be strongly impacted by exposure to marketing communication by the car manufacturer, which was outside the scope of our study. Furthermore, only one pro-environmental value (respect for nature) was included in the study. Other pro-environmental values, for instance from the inventory of Shepherd et al. (2009) may improve the explanatory power of our model. Similarly, only environmental self-assets were included in the study, whereas Sonenshein et al. (2014) also introduced the concept of environmental self-doubts, which could add to the explanatory power of our model. In addition, future studies could also address the type of green self-identities consumers aspire to build with their choice of brands. The finding of high environmental self-assets evoking skepticism among highly educated consumers also paves a way for fruitful avenues for future research.

7. Conclusion

The eco-friendliness of cars has become a subject of extensive public discussion in the context of environmental changes and growing CO₂ emissions (European Commission, 2018; IPCC, 2018). To support the introduction of low-emission car brands into the market, more knowledge is needed about the factors influencing consumers' eco-friendly brand experiences. This study provides a tested model to track consumers' experiences and the underlying values that influence their experiences. For ease of testing the model and to ensure internal validity, the analysis was limited to consumers at a car show in one country and a single car brand. While the findings cannot be widely generalized, they are adequate to test a theoretical model, which indicates that car brand experiences are based on eco-friendly brand experiences (EBEs), and these have an impact on the general brand experiences (GBEs) of consumers. The findings of this study imply that EBE is an important way to increase positive GBE. However, the results also show that companies may need to segment their customers using both

values and levels of education while also being cognizant on how increasing skepticism may influence consumer behavior.

The automotive industry may benefit from creating more EBEs for consumers as they translate into GBEs. This could be achieved by incorporating more green NPD practices into the design of products to improve their sustainability and greenness (Driessen and Hillebrand, 2013). The NPD process has become more complex because of the increased number of internal and external stakeholders (Hillebrand and Biemans, 2004). This is especially true in the case of green and sustainable NPD, where multiple stakeholder viewpoints need to be taken into account, including the views of end customers (Driessen and Hillebrand, 2013), or car users as shown in this study.

The key challenge currently for the automotive industry is gaining competitive advantage from eco-friendliness and generating authentic EBE for its customers. In the future, generating a positive EBE that is then reflected in the GBE may become a competitive advantage for brands.

Author contributions

Ulla A. Saari: Conceptualization; Investigation; Methodology; Formal analysis; Writing - Original Draft; Writing - Review & Editing. Saku J. Mäkinen: Funding acquisition; Conceptualization; Formal analysis; Writing - Original Draft; Writing - Review & Editing; Resources; Supervision. Rupert J. Baumgartner: Conceptualization; Writing - Original Draft; Writing - Review & Editing; Resources. Bas Hillebrand: Conceptualization; Writing - Review & Editing. Paul H. Driessen: Conceptualization; Writing - Review & Editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

- Aaker, J., Fournier, S., Kardes, F., Suajan, M., 1995. Brand as a character, a partner and a person: three perspectives on the question of brand personality. *Adv. Consum. Res.* 22, 391–395.
- Andreini, D., Pedeliento, G., Zarantonello, L., Solerio, C., 2018. A renaissance of brand experience: advancing the concept through a multi-perspective analysis. *J. Bus. Res.* 91, 123–133. <https://doi.org/10.1016/j.jbusres.2018.05.047>.
- Atasu, A., Sarvary, M., Van Wassenhove, L.N., 2008. Remanufacturing as a marketing strategy. *Manag. Sci.* 54 (10), 1731–1746. <https://doi.org/10.1287/mnsc.1080.0893>.
- Baker, M., Hart, S., 2007. *Product Strategy and Management*, second ed. Pearson Education Limited, Essex, England.
- Bakker, S., Trip, J.J., 2013. Policy options to support the adoption of electric vehicles in the urban environment. *Transport. Res. Transport Environ.* 25, 18–23. <https://doi.org/10.1016/j.trd.2013.07.005>.
- Baltas, G., Saridakis, C., 2009. Brand-name effects, segment differences, and product characteristics: an integrated model of the car market. *J. Prod. Brand Manag.* 18 (2), 143–151. <https://doi.org/10.1108/10610420910949040>.
- Baltas, G., Saridakis, C., 2013. An empirical investigation of the impact of behavioural and psychographic consumer characteristics on car preferences: an integrated model of car type choice. *Transport. Res. Pol.* 54, 92–110. <https://doi.org/10.1016/j.tra.2013.07.007>.
- Barnette, J.J., 2000. Effects of stem and Likert response option reversals on survey internal consistency: if you feel the need, there is a better alternative to using those negatively worded stems. *Educ. Psychol. Meas.* 60 (3), 361–370. <https://doi.org/10.1177/00131640021970592>.
- Baumgartner, H., Steenkamp, J.B.E., 2001. Response styles in marketing research: a cross-national investigation. *J. Mar. Res.* 38 (2), 143–156. <https://doi.org/10.1509/jmkr.38.2.143.18840>.
- Bergman, N., Schwanen, T., Sovacool, B.K., 2017. Imagined people, behaviour and future mobility: insights from visions of electric vehicles and car clubs in the United Kingdom. *Transport. Pol.* 59, 165–173. <https://doi.org/10.1016/j.tranpol.2017.07.016>.
- Bireselioglu, M.E., Kaplan, M.D., Yilmaz, B.K., 2018. Electric mobility in Europe: a comprehensive review of motivators and barriers in decision making processes. *Transport. Res. Pol.* 109, 1–13. <https://doi.org/10.1016/j.tra.2018.01.017>.
- Bögel, P., Oltra, C., Sala, R., Lores, M., Upham, P., Dütschke, E., Schneider, U., Wiemann, P., 2018. The role of attitudes in technology acceptance management: reflections on the case of hydrogen fuel cells in Europe. *J. Clean. Prod.* 188, 125–135. <https://doi.org/10.1016/j.jclepro.2018.03.266>.
- Brakus, J.J., Schmitt, B.H., Zarantonello, L., 2009. Brand experience: what is it? How is it measured? Does it affect loyalty? *J. Market.* 73 (3), 52–68. <https://doi.org/10.1509/jmkg.73.3.052>.
- Byun, H., Shin, J., Lee, C.Y., 2018. Using a discrete choice experiment to predict the penetration possibility of environmentally friendly vehicles. *Energy* 144, 312–321. <https://doi.org/10.1016/j.energy.2017.12.035>.
- Christensen, P.N., Rothgerber, H., Wood, W., Matz, D.C., 2004. Social norms and identity relevance: a motivational approach to normative behavior. *Pers. Soc. Psychol. Bull.* 30 (10), 1295–1309. <https://doi.org/10.1177/0146167204264480>.
- Chu, W., Baumann, C., Hamann, H., Hoadley, S., 2018. Adoption of environment-friendly cars: direct vis-à-vis mediated effects of government incentives and consumers' environmental concern across global car markets. *J. Global Market.* 31 (4), 282–291. <https://doi.org/10.1080/08911762.2018.1456597>.
- Dangelico, R., Vocalelli, D., 2017. "Green Marketing": an analysis of definitions, strategy steps, and tools through a systematic review of the literature. *J. Clean. Prod.* 165, 1263–1279. <https://doi.org/10.1016/j.jclepro.2017.07.184>.
- Daziano, R.A., Waygood, E.O.D., Patterson, Z., Kohlová, M.B., 2017. Increasing the influence of CO2 emissions information on car purchase. *J. Clean. Prod.* 164, 861–871. <https://doi.org/10.1016/j.jclepro.2017.07.001>.
- Debo, L.G., Toktay, L.B., Van Wassenhove, L.N., 2005. Market segmentation and product technology selection for remanufacturable products. *Manag. Sci.* 51 (8), 1193–1205. <https://doi.org/10.1287/mnsc.1050.0369>.
- Dodeen, H., 2015. The effects of positively and negatively worded items on the factor structure of the UCLA loneliness scale. *J. Psychoeduc. Assess.* 33 (3), 259–267. <https://doi.org/10.1177/0734282914548325>.
- Driessen, P.H., Hillebrand, B., 2013. Integrating multiple stakeholder issues in new product development: an exploration. *J. Prod. Innovat. Manag.* 30 (2), 364–379. <https://doi.org/10.1111/j.1540-5885.2012.01004.x>.
- Driessen, P., Hillebrand, B., Kok, R., Verhallen, T., 2013. Green new product development: the pivotal role of product greenness. *IEEE Trans. Eng. Manag.* 60 (2), 315–326. <https://doi.org/10.1109/TEM.2013.2246792>.
- European Commission, 2018. Effort sharing 2021–2030: targets and flexibilities. https://ec.europa.eu/clima/policies/effort/proposal_en. Accessed 29 March 2019.
- Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *J. Mar. Res.* 18 (1), 39–50. <https://doi.org/10.2307/3151312>.
- Fournier, S., 1998. Consumers and their brands: developing relationship theory in consumer research. *J. Consum. Res.* 24 (4), 343–373. <https://doi.org/10.1086/209515>.
- Fritz, K., Schoenmueller, V., Bruhn, M., 2017. Authenticity in branding - exploring antecedents and consequences of brand authenticity. *Eur. J. Market.* 51 (2), 324–348. <https://doi.org/10.1108/EJM-10-2014-0633>.
- Gifford, R., 2014. Environmental psychology matters. *Annu. Rev. Psychol.* 65, 541–579. <https://doi.org/10.1146/annurev-psych-010213-115048>.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., 2010. *Multivariate Data Analysis - A Global Perspective*, seventh ed. Pearson, Upper Saddle River, NJ, USA.
- Hair, J.F., Hult, G.T.M., Ringle, C., Sarstedt, M., 2016. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications, London, U.K.
- Hair, J.F., Sarstedt, M., Ringle, C.M., Mena, J.A., 2012. An assessment of the use of partial least squares structural equation modeling in marketing research. *J. Acad. Market. Sci.* 40 (3), 414–433. <https://doi.org/10.1007/s11747-011-0261-6>.
- Hartmann, P., Apaolaza-Ibanez, V., 2012. Consumer attitude and purchase intention toward green energy brands: the roles of psychological benefits and environmental concern. *J. Bus. Res.* 65 (9), 1254–1263. <https://doi.org/10.1016/j.jbusres.2011.11.001>.
- Hennigs, N., Schmidt, S., Wiedmann, K.P., Karampourmioni, E., Labenz, F., 2017. Measuring brand performance in the cruise industry: brand experiences and sustainability orientation as basis for value creation. *Int. J. Serv. Technol. Manag.* 23 (3), 189–203. <https://doi.org/10.1504/IJSTM.2017.085473>.
- Henseler, J., Ringle, C.M., Sarstedt, M., 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. Acad. Market. Sci.* 43 (1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>.
- Henseler, J., Ringle, C.M., Sinkovics, R.R., 2009. The use of partial least squares path modeling in international marketing. In: Sinkovics, R., Ghauri, P. (Eds.), *New Challenges to International Marketing*. Emerald Group Publishing Limited, Bingley, pp. 277–319. [https://doi.org/10.1108/S1474-7979\(2009\)0000020014](https://doi.org/10.1108/S1474-7979(2009)0000020014).
- Hetherich, J., Bonnemeier, S., Pritzke, M., Georgiadis, A., 2012. Ecological sustainability - a customer requirement? Evidence from the automotive industry. *J. Environ. Plann. Manag.* 55 (9), 1111–1133. <https://doi.org/10.1080/09640568.2011.636578>.
- Hillebrand, B., Biemans, W.G., 2004. Links between internal and external

- cooperation in product development: an exploratory study. *J. Prod. Innovat. Manag.* 21 (2), 110–122. <https://doi.org/10.1111/j.0737-6782.2004.00061.x>.
- IPCC, 2018. Intergovernmental Panel on climate change. Summary for policymakers of IPCC special report on global warming of 1.5°C approved by governments. https://www.ipcc.ch/news_and_events/pr_181008_P48_spm.shtml. Accessed 10 October 2018.
- Issock, P., Mpinganjira, M., Roberts-Lombard, M., 2018. Drivers of consumer attention to mandatory energy-efficiency labels affixed to home appliances: an emerging market perspective. *J. Clean. Prod.* 204, 672–684. <https://doi.org/10.1016/j.jclepro.2018.08.299>.
- Janssens, W., Wijnen, K., De Pelsmacker, P., Van Kenhove, P., 2008. *Marketing Research with SPSS*. Pearson Education Limited, Essex, England.
- Jiang, K., Luk, S., Cardinali, S., 2018. The role of pre-consumption experience in perceived value of retailer brands: consumers' experience from emerging markets. *J. Bus. Res.* 86, 374–385. <https://doi.org/10.1016/j.jbusres.2017.09.026>.
- Jiménez-Parra, B., Rubio, S., Vicente-Molina, M.A., 2014. Key drivers in the behavior of potential consumers of remanufactured products: a study on laptops in Spain. *J. Clean. Prod.* 85, 488–496. <https://doi.org/10.1016/j.jclepro.2014.05.047>.
- Jones, R.E., Dunlap, R.E., 1992. The social bases of environmental concern - have they changed over time? *Rural. Sociol.* 57 (1), 28–47.
- Keller, K.L., 2013. *Strategic Brand Management. Building, Measuring, and Managing Brand Equity*, fourth ed. Pearson Education Limited, Essex, England.
- Kim, G.E., Kim, J.H., Yoo, S.H., 2019. South Korean consumers' preferences for eco-friendly gasoline sedans: results from a choice experiment survey. *Transport Pol.* 77, 1–7. <https://doi.org/10.1016/j.tranpol.2019.02.005>.
- Klöckner, C.A., 2015. *The Psychology of Pro-environmental Communication, Scientific American Mind*. Palgrave Macmillan UK, London.
- Kuenzel, S., Halliday, S.V., 2010. The chain of effects from reputation and brand personality congruence to brand loyalty: the role of brand identification. *J. Target Meas. Anal. Market.* 18 (3/4), 167–176. <https://doi.org/10.1057/jt.2010.15>.
- Lane, B., Potter, S., 2007. The adoption of cleaner vehicles in the UK: exploring the consumer attitude-action gap. *J. Clean. Prod.* 15 (11–12), 1085–1092. <https://doi.org/10.1016/j.jclepro.2006.05.026>.
- Lehmann, D.R., Keller, K.L., Farley, J.U., 2008. The structure of survey-based brand metrics. *J. Int. Market.* 16 (4), 29–56. <https://doi.org/10.1509/jimm.16.4.29>.
- Liefländer, A.K., Fröhlich, G., Bogner, F.X., Schultz, P.W., 2013. Promoting connectedness with nature through environmental education. *Environ. Educ. Res.* 19 (3), 370–384. <https://doi.org/10.1080/13504622.2012.697545>.
- Liu, H.C., You, X.Y., Xue, Y.X., Luan, X., 2017. Exploring critical factors influencing the diffusion of electric vehicles in China: a multi-stakeholder perspective. *Res. Transport. Econ.* 66, 46–58. <https://doi.org/10.1016/j.retrec.2017.10.001>.
- Loureiro, S.M.C., Dias Sardinha, I.M., Reijnders, L., 2012. The effect of corporate social responsibility on consumer satisfaction and perceived value: the case of the automobile industry sector in Portugal. *J. Clean. Prod.* 37, 172–178. <https://doi.org/10.1016/j.jclepro.2012.07.003>.
- Majid, K.A., Russell, C.A., 2015. Giving green a second thought: modeling the value retention of green products in the secondary market. *J. Bus. Res.* 68 (5), 994–1002. <https://doi.org/10.1016/j.jbusres.2014.10.001>.
- Majuri, P., 2016. Ground source heat pumps and environmental policy - the Finnish practitioner's point of view. *J. Clean. Prod.* 139, 740–749. <https://doi.org/10.1016/j.jclepro.2016.08.017>.
- Mannetti, L., Pierro, A., Livi, S., 2004. Recycling: planned and self-expressive behaviour. *J. Environ. Psychol.* 24 (2), 227–236. <https://doi.org/10.1016/j.jenvp.2004.01.002>.
- Michaud, C., Llerena, D., 2011. Green consumer behaviour: an experimental analysis of willingness to pay for remanufactured products. *Bus. Strat. Environ.* 20 (6), 408–420. <https://doi.org/10.1002/bse.703>.
- Mohr, J., Sengupta, S., Slater, S., 2010. *Marketing of High-Technology Products and Innovations*, third ed. Pearson Education Inc, New Jersey.
- Moorhouse, D., Moorhouse, D., 2018. Designing a sustainable brand strategy for the fashion industry. *Cloth. Cult.* 5 (1), 7–18. https://doi.org/10.1386/cc.5.1.7_2.
- Nenkov, G.Y., Morrin, M., Schwartz, B., Ward, A., Hulland, J., 2008. A short form of the Maximization Scale: factor structure, reliability and validity studies. *Judgm. Decis. Mak.* 3 (5), 371–388.
- Oltra, V., Jean, M.S., 2009. Sectoral systems of environmental innovation: an application to the French automotive industry. *Technol. Forecast. Soc.* 76 (4), 567–583. <https://doi.org/10.1016/j.techfore.2008.03.025>.
- Osburg, V.S., Strack, M., Toporowski, W., 2016. Consumer acceptance of wood-polymer composites: a conjoint analytical approach with a focus on innovative and environmentally concerned consumers. *J. Clean. Prod.* 110, 180–190. <https://doi.org/10.1016/j.jclepro.2015.04.086>.
- Paço, A., Shiel, C., Alves, H., 2019. A new model for testing green consumer behaviour. *J. Clean. Prod.* 207, 998–1006. <https://doi.org/10.1016/j.jclepro.2018.10.105>.
- Papariodamis, N.G., Tran, H.T.T., 2019. Making the world a better place by making better products: eco-friendly consumer innovativeness and the adoption of eco-innovations. *Eur. J. Market.* 53 (8), 1546–1584. <https://doi.org/10.1108/EJM-11-2017-0888>.
- Parloff, R., 2018. How VW paid \$25 billion for 'dieselgate' – and got off easy. *Fortune*. <https://fortune.com/2018/02/06/volkswagen-vw-emissions-scandal-penalties/>, 6 Feb 2018, Accessed 28 August 2018.
- Payne, A., Storbacka, K., Frow, P., Knox, S., 2009. Co-creating brands: diagnosing and designing the relationship experience. *J. Bus. Res.* 62 (3), 379–389. <https://doi.org/10.1016/j.jbusres.2008.05.013>.
- Pecot, F., Merchant, A., Valette-Florence, P., De Barnier, V., 2018. Cognitive outcomes of brand heritage: a signaling perspective. *J. Bus. Res.* 85, 304–316. <https://doi.org/10.1016/j.jbusres.2018.01.016>.
- Prakash, G., Choudhary, S., Kumar, A., Garza-Reyes, J.A., Khan, S.A.R., Panda, T.K., 2019. Do altruistic and egoistic values influence consumers' attitudes and purchase intentions towards eco-friendly packaged products? An empirical investigation. *J. Retailing Consum. Serv.* 50, 163–169. <https://doi.org/10.1016/j.jretconser.2019.05.011>.
- Ringle, C.M., Wende, S., Becker, J.-M., 2015. *SmartPLS 3*. Boenningstedt. SmartPLS GmbH. <http://www.smartpls.com>.
- Romm, J., 2006. The car and fuel of the future. *Energy Pol.* 34 (17), 2609–2614. <https://doi.org/10.1016/j.enpol.2005.06.025>.
- Rose, G.M., Merchant, A., Orth, U.R., Horstmann, F., 2016. Emphasizing brand heritage: does it work? And how? *J. Bus. Res.* 69 (2), 936–943. <https://doi.org/10.1016/j.jbusres.2015.06.021>.
- Saari, U.A., Baumgartner, R.J., Mäkinen, S.J., 2017. Eco-friendly brands to drive sustainable development: replication and extension of the brand experience scale in a cross-national context. *Sustainability* 9 (1286), 26. <https://doi.org/10.3390/su9071286>.
- Saari, U.A., Fritz, M.M., Mäkinen, S.J., Baumgartner, R.J., 2018. Designing green marketing across industries: a conceptual framework and implications for consumers and transdisciplinary research. In: Leal Filho, W. (Ed.), *Handbook of Sustainability Science and Research*. Springer, Cham, pp. 581–596. https://doi.org/10.1007/978-3-319-63007-6_36.
- Saari, U.A., Mäkinen, S.J., 2019. From Replication to Further Scale Development: A Case Study of Incorporating an Eco-Friendliness Dimension in an Existing Consumer Experience Scale. SAGE Publications Ltd, pp. 1–19. <https://doi.org/10.4135/9781526487629>. SAGE Research Methods Cases Part 2.
- Sakr, D., Sena, A.A., 2017. Cleaner production status in the Middle East and North Africa region with special focus on Egypt. *J. Clean. Prod.* 141, 1074–1086. <https://doi.org/10.1016/j.jclepro.2016.09.160>.
- Sangroya, D., Nayak, J.K., 2017. Factors influencing buying behaviour of green energy consumer. *J. Clean. Prod.* 151, 393–405. <https://doi.org/10.1016/j.jclepro.2017.03.010>.
- Sarstedt, M., Ringle, C.M., Hair, J.F., 2017. Partial least squares structural equation modeling. In: Homburg, C., Klarman, M., Vomberg, A. (Eds.), *Handbook of Market Research*. Springer, Heidelberg, pp. 1–40. https://doi.org/10.1007/978-3-319-05542-8_15-1.
- Saxton, T., Dollinger, M., 2004. Target reputation and appropriability: picking and deploying resources in acquisitions. *J. Manag.* 30 (1), 123–147. <https://doi.org/10.1016/j.jm.2003.01.006>.
- Schaeffer, S., Garza, S., Espinosa, J., Urbina, S., Nurmi, P., Cruz-Reyes, L., 2018. A framework for informing consumers on the ecological impact of products at point of sale. *Behav. Inf. Technol.* 37 (6), 607–621. <https://doi.org/10.1080/0144929X.2018.1470254>.
- Schmitt, B., 2012. The consumer psychology of brands. *J. Consum. Psychol.* 22 (1), 7–17. <https://doi.org/10.1016/j.jcps.2011.09.005>.
- Schultz, P., Zelezny, L., 1999. Values as predictors of environmental attitudes: evidence for consistency across 14 countries. *J. Environ. Psychol.* 19 (3), 255–265.
- Shepherd, D.A., Kusko, V., Patzelt, H., 2009. Measuring the values that underlie sustainable development: the development of a valid scale. *J. Econ. Psychol.* 30 (2), 246–256. <https://doi.org/10.1016/j.joep.2008.08.003>.
- Shepherd, D.A., Patzelt, H., Baron, R.A., 2013. "I care about nature, but...": disengaging values in assessing opportunities that cause harm. *Acad. Manag. J.* 56 (5), 1251–1273. <https://doi.org/10.5465/amj.2011.0776>.
- Shim, D., Shin, J., Kwak, S.Y., 2018. Modelling the consumer decision-making process to identify key drivers and bottlenecks in the adoption of environmentally friendly products. *Bus. Strat. Environ.* 27 (8), 1409–1421. <https://doi.org/10.1002/bse.2192>.
- Sonenshein, S., DeCelles, K., Dutton, J., 2014. It's not easy being green: the role of self-evaluations in explaining support of environmental issues. *Acad. Manag. J.* 7 (1), 7–37. <https://doi.org/10.5465/amj.2010.0445>.
- Sparks, P., Shepherd, R., 1992. Self-identity and the theory of planned behavior - assessing the role of identification with green consumerism. *Soc. Psychol. Q.* 55 (4), 388–399. <https://doi.org/10.2307/2786955>.
- Stanton, J.M., Sinar, E.F., Balzer, W.K., Smith, P.C., 2002. Issues and strategies for reducing the length of self-report scales. *Person. Psychol.* 55 (1), 167–194. <https://doi.org/10.1111/j.1744-6570.2002.tb0108.x>.
- Steg, L., 2005. Car use: lust and must. Instrumental, symbolic and affective motives for car use. *Transport. Res. Pol.* 39 (2), 147–162. <https://doi.org/10.1016/j.tra.2004.07.001>.
- Steg, L., De Groot, J.I.M., Dreijerink, L., Abrahamse, W., Siero, F., 2011. General antecedents of personal norms, policy acceptability, and intentions: the role of values, worldviews, and environmental concern. *Soc. Nat. Resour.* 24 (4), 349–367. <https://doi.org/10.1080/08941920903214116>.
- Stern, P., 2000. New Environmental Theories: toward a coherent theory of environmentally significant behavior. *J. Soc. Issues* 56 (3), 407–424. <https://doi.org/10.1111/0022-4537.00175>.
- Stokburger-Sauer, N., Ratneshwar, S., Sen, S., 2012. Drivers of consumer-brand identification. *Int. J. Res. Market.* 29 (4), 406–418. <https://doi.org/10.1016/j.ijresmar.2012.06.001>.
- Tarigan, A.K., 2019. Expectations, attitudes, and preferences regarding support and purchase of eco-friendly fuel vehicles. *J. Clean. Prod.* 227, 10–19. <https://doi.org/10.1016/j.jclepro.2019.04.190>.
- Uba, C.D., Chatzidakis, A., 2016. Understanding engagement and disengagement

- from pro-environmental behaviour: the role of neutralization and affirmation techniques in maintaining persistence in and desistance from car use. *Transport. Res. Pol.* 94, 278–294. <https://doi.org/10.1016/j.tra.2016.09.002>.
- Unal, A.B., Steg, L., Gorsira, M., 2018. Values versus environmental knowledge as triggers of a process of activation of personal norms for eco-driving. *Environ. Behav.* 50 (10), 1092–1118. <https://doi.org/10.1177/0013916517728991>.
- United Nations, 2018. Sustainable development knowledge platform - GOAL 12: ensure sustainable consumption and production patterns. <https://sustainabledevelopment.un.org/sdg12>. Accessed 4 March 2019.
- Vallet, F., Eynard, B., Millet, D., Mahut, S.G., Tyl, B., Bertoluci, G., 2013. Using eco-design tools: an overview of experts' practices. *Des. Stud.* 34 (3), 345–377. <https://doi.org/10.1016/j.destud.2012.10.001>.
- Wang, Z., Zhao, C., Yin, J., Zhang, B., 2017. Purchasing intentions of Chinese citizens on new energy vehicles: how should one respond to current preferential policy? *J. Clean. Prod.* 161, 1000–1010. <https://doi.org/10.1016/j.jclepro.2017.05.154>.
- Whitmarsh, L., O'Neill, S., 2010. Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *J. Environ. Psychol.* 30 (3), 305–314. <https://doi.org/10.1016/j.jenvp.2010.01.003>.
- Wiedmann, K.P., Hennigs, N., Schmidt, S., Wuestefeld, T., 2011. Drivers and outcomes of brand heritage: consumers' perception of heritage brands in the automotive industry. *J. Mark.Theory Pract.* 19 (2), 205–220. <https://doi.org/10.2753/MTP1069-6679190206>.
- Yankelovich, D., Meer, D., 2006. Rediscovering market segmentation. *Harv* 84 (2), 122–131.
- Young, W., Hwang, K., McDonald, S., Oates, C., 2010. Sustainable consumption: green consumer behaviour when purchasing products. *Sustain. Dev.* 18 (1), 20–31. <https://doi.org/10.1002/sd.394>.