Personal values, green self-identity and electric car adoption

Abstract

Personal values, green self-identity and ethical motives have been widely studied as important, but mostly separate, predictors of pro-environmental behaviors. Scholars call for more research on the combined effects of these variables, to explain pro-environmental behavior. In this regard, this study presents a model of electric car adoption intention, in which personal values determine green self-identity, which in turn influences consumer intention to adopt electric cars directly and also indirectly via ethical motives of ecological care and moral obligation. Second, this work explores how personal values moderate the relationships between green self-identity, ecological care, moral obligation and electric car adoption intention.

Data were collected through a survey in a sample of 2,005 car drivers residing in Belgium, Denmark and Italy. Results confirm that four value domains (i.e., self-transcendence, self-enhancement, openness-to-change and conservation) influence green self-identity, which in turn determines consumer intention to adopt electric cars both directly and indirectly via ecological care and moral obligation motivations. Furthermore, consumers who find self-transcendent and openness-to-change values important tend to express their green self-identity directly into intentions and through moral obligation evaluations. Conversely, individuals who find self-enhancement values important express their green self-identity directly into intentions, while they take the ecological and moral considerations to behave green less into account. Finally, consumers who find conservation values important translate their green self-identity less into intentions to adopt electric cars, and tend to consider less the ecological and moral aspects of consumption choices.

Keywords: personal values, green self-identity, ecological care, moral obligation, electric car adoption.

1. Introduction

The transport sector contributes considerably to the development of society and economy. However, it can also harmfully affect human health and the natural environment (European Environment Agency - EEA, 2015). In Europe greenhouse gas (GHG) emissions from transport have increased by 19.4% in the 1990-2013 period, accounting for almost one-quarter of the EU's total GHG emissions. Car transport remains the dominant mode of passenger transport, and passenger cars contribute almost 45% of the transport sector's emissions (EEA, 2015b). A notable proportion of Europe's population live in areas where air pollutant concentrations and road traffic noise levels exceed the EU's recommended standards (EEA, 2015b).

Electro-mobility offers a potential solution to transport related GHG emissions and environmental noise issues, because it combines the advantages of mobility with the reduction of the negative externalities related to it. However, the extent to which electro-mobility can contribute to actual sustainable outcomes heavily depends on consumer acceptance of this innovation. To gain knowledge on how consumers can be effectively encouraged to adopt electric vehicles is a necessary prerequisite toward a shift to this paradigm (Noppers et al., 2014). While pricing policies and monetary incentives have shown positive short-term effects (Plug in America, 2015), a mid-term evaluation has revealed counterproductive consumer responses. Purchasing behavior returns to baseline levels after the reinforcement is terminated (Oliver and Rosen, 2010), and consumers refrain from adopting eco-friendly alternatives in absence of expected material rewards (Sierzchula et al., 2014). Some argue that understanding more fundamental aspects of consumers, such as personal values, identity and ethics, is critical in moving toward more enduring sustainable behaviors (Steg and Vlek, 2009). Hence, policy makers and marketers now focus and call for further research on the use of these

variables, to lead consumers to a more sustained adoption of electric vehicles in the market (Skippon and Garwood, 2011).

Personal values, green self-identity and ethical motives are widely acknowledged predictors of pro-environmental behavior. Values – conceptions of desirable end-states that form an integrated system of evaluation (Schwartz, 1992) – are acclaimed determinants of pro-environmental attitudes and actions (Bamberg and Möser, 2007; Leonidou et al., 2010). Green self-identity – an individual's overall perceived identification with the typical green consumer – is a well-recognized common motivational root of different eco-friendly behaviors (Whitmarsh and O'Neill, 2010). Ethical evaluations of ˙teleology˙ – a consumer's concern for the environmental consequences of his/her consumption behavior – and ˙deontology˙ – a consumer's intrinsic moral obligation to behave pro-environmentally – are vital parts of consumer pro-environmental behavior prediction in various conceptualizations (Schwartz, 1977; Hunt and Vitell,1986; Stern, 1999). However, while personal values, green self-identity and ethical motives have been analyzed separately for a long time, there is a need for more research on the relationships between these variables, and their combined effects on consumer pro-environmental behavior (Gatersleben et al., 2014).

The current study addresses this issue in the context of eco-friendly electric car adoption. It presents a model of eco-friendly electric car adoption intention, in which personal value domains (Schwartz 1992) determine green self-identity, which in turn influences consumer intention to adopt electric cars directly and also indirectly through ethical motives of ecological care (teleology) and moral obligation (deontology). Most importantly, this study explores how personal value domains moderate these hypothesized relationships. It posits that the extent to which green self-identity influences consumer intention to adopt eco-friendly electric cars directly and indirectly depends on the importance consumers attach to different personal values as guiding principles in their life. The proposed model is empirically

validated in a sample of 2,005 car drivers residing in three European countries: Belgium, Denmark and Italy.

The contribution of this work is threefold. First, a number of studies established the link between personal values and eco-friendly behavior on the one hand (De Groot and Steg, 2008; Hansla et al., 2008), and green self-identity and eco-friendly behavior on the other hand (Oliver and Lee, 2010). Among these studies, attempts were made to include also ethical (teleological and deontological) motives into value-based and identity-based intention formation processes (van der Werff et al., 2013; Barbarossa et al., 2015). A related line of research attempted to determine a causal link between personal values and self-identity, where values were supposed to influence pro-environmental behavior indirectly via the mediating role of environmental identity (Verplanken and Holland, 2002; Steg et al., 2014). Finally, taking a different perspective, a more limited number of studies considered personal values as moderators, instead of causal antecedents, of pro-environmental behavioral intention formation models (Vermeir and Verbeke, 2008; Ruiz de Maya et al., 2011). However, very few studies integrated these approaches in a single, holistic model. In this regard, the current work conceives personal values as important determinants of green self-identity, and green self-identity as a direct and indirect (through teleological and deontological motives) antecedent of consumer intention to adopt electric cars. Finally, and most importantly, it conceives personal values as moderators of this intention formation process. The integration of these research angles in a new perspective is the main contribution of this study.

Second, the current study applies the conceptual model to an under-researched, high-involvement, eco-friendly product type: the electric car. Green consumer behavior literature mainly focused on low-involvement products (Shaw and Shiu, 2003; Johe and Bhullar, 2016). More research is needed for high-involvement products, that express and signal more about a consumer identity and status (Skippon and Garwood, 2011; Noppers et al., 2014).

Finally, this study empirically validates the proposed conceptual model in a sample of 2,005 car drivers residing in three European countries (Belgium, Denmark and Italy) to enhance the reliability and the external validity of the findings.

First, we provide a brief overview of the conceptual frameworks previously used to predict pro-environmental behavior. Then, we present the conceptual model developed in this study and the related hypotheses. Next, we describe the method, and present the results of the statistical analyses. Finally, we discuss the results and their implications, and propose directions for future research.

2. Theoretical background and hypotheses

2.1 Positioning of the proposed conceptual model

Many studies adopted a value-based approach to green consumer behavior, and considered personal values as the prime antecedents of pro-environmental behavioral intention formation (Schultz and Zelezny, 1999). One of the best known conceptualizations in that respect is the Values-Beliefs-Norms (VBN) Theory (Stern et al., 1999). VBN Theory posits that personal values influence consumers' awareness-of-consequences of consumption behaviors on the environment, which in turn impacts ascription of responsibility and pro-environmental personal norms, which finally influence pro-environmental behavior. Various studies, building on this Theory, focused on the motivational process through which personal values (e.g., self-transcendence, conservation and self-enhancement – Follows and Jobber, 2000; egoistic, altruistic and biospheric values – De Groot and Steg, 2008; universalism, benevolence and power – Hansla, 2008) may impact consumer eco-friendly behavioral intentions, via the mediation of ethical motives (e.g., consumers' awareness-of-consequences and subsequent concern for oneself, others and the biosphere, and green beliefs).

A second line of research adopted a self-identity approach to green consumer behavior (Stets and Biga, 2003), and recognized green self-identity as the prime antecedent of pro-

environmental behavioral intentions (Whitmarsh and O'Neill, 2010). Based on self-congruity considerations (Sirgy, 1986), these studies assumed that individuals who perceive themselves as green consumers are likely to engage in pro-environmental behavior as a means of their self-identity expression (Shaw and Shiu, 2003; Oliver and Lee, 2010). A number of these studies also focused on the motivational process through which green self-identity impacts consumer intentions to behave eco-friendly. These works, mostly referring to Hunt and Vitell's (1986) Theory of Ethics and Ryan and Deci's (2000) Self-determination Theory, included ethical evaluations of 'teleology' and 'deontology' as mediators of the self-identity–intention relationship (van der Werff et al., 2013; Barbarossa et al., 2015).

A third line of research established a causal link between personal values and self-identity, whereby values determine self-identity, which in turn drives pro-environmental behavior. Verplanken and Holland (2002) found that priming environmental values enhances attention to and the weight of information related to those values, which results in more eco-friendly consumer choices, but only if these values are of primary importance to define an individual self-concept. Similarly, Gatersleben et al. (2014) showed that values influence a consumer's green self-identity, which in turn impacts pro-environmental behavior.

Finally, a fourth line of research considered values as moderators, instead of antecedents, of pro-environmental behavior formation processes. Vermeir and Verbeke (2008), using the Schwartz Value Framework (Schwartz,1992), investigated how personal values moderate the effects of the Theory of Planned Behavior's (TPB – Ajzen, 1991) variables on consumer intention to purchase sustainable food products. Zhou et al. (2013) used a similar approach in the context of Chinese consumers' intention to buy organic food. Ruiz de Maya et al. (2011) analyzed how Schwartz's cultural values (Schwartz, 1994) moderate the effects of the TPB variables on organic product purchase intention in a sample of consumers residing in eight European countries.

The current study develops a holistic conceptual framework to explain pro-environmental behavioral intentions that attempts to integrate the components of the models discussed above. The comprehensive integration of these research angles in a new, inclusive perspective aims at formulating a more complete view on the interplay between personal values, self-identity and ethical motives, in the context of consumer intention to adopt eco-friendly electric cars. The proposed model, using a self-identity based approach to green consumer behavior, conceptualizes personal values as antecedents of green self-identity, which in turn generates the motivational process of electric car adoption intention formation (Steg et al., 2014). By adopting Hunt and Vitell's (1986) Theory of Ethics in the context of self-identity based models of pro-environmental behavior (Barbarossa et al., 2015), the proposed model also considers ethical motives of ecological care (teleology) and moral obligation (deontology) as mediators of the green self-identity–consumer intention relationship. Finally, and most importantly, by embracing the stream of research considering personal values as moderators of pro-environmental behavior formation processes (Vermeir and Verbeke, 2008; Ruiz de Maya et al. 2011), the proposed model conceives values as moderating variables of the direct and indirect effects described above. It hypothesizes the existence of different motivational mechanisms through which green self-identity influences consumer intention to adopt electric cars, based on the importance consumers attach to different values as guiding principles in their life. The use of values as both predictors of green self-identity and moderators of the green self-identity–adoption intention relationship is a conceptual approach that Sharma et al. (1981) labeled as 'quasi moderators'.

Figure 1 shows the proposed conceptual model. The next sections provide theoretical bases for the proposed conceptual model and develop specific hypotheses[1].

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[1]Previous literature widely tested the effects of personal values on green self-identity, as well as the direct and indirect (via ecological care and moral obligation) effects of green self-identity on consumer intention to adopt green alternatives. Conversely, research on the moderating effects of personal values on the green self-identity based process of intention formation is rather scarce. For these reasons, we formulate formal hypotheses for the

Figure 1. Conceptual model
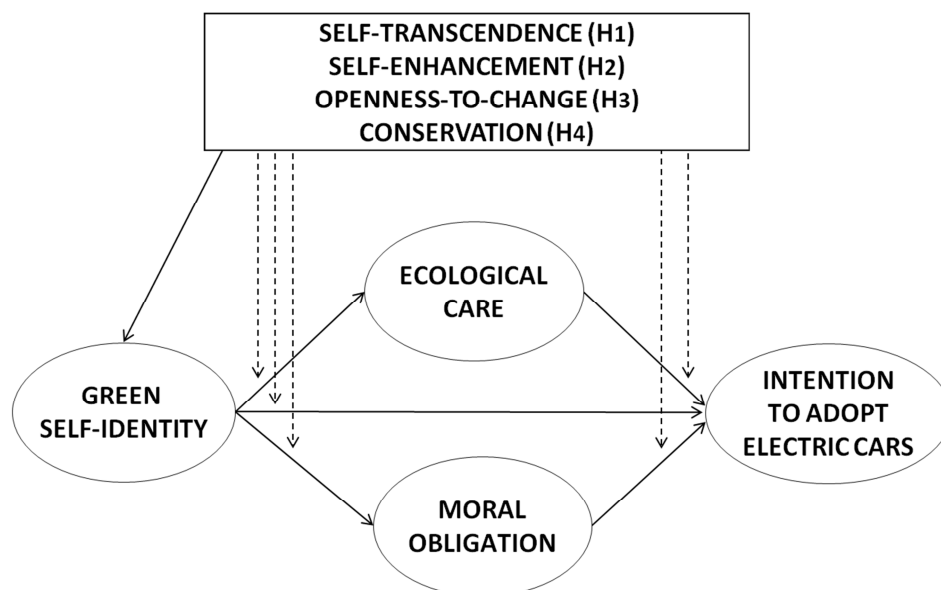
**Notes:** Dotted lines indicate moderating effects.

2.2 The influence of personal values on green self-identity

Values are abstract and stable beliefs that transcend specific situations, are hierarchically ordered in terms of importance, and are used to resolve conflicts or make decisions (Schwartz and Bilsky, 1990). Schwartz's (1992) Value Survey (SVS) defines ten value types based on the type of motivational goals they express, and structures them in a circular way to emphasize their relationships of similarity vs. conflict (Figure 2). Furthermore, SVS organizes value types in four higher order value domains (Schwartz, 1994): 'self-transcendence', 'self-enhancement', 'openness-to-change' and 'conservation'. 'Self-transcendence' combines benevolence and universalism. Benevolence indicates voluntary concern for others' welfare. Universalism emphasizes understanding and tolerance, and the protection of interest of all people and nature. 'Self-enhancement' combines power and achievement. Power indicates control and dominance over people and resources, social status

moderating effects of personal values on the self-identity based model of electric car adoption intention only. The effects of personal values on green self-identity, as well as the direct and the indirect effects of green self-identity on consumer intention to adopt electric cars, are conceptually explained and also statistically tested.

and prestige. Achievement refers to success and social approval through demonstration of personal capabilities, and success based on shared societal standards. ʿOpenness-to-changeʾ integrates self-direction, stimulation and hedonic value types. Self-direction indicates autonomous thought and action. Stimulation emphasizes the excitement, novelty and challenge in life, and readiness for change. Hedonism emphasizes sensuous gratification and pleasure for oneself. Finally, ʿconservationʾ includes security, conformity and tradition. Security leads people to prioritize established social rules, personal and national safety. Conformity leads individuals to inhibit inclinations that might disrupt group functioning. Tradition leads people to prioritize established social rules and immutable expectations from the past.

Figure 2. The Schwartz value orientation framework
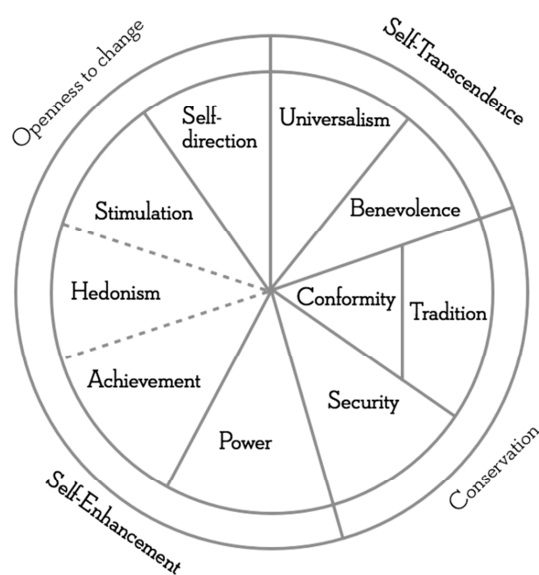
The influence of values and value domains on environmentally-friendly behavior is well-documented (Schultz and Zelezny, 1999; Stern, et al., 1999; Follows and Jobber, 2000; De Groot and Steg, 2008; Hansla, 2008). Furthermore, more recently scholars acknowledged how personal values exert their influence on pro-environmental behavior through an

individual's green self-identity. Steg et al. (2014) posited that values form important ingredients of a person's self-concept and contribute to a person's sense of identity, and that green self-identity is a crucial structure that mediates the relationship between values and pro-environmental behavior.

Previous studies showed that individuals who strongly endorse self-transcendence values are more likely to develop an environmental self-identity, while the opposite is mostly true for those who strongly endorse self-enhancement values (van der Werff et al., 2014). Gatersleben et al. (2014) found that altruistic and biospheric values on the one hand, and egoistic values on the other hand, have respectively a positive and negative impact on consumers' environmental identity. Furthermore, previous studies revealed that individuals who strongly endorse openness-to-change values are more likely to develop an environmental self-identity, because these consumers may derive pleasure from developing what is in their mind a pioneering and unconventional green self-identity, while the opposite is mostly true for those who strongly endorse conservation values (Schuitema et al., 2013). Schultz and Zelezny (1999) found indeed a negative relationship between conformity and tradition and pro-environmental behavior. Overall, this literature suggests positive effects of self-transcendence and openness-to-change, and negative effects of self-enhancement and conservation, on green self-identity.

2.3 The direct and indirect effects of green self-identity on consumer intention to adopt electric cars

Green self-identity is a direct, positive antecedent of consumer intention to buy green products (Whitmarsh and O'Neill, 2010). Based on the Self-congruity Theory (Sirgy, 1986), individuals who perceive themselves as green consumers may consider purchasing eco-friendly products because these items satisfy their self-definitional needs, and they gain

personal satisfaction from it. This effect was found in many previous studies. Sparks and Shepherd (1992), Shaw and Shiu (2003) and Johe and Bhallar (2016) found that a consumer's identification with the typical green consumer has a positive effect on the intention to purchase organic food products or brands. Barbarossa and De Pelsmacker (2016) found similar results for eco-friendly paper products.

Besides the direct effect of green self-identity on consumer intention, the Theory of Ethics (Hunt and Vitell,1986) maintains that individuals use moral principles of 'teleology' and 'deontology' when facing ethical situations (Chan et al., 2008). With respect to teleological considerations, ecological care represents the extent to which individuals are concerned about the negative effects of their consumption actions on the natural environment. Several studies found that the more consumers perceive themselves as green consumers, the more they care for the ecological consequences of their consumption choices, and the more they are likely to engage in eco-friendly behavior. Barbarossa et al. (2015) demonstrated that the stronger the green self-identity, the more consumers place importance on the environmental effects of using cars. Follows and Jobber (2000) and Skippon and Garwood (2011) found that consumers who are more sensitive to the environmental effects of their consumption are also more prone to purchase organic cotton diapers and electric vehicles.

With respect to deontological considerations, moral obligation is "a personal internal state construct (that) is concerned with the extent to which an individual feels a sense of responsibility to act morally when faced with an ethical situation, such as environmental protection" (Haines et al., 2008, p. 390). Several studies found that the more consumers perceive themselves as green consumers, the more they are likely to perceive a moral obligation to perform (or refrain from performing) ethical (unethical) actions, and the more they are likely to opt for green alternatives. Van der Werff et al. (2013) found that green self-identity has a positive effect on moral obligation in the context of opting for renewable

energy. Furthermore, Sparks and Shepherd (1995) found that moral obligation is a significant antecedent of consumer intention to use gene technology. Sparks and Shepherd (2002) and Shaw and Shiu (2003) found similar results in the context of purchase ethical food products.

Overall, this literature suggests a positive direct effect of green self-identity on consumer intention to adopt electric cars, as well as positive indirect effects of green self-identity on consumer intention through ethical motives of ecological care and moral obligation (Figure 1).

2.4 The moderating effects of value domains

Previous literature showed that values enhance or weaken the weight of different motivations and behavioral intentions in consumer decision making processes (Vermeir and Verbeke, 2008; Ruiz de Maya et al. 2011; Zhou et al., 2013). Values indeed influence the extent to which consumer perceive motivations and action alternatives as more suitable for their self-identity expression (Verplanken and Holland, 2002). In line with this research, and adopting the Schwartz's (1992) VS framework, the current study proposes that, given a certain level of green self-identity (e.g., high, medium or low), the motivational process through which consumers express their green self-identity into electric cars usage intention may vary depending on the importance consumers attach to certain value domains. That is, the importance consumers attach to different value domains as guiding principles in their life not only determines their green self-identity, but it is also assumed to moderate the weights of the direct and indirect effects (via ecological care and moral obligation) of green self-identity on consumer intention to adopt electric cars (Figure 1).

2.4.1 The moderating effects of self-transcendence and self-enhancement

People valuing self-transcendence care for protecting the natural environment, they are concerned about justice for all and are less self-oriented. Self-transcendent individuals are assumed to transcend from their ʿegoʾ and attach greater importance to the environmental consequences of their consumption actions, as well as to the moral, inner aspects of making specific consumption choices (De Groot and Steg, 2008). Vermeir and Verbeke (2008) showed that, compared to low self-transcendent consumers, highly self-transcendent consumers tend to buy organic food products more out of their environmental beliefs, and less out of ego-centric considerations. Altruistic values also activate normative goals, so that individuals provide stricter moral judgments and are more motivated by doing the right thing, such as adopting eco-friendly alternatives. This literature suggests that high self-transcendent consumers tend to express their green self-identity less directly into intentions, because they attach less importance to ego-centric considerations of personal satisfaction, self-esteem, self-enhancement and status of adopting eco-friendly products. Conversely, these consumers tend to express their green self-identity more through considering the ecological and moral aspects of adopting these goods (Gärling et al., 2003). We hypothesize:

H$_1$: When self-transcendence values are more important, (H$_{1a}$) the direct impact of green self-identity on consumer intention to adopt electric cars is weaker, while its indirect impact through (H$_{1b}$) ecological care, and (H$_{1c}$) moral obligation is stronger.

Consumers prioritizing self-enhancement values are highly self-centred, while they tend to neglect others' needs or the ecological impact of their actions (Vermeir and Verbeke, 2008). Recent research pinpointed that, despite the fact that individuals with an ego-centered value orientation may consider the normative aspects of pro-environmental consumption as less important, egocentric value orientation does not necessarily prevent individuals from engaging in green actions. More ego-centric motivations, such as self-esteem and status, may

directly motivate self-enhanced individuals toward green behaviors. Cho et al. (2013) found that consumers, who concentrate on personal gain and benefits, are more likely to act ˈgreenˈ to feel better about themselves. Similarly, Thøgersen and Zhou (2012) showed that the adoption of electric cars requires certain capacity and competence, which brings consumers a sense of self-achievement and self-esteem. This literature suggests that, since self-enhancement triggers self-centered motivations (i.e., enhancing one's self-esteem by acting in a self-identity consistent way), and leads consumers to take the ethical 'reasons' for this behavior less into account, high self-enhancement consumers tend to express more their green self-identity directly into intentions, and less through ecological and moral evaluations (Zhou et al., 2013). We hypothesize:

H$_2$: When self-enhancement values are more important, (H$_{2a}$) the direct effect of green self-identity on consumer intention to adopt electric cars is stronger, while its indirect effect through (H$_{2b}$) ecological care and (H$_{2c}$) moral obligation is weaker.

2.4.2 The moderating effects of openness-to-change and conservation

Consumers valuing openness-to-change as an important principle in life may derive pleasure from being the ˈearly adoptersˈ of a highly innovative eco-friendly solution, which communicates their pioneering and unconventional green self-identity (Schuitema et al., 2013). Research about purchasing organic food (Ruiz de Maya et al., 2011; Zhou et al., 2013), curtailment behavior and eco-friendly innovation adoption (Jansson et al., 2010) corroborates the notion of green alternatives adding freshness and novelty to consumers' life. Enhancing their green self-identity through direct intentions to adopt electric vehicles may provide these consumers with joy, pleasure and sensuous gratification for themselves (O'Shaughnessy and O'Shaughnessy, 2002; Jansson, 2011). Additionally, acting upon new ethical paradigms and appeals makes consumers see themselves as ethically right persons, which can elicit positive

feelings about themselves, especially when they find hedonism in life important (Steg et al., 2012; Noppers et al., 2014). This literature suggests that people, who adhere strongly to openness-to-change values, tend to express their green self-identity both directly and indirectly through ethical motives to a greater extent. We hypothesize:

H$_3$: When openness-to-change values are more important, (H$_{3a}$) the direct effect of green self-identity on consumer intention to adopt electric cars as well as its indirect effect through (H$_{3b}$) ecological care and (H$_{3c}$) moral obligation is stronger.

Finally, people valuing conservation as an important principle in life depend more on the strength of the established community's ideologies to better survive in society. They strongly behave according to the social acceptance of a certain behavior when making decisions, while their personal, independent opinion is reduced (Ruiz de Maya et al., 2011). People who adhere strongly to conservation values may be more reluctant to embrace new ways of thinking such as new ecological paradigms and related ethical obligations (Jansson et al., 2010; Jansson, 2011). Electric cars represent a technical, social and cultural innovation, which may strongly deviates from accepted social norms, traditions and established cultural meanings (Claudy et al., 2015). In this regard, previous studies showed the relevance of image barriers and social norms in the diffusion of innovation decisions (Kleijnen et al., 2009; Kulviwat et al., 2009). This literature suggests that consumers, who find conservation values important in their life, tend to show a weaker direct effect of green self-identity on the intention to adopt electric cars, as well as a lower intention formation through ecological care and moral obligation. We hypothesize:

H$_4$: When conservation values are more important, (H$_{4a}$) the direct effect of green self-identity on consumer intention to adopt electric cars as well as its indirect effect through (H$_{4b}$) ecological care and (H$_{4c}$) moral obligation is weaker.

3. Study

3.1 Sample and data collection

The data were collected by means of an online survey in three European countries: Belgium, Denmark and Italy. Professional agencies collected the data from February to April 2013. Their procedures of approaching and incentivizing participants were similar across the countries. Only respondents owning a driver's license were selected. In cross-cultural research it is important that the samples for different cultures are as similar as possible on all aspects other than culture (Hoeken et al., 2007). Therefore, the same gender and age quota in all the countries were applied, as follows:

i) gender: 50% male;

ii) age: 16% 18-25 years old, 21% 26-35 years old, 21% 36-45 years old, 42% 46-65 years old.

Consequently, the samples were in principle not fully representative of the national population in each of the three countries. However, for theory testing in cross-cultural research, sample equivalence is more important that representativeness of a population. Moreover, we controlled for age and gender in our model estimation.

The final sample consisted of 2,005 respondents (Belgium: n=600; education: 38% junior high school, 28% high school, 34% higher education; Denmark: n=611; education: 17% junior high school, 39% high school, 44% higher education; Italy: n=794; education: 38% junior high school, 28% high school, 34% higher education).

3.2. Procedure and measures

The questionnaire comprised three sections: the first section explained the research purpose, the second section covered the measurement scales for the model variables, and the last one collected socio-demographic information.

The measurement scales consisted of multiple item scales that were adapted from previous literature. The questionnaire was developed in English, and then translated and back translated in Flemish, Danish and Italian. We assessed green self-identity (GSI) adapting Sparks and Shepherd's (1992) self-identity scale (e.g., "I think of myself as a ʿgreenʾ consumer", "I would describe myself as an ecologically conscious consumer"). We measured ecological care (EC) adapting Follows and Jobber's (2000) environmental consequences scale (e.g., "It is important to me how cars usage may affect the environment", "It is important to me whether car usage causes air pollution"). Moral obligation (MO) was measured adapting Sparks and Shepherd's (2002) scale (e.g., "To buy a car that highly damages the environment is morally wrong for me", "Purchasing a car that highly affects the environment goes against my principles"). Consumer intention to adopt an electric car (INT) was assessed adapting Moons and De Pelsmacker's (2012) scale (e.g., "Next time I buy a car, I will consider buying an eco-friendly electric car", "I have the intention to adopt an eco-friendly electric car in the near future"). All items were measured on a 7-point Likert scale anchored by "1= completely disagree" and "7= completely agree". We used the ten items Short Schwartz's Value Survey (SSVS) to measure the personal value domains of self-transcendence, self enhancement, openness-to-change and conservation. All value items were measured on a 9-point Likert scale: "as a guiding principle in my life, this value is': 1=opposed to my values, 9=of supreme importance" (Hansla et al., 2008). An exploratory factor analysis on the 10 SSVS items, with Maximum Likelihood (ML) Estimation and Promax rotation (KMO test=.81; 75% total variance explained), revealed the presence of four components which correspond to the value domains proposed by Schwartz (1992). Finally, country dummy variables for Italy and Belgium, gender (female=1; male=2) and age (18-35=1; 36-65=2) were measured to be used as controls in the analyses.

4. Data Analysis and Results

4.1 Cross-cultural equivalence of the factorial measurement

As indicated with cross-cultural data, we first tested the equivalence of the factorial measurement across countries (Steenkamp and Baumgartner, 1998). Results are reported in Tables 1a and 1b. C*onfigural* invariance, namely whether the pattern of fixed and free parameters is the same for the three samples, was observed: all samples showed significant factor loadings ($p<.01$), covariances among constructs lower than one, and good fit indices (i.e., SRMR<.08 and GFI>.90) (Table 1a). Fit indices for the full sample model ($\chi^2(543)=1,569.40$) were good, too (Table 1b). *Metric* invariance, namely whether the factor structure (i.e., item loadings to factors) was statistically invariant among the three samples, was not met because the difference between the χ^2 of the full models assessed for metric and configural invariance was significant ($\Delta\chi^2(28)= 202.88$, $p<.01$) (Table 1b). Hence, a *partial metric* invariance test was conducted. For partial metric invariance, at least one item (other than the one fixed at unity to define the scale of each latent construct) should be metrically invariant (Steenkamp and Baumgartner, 1998). For the goal of our research partial metric invariance was only desirable and not necessary (Steenkamp and Baumgartner, 1998). *Partial metric* invariance was observed: all samples showed significant factor loadings ($p<.01$), covariances among constructs lower than one, and good fit indices (Table 1a). Fit indices for the full sample model ($\chi^2(555)=1,589.92$) were good, too (Table 1b), ΔCFI<.01, and $\Delta\chi^2$ was not significant ($\Delta\chi^2(12)=20.52$, $p=.06$). These results indicated that cross-cultural equivalence of the factorial measurement was assessed and the data could be meaningfully used for further analyses.

Table 1a. Assessment of the factorial measurement equivalence in each sample

	Configural invariance		Metric invariance		Partial metric invariance	
	SRMR	GFI	SRMR	GFI	SRMR	GFI
Denmark (n= 611)	.05	.93	.07	.92	.05	.93
Belgium (n= 600)	.06	.92	.07	.91	.06	.92
Italy (n= 794)	.06	.92	.06	.91	.06	.92

Table 1b. Assessment of the factorial measurement equivalence in the full sample

		χ^2	d.f.	RMSEA	NFI	NNFI	CFI	ΔCFI	$\Delta\chi^2$	Δd.f.	p-value
Full sample	C.I.	1,569.40	543	.05	.96	.97	.98				
(n= 2,005)	M.I.	1,772.28	571	.06	.96	.97	.97	.001	202.88	28	.001
	P.M.I.[*]	1,589.92	555	.05	.96	.97	.98	0	20.52	12	.06

*unconstrained $GSI_{2,3}$, $MO_{2,3}$, $MO_{2,3}$, $CONS_{2,3}$, $OPTOC_{2,3}$.

4.2 Confirmatory Factor Analysis

The second step involved the assessment of the eight-factor measurement model proposed in the study, by means of confirmatory factor analysis (CFA) using LISREL 8.80 (Jöreskog and Sörbom, 2006). Global fit indices met standard requirements: RMSEA=.06 and SRMR=.06, thus both lower than .08; NFI=.97, NNFI=.97 and CFI=.98, thus all greater than .95. Local fit criteria were good, too (Table 2). All standardized item loadings (λCFA) significantly loaded on their factors (*p*< .01), and factor loadings were greater than .60 (Bagozzi and Yi, 1988), with the exception of one item (hedonism=$OPTOC_3$) which showed a factor loadings of $.50^2$. Cronbach's alphas (α) for all constructs were greater than .60 (George and Mallery, 2013). The composite reliability threshold of .60 was observed for every construct. The average variance extracted (AVE) met the recommended threshold of .50, with the exception of the openness-to-change construct which showed an AVE of .49, only slightly lower the recommended threshold. Discriminant validity was observed: the shared variance

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[2]The removal of the item could have led to an improvement in the model fit (i.e., to an average variance extracted index of .59 for the openness-to-change construct). However, we opted for keeping the item in the model. This choice is based on a threefold consideration. First, the factor loading threshold of .50 or greater is considered still acceptable in literature (Hair et al., 1995). Second, an overall assessment of the model fit indices clearly shows that the data fit well with the hypothesized constructs. Third, the removal of the value OPTOC3 (hedonism) from the item list could have undermined the theoretical integrity of the value domain (openness-to-change=self-direction, stimulation and hedonism) as it was originally proposed by Schwartz (1992) and used in this study.

between pairs of constructs was indeed always less than the corresponding AVE (Fornell and Larcker, 1981). Table 3 provides means and standard deviations per construct, and the bivariate correlations between constructs. Correlations among components ranged from .01 to .57.

Finally, we assessed common method variance statistically (Podsakoff et al., 2003). We applied the marker variable technique ("[Home country] people should not buy foreign eco-friendly electric cars, because this hurts domestic business and causes unemployment"; 7-point Likert scale item). Results showed that significant correlations did not vary after we controlled for the marker variable[3], indicating that common method variance did not represent a threat in our data.

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[3]Correlations tables can be provided by the authors on request.

Table 2. Item list per construct, Factor loadings, Cronbach's Alphas, Composite reliability and Average variance extracted

Constructs	λCFA	α	CR	AVE
Green self-identity (GSI)		.88	.88	.72
GSI$_1$	.82			
GSI$_2$	.86			
GSI$_3$	.86			
Ecological care (EC)		.89	.89	.74
EC$_1$	.87			
EC$_2$	.79			
EC$_3$	.90			
Moral obligation (MO)		.93	.94	.83
MO$_1$	.86			
MO$_2$	.95			
MO$_3$	.92			
Intention to adopt eco-friendly electric cars (INT)		.89	.90	.76
INT$_1$	.77			
INT$_2$	.89			
INT$_3$	.93			
Self-transcendence (S-TRANSC)		.69	.70	.54
S-TRANSC$_1$	.72			
S-TRANSC$_2$	.75			
Self-enhancement (S-ENHANC)		.79	.80	.66
S-ENHANC$_1$	.84			
S-ENHANC$_2$	.78			
Openness to change (OPTC)		.71	.73	.49
OPTC$_1$	.75			
OPTC$_2$	.78			
OPTC$_3$	.50			
Conservation (CONS)		.79	.80	.58
CONS$_1$	.67			
CONS$_2$	.80			
CONS$_3$	.79			

Notes: GSI=Green self-identity, EC=Ecological care, MO=Moral obligation, INT=Consumer intention to adopt electric cars, S-TRANSC=Self-transcendence, S-ENHANC=Self-enhancement, OPTC=Openness-to-change, CONS=Conservation, standardized item loadings (λCFA), α=Cronbach's alphas, CR=Composite reliability, AVE=Average variance extracted.

Table 3. Mean scores, standard deviations per construct and correlations between constructs

|	GSI M= 4.60 SD= 1.28	EC M= 5.35 SD=1.23	MO M= 4.42 SD= 1.54	INT M= 3.06 SD= 1.06	S-ENHANC M= 4.52 SD= 1.86	CONS M= 6.28 SD=1.66	S-TRANSC M= 6.83 SD=1.58	OPTC M= 6.08 SD=1.50
GSI	1							
EC	.57**	1						
MO	.51**	.45**	1					
INT	.53**	.50**	.40**	1				
S-ENHANC	-.14**	-.08**	-.13**	-.03(ns)	1			
CONS	.08**	.07**	.08**	.12**	.30**	1		
S-TRANSC	.38**	.37**	.23**	.36**	.08**	.48**	1	
OPTC	.09**	.13**	.01(ns)	.14**	.41**	.37**	.49**	1

Notes: GSI=Green self-identity, EC=Ecological care, MO=Moral obligation, INT=Consumer intention to adopt electric cars, S-ENHANC=Self-enhancement, CONS=Conservation, S-TRANSC=Self-transcendence, OPTC=Openness-to-change,. M= Mean, SD= Standard deviation, ** = Correlation is significant at $p=.01$, (ns)= Correlation is not significant. This matrix is diagonal.

4.3 Basic model and conditional direct and indirect effects

The third step involved the assessment of the structural model. In order to unequivocally test the hypotheses, and for clarity of exposition, we first tested the basic model. Second, we tested four moderated mediation models, one for each of the four Schwartz's value domains.

To test the basic model, we used the structural equation modeling technique with LISREL 8.80. Both global and local fit indices gave good results: $\chi^2(80)$ 506.474; RMSEA=.06, SRMR=.05, NFI=.98, NNFI=.98, CFI=.98; all standardized item loadings significantly ($p<.01$) loaded on their factors, and were all greater than .60, ranging from .77 to .98. Figure 3 shows the standardized coefficients of the direct effects. Direct paths were all significant. In line with our expectations, results revealed that self-transcendence positively influences green self-identity, while self-enhancement and conservation have a negative impact on this variable. Conversely, contrary to our predictions, openness-to-change negatively influences green self-identity. Furthermore, as expected, green self-identity in turn influences positively ecological care, moral obligation and consumer intention to adopt electric cars. Green self-identity also has an indirect effect on consumer intention to adopt electric cars through ecological care (b=.16, $p<.05$) and moral obligation (b=.05, $p<.05$).

Figure 3 Direct effects of the basic mediation model
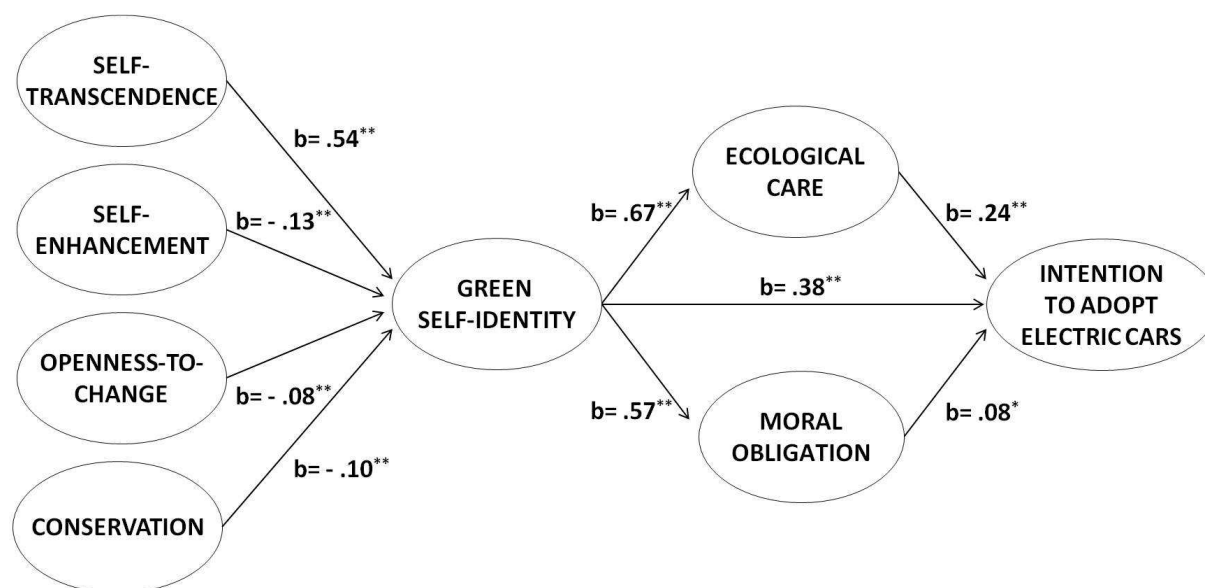
Notes: b = standardized beta coefficient; ** = $p < .01$, * = $p < .05$, (ns) = not significant

In the second set of analyses, we tested the moderating effects of the four Schwartz's value domains on the relationships between green self-identity, ecological care, moral obligation, and consumer intention to adopt electric cars (Figure 1). To this end, we used Hayes' (2013) PROCESS, model 59. In all analyses, country dummy variables for Italy and Belgium, and age and gender were used as covariates.

The main indicator for judging the meaningfulness of a moderation effect is the difference in effect sizes (as detailed in the tables in the text below) for three different values of the moderator (the mean and the mean minus and plus one standard deviation). PROCESS software does not provide a statistical test that can be used to test differences in effect sizes. Consequently, judging these differences is to a certain extent subjective. Additionally, a clear indication of moderation would be that there is a significant effect for one or more of the values of the moderator, but not for others. That can be inferred from the confidence intervals in the tables included in the text below. If a confidence interval contains zero, the effect is not significant for that value of the moderator. We used these criteria to arrive at our conclusions.

In Tables 4-7, the first column shows three levels of the moderator. The second block shows the direct effects of green self-identity on consumer intention to adopt electric cars, for the three values of the moderator. The third and fourth blocks of each table show the effect sizes and the confidence intervals of the indirect effects through ecological care and moral obligation respectively.

Table 4 reports the results of the moderated mediation analysis with 'self-transcendence' as the moderator. The more consumers prioritize self-transcendence values, the stronger the direct effect of green self-identity on intention, although this effect is rather limited. Green self-identity has a significant effect on consumer intention to adopt electric cars through the mediator ecological care, but this effect becomes weaker at higher levels of self-transcendence. As expected, the effect of green self-identity on intention through moral obligation becomes stronger at higher levels of self-transcendence, although this effect is limited. H_{1c} was confirmed, while H_{1a} and H_{1b} were not.

Table 4. Conditional direct and indirect effects of the moderator 'self-transcendence'

Levels of S-TRANSC	Direct effects of GSI on INT			Mediator = EC		Mediator = MO	
	Effect	Sign.level	Conf. interval	Effect	Conf. interval	Effect	Conf. interval
5.2	.17	<.01	[.12; .22]	.08	[.05; .11]	.07	[.04; .09]
6.8	.18	<.01	[.15; .22]	.06	[.04; .08]	.08	[.06; .10]
8.4	.19	<.01	[.14; .24]	.03	[.02; .06]	.09	[.06; .11]

Note: GSI=Green self-identity, EC=Ecological care, MO=Moral obligation, INT=Consumer intention to adopt electric cars, S-TRANS=Self-transcendence.

Table 5 reports the results of the moderated mediation analysis with 'self-enhancement' as a moderator. The more people prioritize self-enhancement, the stronger the direct effect of green self-identity on consumer intention to adopt electric cars. Results for the indirect effects show that the influence of green self-identity on consumer intention via moral obligation is reduced at higher levels of self-enhancement, as expected. The more people prioritize self-enhancement, the weaker the indirect effect of green self-identity on intention

through moral obligation. Contrary to our expectations, self-enhancement does not moderate the effect of green self-identity on intention via ecological care. Hence, H_{2a} and H_{2c} were confirmed, while H_{2b} is not.

Table 5. Conditional direct and indirect effects of the moderator 'self-enhancement'

Levels of S-ENHANC	Direct effects of GSI on INT			Mediator = EC		Mediator = MO	
	Effect	Sign. level	Conf. interval	Effect	Conf. interval	Effect	Conf. interval
2.65	.16	<.01	[.11; .20]	.05	[.02; .08]	.12	[.09; .15]
4.52	.19	<.01	[.16; .23]	.06	[.04; .08]	.08	[.06; .10]
6.39	.23	<.01	[.18; .27]	.06	[.04; .09]	.05	[.03; .08]

Note: GSI=Green self-identity, EC=Ecological care, MO=Moral obligation, INT=Consumer intention to adopt electric cars, S-ENHANC=Self-enhancement.

Tables 6 shows the results of the moderated mediation analysis with 'openness-to-change' as a moderator. The direct impact of green self-identity on consumer intention to adopt electric cars as well as its indirect impact through moral obligation are both stronger at higher levels of openness-to-change, as expected (although the effect is rather limited). Contrary to our expectations, openness-to-change does not moderate the effect of green self-identity on intention via ecological care. H_{3a} and H_{3c} were confirmed, while H_{3b} was not.

Table 6. Conditional direct and indirect effects of the moderator 'openness-to-change'

Levels of OPTC	Direct effects of GSI on INT			Mediator = EC		Mediator = MO	
	Effect	Sign.level	Conf. interval	Effect	Conf. interval	Effect	Conf. interval
4.58	.18	<.01	[.13; .23]	.06	[.03; .09]	.07	[.05; .11]
6.08	.19	<.01	[.15; .22]	.06	[.04; .08]	.08	[.06; .10]
7.58	.20	<.01	[.15; .25]	.06	[.03; .08]	.09	[.06; .12]

Note: GSI=Green self-identity, EC=Ecological care, MO=Moral obligation, INT=Consumer intention to adopt electric cars, OPTC=Openness-to-change.

Table 7 exhibits the results of the moderated mediation analysis with 'conservation' as a moderator. The moderating effect of conservation on the impact of green self-identity on consumer intention is not significant. The indirect influence of green self-identity through ecological care becomes weaker at higher levels of conservation, as expected. The moderation

of conservation on the indirect effect of green self-identity via moral obligation is not significant. Hence, only H$_{4b}$ was confirmed.

Table 7. Conditional direct and indirect effects of the moderator 'conservation'

Levels of CONS	Direct effects of GSI on INT			Mediator = EC		Mediator = MO	
	Effect	Sign.level	Conf. interval	Effect	Conf. interval	Effect	Conf. interval
4.62	.18	<.01	[.13; .23]	.07	[.04; .11]	.09	[.06; .12]
6.28	.19	<.01	[.15; .22]	.06	[.04; .08]	.08	[.06; .10]
7.94	.19	<.01	[.14; .23]	.05	[.03; .07]	.08	[.06; .,11]

Note: GSI=Green self-identity, EC=Ecological care, MO=Moral obligation, INT=Consumer intention to adopt electric cars, CONS=Conservation.

4.4 Covariates and descriptive statistics

Finally, we assessed the effects of potential covariates in the model. Similarly, we analyzed significant differences between socio-demographic variables with respect to the importance attached to personal values. The latter will be also used in our managerial discussion section.

Results of the effects of the covariates across the four models revealed that Italians ($p<.01$, effects (b) ranging from .94 to .96), Belgians ($p<.01$, b from .19 to .20) and young people ($p<.01$, b from .07 to .08) are more willing to adopt electric cars compared to Danish and older people. Italians ($p<.01$, b from .39 to .47), women ($p<.05$, b from .09 to .13) and younger people ($p<.05$, b from .04 to .06) show more ecological care than Danish and Belgian respondents, men and younger people. Belgians ($p<.01$, b from .85 to .87) and older people ($p<.01$, b from .10 to .11) show a higher moral obligation to drive electric cars as compared to Italian and Danish respondents and young people.

Men attach significantly more importance to self-enhancement values (M=4.63, SD=1.88) than women (M=4.42, SD=1.84; $p<.05$), and women attach more importance to self-transcendent (M=7.01; SD=1.50) and conservation values (M=6.37, SD=1.64) than men (self-transcendence: M=6.66, SD=1.64; $p<.05$; conservation: M=6.19, SD=1.67; $p<.05$).

Younger people (18-35) attach more importance to self-enhancement (M=5.09, SD=1.81) and openness-to-change values (M=6.44, SD=1.45) than older people (46-65) (self-enhancement: M=4.20, SD=1.82; $p<.05$; openness-to-change values M=5.88, SD=1.49; $p<.05$). Based on the samples involved in the current study, Italians are significantly more self-transcendent and open-to-change than the Danish and the Belgians (self-transcendence: M_{IT}=7.60, SD=1.52; M_{DE}=6.35, SD=1.41; M_{BE}=6.30, SD=1.39; $p<.05$; openness-to-change: M_{IT}=6.39, SD=1.70; M_{DE}=5.90, SD=1.31; M_{BE}=5.86, SD=1.32, $p<.05$).

5. Discussion, implications, and conclusions

5.1 Discussion of results

The present study develops a model of electric car adoption intention in which Schwartz's (1992) value domains influence green self-identity, and the latter influences consumer intention to adopt electric cars. Green self-identity is assumed to influence consumer intention directly and also indirectly via the indirect effects of teleological and deontological motives. Furthermore, and most importantly, the present study assesses the role of value domains in moderating the green self-identity process of electric car adoption intention formation. Individuals are assumed to differ in the green self-identity based process of electric car adoption intention formation, based on the importance they attach to different value domains as guiding principles in their life. This conceptual model is empirically tested in a sample of 2,005 consumers residing in Belgium, Denmark and Italy.

Results show that the basic conceptual model is almost fully supported. Self-transcendence has a strong positive effect on green self-identity, while self-enhancement and conservation impact green self-identity negatively. These findings support previous research on the positive (vs. negative) effects of altruistic and biospheric (vs. egoistic) values on green self-identity (van der Werff et al., 2014). However, contrary to our expectations, openness-to-

change has a negative effect on green self-identity, be it relatively small. A possible explanation for this result is that openness-to-change reflects values such as hedonism and self-direction. These values can be considered as somewhat ego-centered. Previous literature found indeed that egoistic values have a negative impact on pro-environmental behaviors (Gatersleben et al., 2014).

Green self-identity significantly and positively influences consumer intention to adopt electric cars directly and also indirectly through the development of ethical motives of ecological care and moral obligation. With regard to the direct impact of green self-identity, our results corroborate the notion of green self-identity being a motivational root of pro-environmental behaviors (Whitmarsh and O'Neill, 2010). The more individuals perceive themselves as green consumers, the more they tend to engage in specific pro-environmental actions that express the green self-identity role. With regard to the indirect effects of green self-identity on electric car adoption intention, through teleological and deontological considerations, our results corroborate Hunt and Vitell's (1986) Theory of Ethics, and its application in the context of pro-environmental consumption (Chan et al., 2008; Barbarossa et al., 2015). The more individuals see themselves as green consumers, the more they are concerned about the ecological consequences of their consumption choices, and the more they perceive the moral obligation of behaving pro-environmentally, leading to a stronger intention to adopt eco-friendly alternatives, such as electric cars.

Most importantly, our results show that Schwartz's (1992) value domains moderate the process of adoption intention formation. Self-transcendent individuals are more likely to express their green self-identity directly into intentions, and indirectly through the consideration of moral obligation, while they evaluate the ecological consequences of driving cars to a lesser extent. The results revealing a stronger direct effect of green self-identity on consumer intention to adopt electric cars, as well as its weaker indirect effect via ecological

care, are inconsistent with Gärling et al. (2003) and Vermeir and Verbeke's (2008) findings of highly self-transcendent consumers placing more attention to the environmental aspects of engaging in pro-environmental behaviors. Conversely, our findings revealing a stronger indirect effect of green self-identity via moral obligation considerations confirm previous research of self-transcendent consumers prioritizing the intrinsic, moral aspects of consuming eco-friendly products (van der Werff et al., 2013).

Self-enhanced individuals tend to express their green self-identity directly into intentions, and less through moral obligation considerations. These findings are consistent with recent research in consumer psychology indicating that, while self-enhancing individuals are likely to express their green self-identity directly into positive green behavioral intentions (e.g., because of ego-centric motives of self-esteem, self-recognition and status), they consider less the moral arguments to do so (Thøgersen and Zhou, 2012; Cho et al., 2013). The indirect effect of self-identity on intention via ecological care is not moderated by self-enhancement values.

Open-to-change individuals tend to express their green self-identity directly into intentions as well as through deontological considerations. These results are consistent with Steenkamp et al. (1999) and Jansson et al.'s (2010) findings that open-to-change consumers find it attractive to express their green identities through the adoption of eco-innovations that make them feel doing the right thing in a modern, exciting way, and which provides them with pleasure and sensuous gratification for themselves (Noppers et al., 2014). Additionally, acting upon new ethical appeals can make consumers perceive themselves as ethically right. This can evoke positive feelings, especially when consumers find hedonism in life important (Hansla et al., 2008; Steg et al., 2012; Noppers et al., 2014). In our results, this factor seems to have an influence only through feelings of moral obligation, and not through the development of ecological care.

Finally, individuals prioritizing conservation seem not to consider the ecological and moral aspects of their consumption choices. Our findings corroborate the notion of environmentalism being negatively related to values of tradition and conformity (Schultz and Zelezny, 1999). People valuing conservation favour the *status quo*, and tend to behave according to accepted social norms, traditions and established cultural meanings, which may be distant from new environmental paradigms. Consequently, they are not inclined to engage in behaviors that imply significant changes from what they are used to (Claudy et al., 2015).

One remarkable finding across most of the analyses is that values moderate the moral obligation mediation to a greater extent than the ecological care mediation. This result does not indicate that ecological care is not an important mediator of the self-identity–intention relationship. However, contrary to what we found for moral obligation, the "green self-identity–ecological care–electric car adoption intention" process is hardly affected by the importance consumers attach to different personal values. This evidence indicates that deontological considerations are, in general, more impacted by values than teleological ones. These results could be partly explained by the greater inherent consistency between values and deontological considerations than between values and teleological motivations. Values are conceptions of desirable end-states which transcend specific situations. Similar to values, moral obligations are inner principles which may transcend context-specific or product-specific effects, because they represent an internalized moral way of conduct. Conversely, ecological care is more strictly connected to consumer evaluations of the specific consequences of engaging in determined (eco-friendly) consumption behaviors. Therefore, the effect of values on the process of moral considerations could be more profound than their effect on more situation-specific considerations of ecological care using an electric car. Furthermore, additional variables such as consumer perceived effectiveness, information or scepticism, which were not included in the present model, may have exerted an additional

impact on the mediating effect of ecological care, thus diluting the moderating effects of personal values on this process.

5.2 Managerial implications

The findings of the present study provide marketers, policy makers and environmental non-governmental organizations (NGOs), aiming at promoting eco-friendly electro mobility, with useful insights to building the most effective identity-based communication strategies for different consumer segments.

Green self-identity represents a pivotal factor to target in the contents of electric car advertising and awareness building. The more green identities are enhanced, the more consumers turn these identities into the formation of electric car adoption intentions. Based on our results, green self-identity can be most efficiently enhanced by developing self-transcendent values in people, and by emphasizing these values in campaigns that promote eco-friendly behavior. Furthermore, results of the moderated mediations analyses of this study reveal that consumers are different in the way they turn their green self-identities into electric car adoption intentions, based on importance they attach to different values as guiding principles in their life. Based on this evidence, marketers, policy makers, and NGOs should first consider segmenting the market using value-based segmentation approaches (Schwartz and Bilsky, 1990; Schwartz, 1992). Second, they should consider addressing different value-based consumer segments with tailored communication contents. Successful communication requires indeed a good understanding of the most effective motivational incentives to persuade different target groups.

Results indicate that self-enhanced individuals tend to express their green self-identity more directly into intentions, and less through moral considerations. Hence, communication strategies addressing this target group should consider focusing on how self-enhanced

consumers can gain personal recognition and satisfaction from adopting an electric car. Communication should focus on electric car owners as a group that people would like to be a part of, to enhance their own self-esteem. For instance, recent Lexus commercials have taken this approach. With claims defining the new Lexus as ˈcaptivatingˈ and ˈthe pursuit of perfectionˈ, Lexus commercials emphasize the car's striking coupe body style and performance, so that it is hard for people to look away from it, and to avoid envying the ˈcaptivatingˈ Lexus owners[4]. Conversely, communication contents which emphasize the environmental and moral aspects of driving electric cars (e.g., Nissan Leaf commercial showing the melting of the Arctic and the poignant living conditions of a polar bear[5]) would be less persuasive for this target group.

Self-transcendent and open-to-change individuals tend to express their green self-identity more directly into intentions and indirectly through moral obligation evaluations. Communication arguments tailored for these consumers should emphasize green self-identity enhancement. Simultaneously, communication arguments should also emphasize the personal satisfaction that consumers may derive from acting morally, such as from adopting an eco-friendly, morally ˈrightˈ innovation. For instance, Toyota Prius 2009 commercial took this approach. This ad claimed "I am the original […], I am the first […], I am forward […] and I am doing it cleaner". More recently, Volvo 2016 commercial has emphasized a new morally ˈrightˈ vision of luxury, and referred to the new electric car Volvo XC90 as ˈour idea of luxuryˈ[6].

Individuals prioritizing conservation values have lower intentions to adopt eco-friendly alternatives, and they are less willing to consider the ecological and moral aspects of

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[4]For example: https://www.youtube.com/watch?v=tmSlCw_R9KI&list=PL3rN31hgtvRb45mkzZA5XrEYT.
[5]For example: https://www.youtube.com/watch?v=VT_3xtI2kvM.
[6]For example: https://www.youtube.com/watch?v=a76y8OoDy90.

consumption choices. Based on this evidence, marketers, policy makers and NGOs should assign a lower priority to this value-based consumer group over other consumer segments.

Finally, our study also provides useful socio-demographic information that marketers, policy makers and NGOs, that want their messages to be tailored according to groups differing in personal values, should take into account (Schwartz and Sagiv, 1995). Practitioners should consider combining value-based segmentation clusters with socio-demographic variables, to have a richer and more detailed insight into each value-based consumer target's profile. Results indicate that men rather than women, and younger rather than older consumers, attach significantly more importance to self-enhancement values. For young male consumers the most effective value-based communication strategy seems therefore to be the one used by the 'captivating' Lexus brand.

Conversely, women attach more importance to self-transcendence than men. Our results also show that younger people attach more importance to openness-to-change values than older people. Finally, based on the sample of drivers involved in this study, Italian drivers seem significantly more self-transcendent and open-to-change than Danish and Belgian drivers. For young women, particularly residing in Italy, the most effective value-based communication strategy seems to be therefore Volvo XC90's 'our idea of luxury'.

5.3 Limitations and guidelines for future research

The current study has a number of limitations, which provide avenues for future research. First, the findings reveal that self-transcendence does not positively interact with the teleological consideration of ecological care, but rather with the introspective deontological consideration of moral obligation and the ego-centric tendency of 'showing of' one's green self-identity. Future research is invited to replicate our study using different high-involvement product categories (e.g., luxury fashion), to detect whether the negative moderation of the

self-transcendence value domain on the mediating effects of ecological care could be ascribed to product- (electric car) specific effects or not. Furthermore, the findings of this study reveal that values moderate the moral obligation mediation to a greater extent than the ecological care mediation. Future research is invited to address these issues by replicating the proposed conceptual model using biospheric values (De Groot and Steg, 2008), which may be deemed more consistent with specific teleological considerations of care for the environmental consequences of using cars (Van der Werff et al., 2013). Future research is also invited to include variables of perceived consumer effectiveness, information and scepticism in the proposed conceptual model, to control for possible product-specific or context-specific effects.

Second, the current study empirically validates the proposed conceptual model in Belgium, Denmark and Italy. Previous research posits that for theory testing in cross-cultural research, sample equivalence is more important that representativeness of a population (Hoeken et al., 2007). Hence, stratified quota sampling technique for age and gender was used to collect the data. However, future research is invited to validate the model using statistical samples that are more representative of the national populations. Similarly, future research is invited to include other countries with different Schwartz's (1992) value levels, to fully assess the significance and magnitude of Schwartz's personal values on pro-environmental consumption behavior. Alternatively, other personal or cultural value frameworks could be used, to investigate the effect of values from a different angle or logic.

Third, this study uses a survey approach with self-reported measures. Future research is invited to use an experimental approach, and manipulate green self-identity and specific personal values, in order to test experimentally under which personal value conditions (i.e., importance of values) consumers express their green self-identities into different teleological and deontological motives and electric car adoption intentions.

Finally, individuals usually develop multiple self-identities. The current study focused upon green self-identity as the pivotal construct. However, personal values may have a different influence on the diverse self-identities, which in turn may influence pro-environmental intentions and behaviors differently. Future research is invited to include multiple self-identities in the proposed conceptual model, to explore these issues.

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