A SELF-IDENTITY DRIVEN MODEL OF ELECTRIC CAR ADOPTION AND THE MODERATING ROLE OF PERSONAL VALUES

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Abstract

We propose a model to assess the effects of green self-identity, care for the environment, and green moral obligation, on the intention to use electric cars, and we explore the moderating role of personal values on the influence of the antecedents of consumer intentions. The model is empirically validated in a sample of 600 Belgian car drivers. Green self-identity has an effect on electric car usage intention, both directly and indirectly through the development of environmental concern and green moral obligation. These effects are moderated by consumers' personal values. The more people adhere to self-enhancement values, the stronger the direct effect of green self-identity, and the weaker the indirect effect through environmental concern and green moral obligation. The more important people find conservation values, the lower the direct effect of green self-identity, the higher the indirect effect through environmental concern, and the lower the indirect effect through green moral obligation. The more important self-transcendent and openness to change values are, the weaker the direct effect of green self-identity and the stronger the indirect effects through environmental concern and green moral obligation.

Keywords: green self-identity, environmental concern, green moral obligation, electric car adoption, personal values

Introduction and objectives

We develop and test a self-identity based model of eco-friendly electric car adoption intention and explore the differences in the effects of antecedents of this intention between individuals differing in personal values, using Schwartz's value framework.
Self-identity refers to how individuals perceive their role in the social structure (Stets and Burke, 2003). By taking on a role identity, individuals adopt expectations to accompany the role, and tend to act to represent these expectations. Self-identity is therefore a primary determinant of behaviour (Arnocky et al., 2007). Green self-identity (GSI) is an individual's overall perceived identification with the role of the green consumer. Our model starts from the assumption that green self-identity is a 'primary' direct motive of pro-environmental behavior (Moisander, 2007; Rise et al., 2010; Bartels and Hoogendam, 2011).

Using electric cars, or developing the intention (INT) to do so, is a pro-environmental behaviour, and can therefore be considered as ethical consumer behaviour. Hunt and Vitell (1986) posit that, when consumers take decisions in situations involving ethical issues, they are influenced by moral philosophies of 'teleology' and 'deontology'. Teleology refers to the goodness or badness of the consequences of a specific behavioral alternative, while deontology is based on the inherent moral righteousness of a specific behavioral alternative (Chan et al., 2008). As to the former, the more consumers consider themselves as 'green', the more they will care about the environmental consequences of their consumption behaviour, and this concern will influence their intention to adopt an electric car (Hansla et al., 2008; Kilbourne and Pickett, 2008; Skippon and Garwood, 2011). As to the latter, the more they see themselves as 'green', the more they will feel the moral obligation to consume eco-friendly, and the stronger their intention to adopt the electric car will be (Peloza et al., 2013; van der Werff et al., 2013b). We thus posit that, besides the direct effect of green self-identity on electric car purchase intentions, green self-identity will also have an indirect effect on intentions through the development of both environmental concern (EC) and green moral obligation (GMO).

Values are beliefs that lead to desirable end states or behaviour. They transcend specific situations and they guide evaluations of behaviour (Rokeach, 1973). Personal value orientations have often been referred to as determinants of pro-environmental behaviour (Kilbourne, and Beckmann, 1998; Jansson, 2011). Schwartz (1992) proposed a typology of ten values, distinguishing among the type of motivational goals they express. Several of these values have been associated with different types of ethical and eco-friendly behaviour (Gärling et al., 2003; Leonidou et al., 2010; Kilbourne and Pickett, 2008; Jansson et al., 2011). Moreover, values, and more particularly Schwartz's values, have already been used as moderators of the buying process in previous research on sustainable consumption (e.g., Vermeir and Verbeke, 2008). We propose that the role of green self-identity, environmental concern and green moral obligation in developing the intention to adopt an electric car will be different depending on the personal values of the consumer.

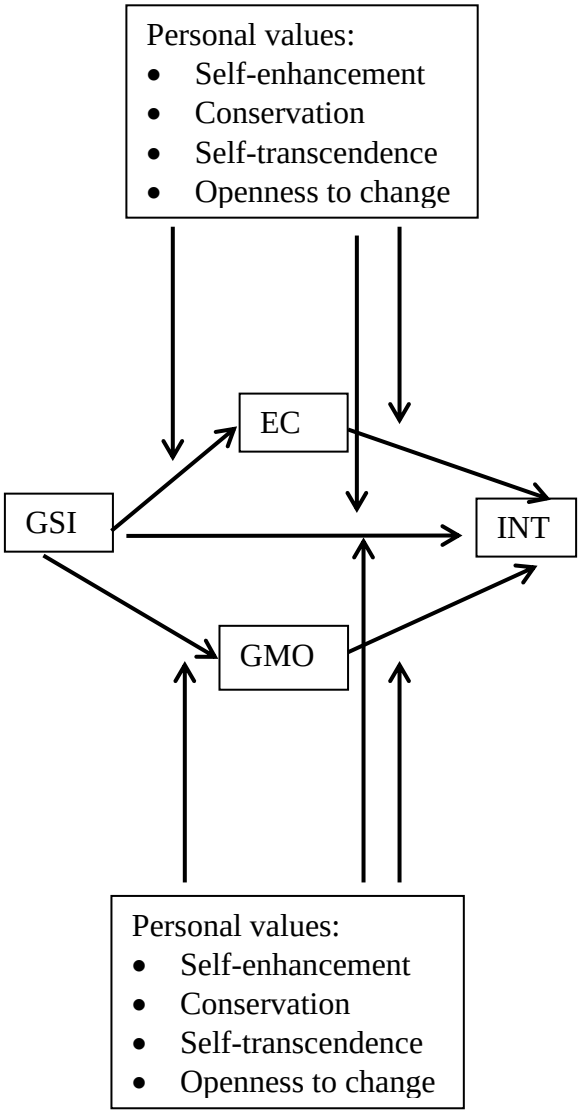
The conceptual model for this study is shown in Figure 1.

Research investigating high involvement purchases of eco-friendly products, such as electric cars, is basically absent (Luchs et al., 2010; see, e.g., Moons and De Pelsmacker, 2012 and Koller et al., 2011, for exceptions). The present study partly fills this void by examining a product that is relatively expensive, reflects on the consumer's self-identity, has a high social

risk, and thus requires more effort prior to purchase (Jansson et al., 2010; Oliver and Lee, 2010).

Our contribution is thus threefold. We define and empirically test a self-identity based model of eco-friendly consumer behaviour, we investigate how the antecedents of eco-friendly intention formation work differently depending on individuals' personal values, using Schwartz's value framework, and we apply the model to an under-researched product type. We also offer implications for the promotion of eco-friendly products. The study was carried out in a sample of 600 Belgian car drivers.

Figure 1. Conceptual model



Conceptual background and research questions

A Model of Eco-Friendly Electric Car Buying Behaviour

The first objective of this study is to build a self-identity based model of the antecedents of electric car adoption intention. Self-identity is a set of meanings attached to roles individuals occupy in the social structure, and unique ways in which they see themselves in these roles (Stets and Burke, 2003). According to Identity Theory (Stryker and Burke, 2000), self-identity is a primary motivator of behaviour because individuals seek to maintain consistency with the identity standard through behavioural actions (Arnocky et al., 2007). Green self-identity (GSI) – an individual's overall perceived identification with the typical green consumer – represents a mental model which may motivate the individual to engage in specific eco-friendly behaviours (Stets and Biga, 2003; van der Werff et al., 2013a; Arnocky et al., 2007; Clayton, 2007). Our proposed model focuses on the motivational process through which self-identity determines specific ethical motives and intentions with respect to the usage of electric cars. Indeed, green self-identity may be considered as a 'primary' motive of pro-environmental behavior (Moisander, 2007), that is, a motivational 'root' that influences consumers in developing positive intentions to engage in specific pro-environmental behaviors that express the green self-identity role (Rise et al., 2010; Bartels and Hoogendam, 2011). Empirical evidence corroborates the idea that green self-identity influences consumer intention to engage in specific eco-friendly behaviours (Oliver and Lee, 2010; Hinds and Sparks, 2008; Shaw and Shiu, 2003; Rise et al., 2010). Therefore we posit that the more consumers perceive themselves as green, the more they will be willing to adopt them.

In addition to the direct influence that green self-identity exerts on consumers' intentions to perform specific eco-friendly behaviours, Hunt and Vitell's (1986) Theory of Ethics posits that consumers rely on teleological and deontological considerations in situations involving ethical issues (Vitell et al., 2001). Teleological evaluation is based on the estimated goodness or badness of the consequences of a specific behavioral alternative, while deontological evaluation is based on the inherent moral righteousness of a specific behavioural alternative (Chan et al., 2008). The 'greener' consumers' self-identity is, the more they will care about the environmental consequences of a specific consumption behaviour (teleological evaluation) (Hansla et al., 2008; Kilbourne and Pickett, 2008). Follows and Jobber (2000) found that women who see themselves as environmentally-friendly place higher importance on the environmental consequences of purchasing diapers, and therefore are less likely to purchase disposable diapers. Skippon and Garwood (2011) found that early adopters of battery electric vehicles have high personal concern for the environmental consequences of using cars. We posit that the more consumers perceive themselves as green, the more they will place importance on the environmental consequences of car use, and the more they will develop positive intentions toward the adoption of eco-friendly electric cars.

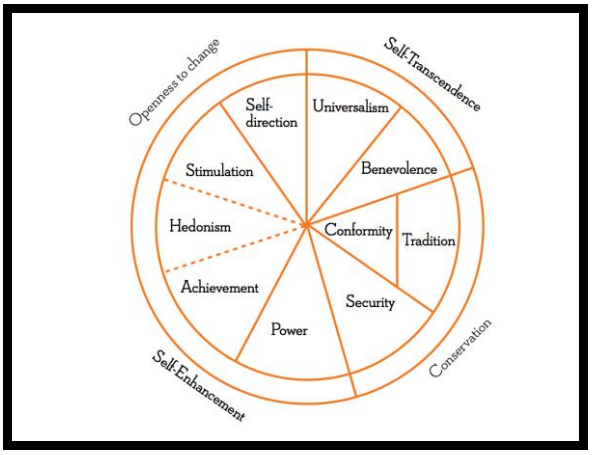
Additionally, the more consumers perceive themselves as green, the more they will perceive a specific environmentally unfriendly consumption behaviour as unethical behaviour a green consumer should not engage in (deontological evaluation – green moral obligation). Green moral obligation (GMO) is as 'a 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). A consumer may adhere to specific eco-friendly principles because it is the right thing to do and the violation of these principles is intrinsically wrong (Peloza et al., 2013). Van der Werff et al. (2013b) show that environmental self-identity is related to one's obligation-based intrinsic

motivation to act pro-environmentally, which in turn mediates the relationship between . environmental self-identity and eco-friendly behavior. We posit that the more consumers perceive themselves as green, the more they will feel a moral obligation to avoid environmentally unfriendly consumption actions, and the more they will develop the intention to adopt the eco-friendly electric cars.

The moderating role of personal values

Values are "desirable end states, varying in importance, that serve as guiding principles in people's lives" (Schwartz, 1994, p. 88). They transcend specific situations and guide evaluations of behaviour (Rokeach, 1973). Building on the work of Rokeach, Schwartz (1992) and Schwartz and Sagiv (1995) derived a typology of values, distinguishing among the type of motivational goals they express. Ten motivationally distinct value types are defined that reflect a continuum of related motivations and are structured in a circular way to express that the pursuit of different value types can be compatible or in conflict (Figure 2). Close value types are compatible, more distant value types are conflicting. In turn, Schwartz organises these ten value types further in four higher order value domains.

Figure 2. The Schwartz value orientation framework



Personal value orientations have often been referred to as determinants of pro-environmental behaviour. Amongst others, personal values are a good predictor of recycling, donating items to reuse, and walking to conserve energy (Kilbourne, and Beckmann, 1998; Jansson, 2011; Granzin and Olsen, 1991). Schwartz's (1992) self-transcendence value types of 'universalism' and 'benevolence' have been found to be positively related to pro-environmental attitudes and behaviour (ThØgersen, 1996). The self-enhancing 'achievement' and 'power value' types (power, achievement, stimulation, self-direction) have been shown to be negatively related to pro-environmental attitudes and behaviour (Gärling et al., 2003; Leonidou et al., 2010; Kilbourne and Pickett, 2008). Jansson et al. (2011) identified three value types: social-altruistic, biospheric, and egoistic. The first two positively related to eco-innovation adoption, the last one negatively. Also Schultz and Zelezny (1999) examined the relationship between Schwartz's ten value types and pro-environmental behaviour, and found that environmentalism is positively related to universalism. The values that fall into this type are: equality, a world at peace, unity with nature, wisdom, a beautiful world, social justice, broad-

mindedness, and protecting the environment (Schwartz, 1992). They also found that environmentalism was negatively related to power and tradition. Chua et al. (2010) report that one of the reasons is that hybrid car buyers value social image factors more than the quality and appeal of the car. Items chosen by hybrid car buyers to be most important for them were: the car makes me look good, it makes me equal to family members, I own the same brand as my friends and family, I am being seen in an environmentally friendly car. This is related to the value type 'conformism'.

Recent research suggested to explore the interaction between self-identity, motives and personal values (Bardi et al. 2014). We propose that people will express their green identity into behavioural intentions differently such that it fits with the importance (centrality) of their personal values (Steg et al., 2014). We expect differences in the relative importance of each of the causal paths in the model for individuals differing in the importance they attach to personal values. For instance, consumers adhering more to self-transcendent motivations can be expected to express their green self-identity into behavioural intentions more through the development of environmental concern and green moral obligation than via a direct expression of their green self-identity. Consumers adhering more to self-enhancement values may feel the urge to express their green self-identity directly into intentions to adopt the electric car, without much concern for moral obligation or the environmental consequence of their behaviour. People wo are strongly motivated by conservation values may express their green self-identity more through the development of environmental concern than through self-inspired motives such as expressing their green self-identity directly or through the development of moral obligation. People with a high openness to change are hedonistic and sensation-seeking. Consequently, they may be primarily driven by the egocentric motivation to express their self-identity directly in their behavioural intentions, and care less about ethical considerations of moral obligation or environmental concern. On the other hand, an electric car is not only an eco-friendly product, but also an innovative proposition. People scoring high on 'openness to change' values may therefore be attracted by the idea of adopting an innovative product such as the electric car that, additionally, contributes to a pro-environmental world.

The research questions we try to answer in this study are:

RQ1. To what extent does green self-identity determine the intention to use electric cars, and what is the mediating role of environmental concern and green moral obligation?

RQ2. In what way do personal values moderate the effects of green self-identity, environmental concern and green moral obligation on electric car usage intention?

Method

Data were gathered in a sample of 600 Belgian car drivers by means of an online survey administered by a professional data collection agency. Quota for age and gender were set in order to be representative of the Flemish speaking part of the Belgian population (Age: 16% 18-25 years old, 21% 26-35 years old, 21% 36-45, 42% 46-65; Gender: 50% male). Data were collected from February to April 2013. The first part of the questionnaire explained the aim of the study and the guidelines to complete the questionnaire. Respondents were briefed that the survey was about their consumption behaviour and their personal values. Then the Schwartz personal values were measured. Subsequently the measurement scales for the model variables were administered. Finally, socio-demographic data were gathered.

The measures for the model constructs were taken from extant research: GSI (Sparks and Shepherd, 2002), EC (Follows and Jobber, 2000), GMO (Sparks & Shepherd, 2002), and INT (Moons and De Pelsmacker, 2012). Where required, scales were adapted to the product category (electric cars) at hand. All items were measured on a 7-point Likert scale anchored by "1= Completely disagree" and "7= Completely agree". The full scales per construct are shown in Appendix 1. Cronbach Alphas for all constructs were greater than .70. For further analysis, a mean score across items was calculated per construct.

To measure personal values, the 10 items Short Schwartz's Value Survey (SSVS) was used (Hansla et al., 2008). This survey measures each of the 10 personal values by means of one item. Each value is rated on a nine point importance scale: 'as a guiding principle in my life, this value is': -1= opposed to my values, 0= not important, 3= important, 6= very important, 7= of supreme importance. The other categories are unlabelled (Schwartz and Sagiv, 1995; Hansla et al. , 2008) (Appendix 2). An exploratory principal components analysis was performed on the 10 SSVS items to identify the basic dimensions underlying the SSVS. Based on the Scree plot and the coherence of the resulting outcome, a four factors solution was used. All communalities of this four-factor solution are >.64. Cumulative variance explained is 72.33%. Based on Varimax rotated factor loadings, the four factors were defined by the items that load exclusively on one of the factors. These four higher-order dimensions are consistent with the four value dimensions proposed by Schwartz (1992) (see Figure 2):

F1. Self-enhancement: achievement, power (alpha: .779)
F2. Conservation: Security, tradition, conformity (alpha: .725)
F3. Self-transcendence: Benevolence, universalism (alpha: .632)
F4. Openness to change: Stimulation, hedonism (alpha: .639).

Although the alpha of two of the scales is lower than the traditional .7 benchmark, for scales with a limited number of items, also alphas > .6 are acceptable (George & Mallery 2013) . For further analysis, a mean score across items was thus calculated per value construct. Table 1 gives an overview of the descriptives of all variables used in the analysis.

Table 1. Descriptives of variables used in the analysis

Variable	Mean	Standard deviation
GSI	4.27	1.19
EC	5.04	1.14
GMO	4.76	1.44
ATT	4.01	1.46
INT	3.63	1.36
Power	2.37	1.60
Tradition	4.21	1.36
Benevolence	4.30	1.39
Hedonism	4.34	1.36

Results

The data were analyzed using Hayes' PROCESS macros 4 and 59 (Hayes, 2013). In a first analysis, the basic mediation model is tested. In subsequent analyses, four moderated mediation models are tested. Each of these models use one of the four personal value dimensions as a moderator.

The results of the first analysis, exploring RQ1, are shown in Tables 2 and 3. Table 2 presents the results of the three regression analyses that estimate the coefficients for all causal paths in the model. The independent variables are in the columns, and the dependent variables in the rows. Table 3 shows the indirect effects of GMI on INT through each of the mediators EC and GMO. Confidence intervals that do not contain zero represent a significant overall indirect effect. The results indicate that each causal path in the model is positive and significant, as expected. GSI has both a direct effect on intentions and significant indirect effects on intentions through the mediating role of both EC and GMO. The indirect effect through EC has the strongest effect on intentions.

Table 2. Base model

Outcome variable	**GSI**	**EC**	**GMO**	**R^2**
EC	.588 (<.001)			.378
GMO	.684 (<.001)			.321
INT	.139 (.010)	.363 (<.001)	.151 (.006)	.258

Cells are regression coefficients and significance levels in brackets

Table 3. Indirect effects of GSI on INT

Mediator = EC			**Mediator = GMO**		
Effect	*Boot SE*	*Confidence interval*	*Effect*	*Boot SE*	*Confidence interval*
0.214	0.040	[0.137; 0.289]	0.103	0.034	[0.043; 0.181]

In Tables 4-6, the results of the moderated mediation analysis with 'self-enhancement' as a moderator are shown. Table 4 presents the results of the three regression analyses that estimate the coefficients for all causal paths and their interaction with the moderator. The independent variables are again in the columns, and the dependent variables in the rows. For interpretation purposes and for answering RQ2, Tables 5 and 6 are more important. They both illustrate the nature of the moderation by showing the effect of GSI on INT at three values of the moderator, i.e. the mean and the mean minus and plus one standard deviation. These values of the moderator are shown in the first column of both tables. In Table 5, the direct effects of GSI on INT at the three levels of self-enhancement is shown. The second column gives the sizes of these effects; the third column the significance of the effect, and the last column the confidence intervals of the effects. Again, confidence intervals that do not contain zero represent a significant effect. The more people adhere to self-enhancement values, the stronger the direct effect of GSI on intentions. At a low level of self-enhancement, the effect of GSI on INT is not significant. At mean and high levels of self-enhancement, the effect is significant, but it is substantially stronger at the high self-enhancement level. Table 6 provides the results for the indirect effects of GSI on INT, through EC and GMO, again at three levels of the moderator 'self-enhancement'. Besides, again, effect sizes and confidence intervals of the effects, also the standard error of the effect size is given (Boot SE). GSI has a significantly positive effect on INT through the mediator 'environmental concern', at all three levels of self-enhancement. This effect becomes slightly weaker at higher levels of self-enhancement. Also the effect of GSI on INT through GMO becomes weaker at higher levels of self-enhancement. At a high level of self-enhancement, this effect becomes insignificant.

Table 4. Regression models with Self-enhancement (SE) as a moderator

Outcome variable	GSI	SE	EC	GMO	SE x GSI	SE x EC	SE x GMO	R^2
EC	.631 (<.001)	.078 (.338)			-.018 (.322)			.379
GMO	.617 (<.001)	-.139 (.194)			.026 (.265)			.323
INT	-.041 (.669)	-.175 (.194)	.387 (.003)	.210 (.006)	.075 (.025)	-.008 (.820)	-.027 (.277)	.266

Cells are regression coefficients and significance levels in brackets

Table 5. Conditional direct effect of GSI on INT at values of Self-enhancement

SE	*Effect*	*Significance level*	*Confidence interval*
.774	.016	.831	[-0.134; 0.167]
2.374	.136	.012	[0.029; 0.242]
3.975	.255	.001	[0.108; 0.401]

Table 6. Conditional indirect effects of GSI on INT at values of Self-enhancement

SE	Mediator = EC			Mediator = GMO		
	Effect	*Boot SE*	*Confidence interval*	*Effect*	*Boot SE*	*Confidence interval*
.774	0.235	0.058	[0.123; 0.345]	.121	0.047	[0.033; 0.219]
2.374	0.217	0.038	[0.145; 0.293]	.099	0.034	[0.041; 0.178]
3.975	0.200	0.054	[0.103; 0.313]	.075	0.050	[-0.025; 0.175]

Tables 7-9 show the results of the moderated mediation analysis with 'conservation' as a moderator. The direct effect of GSI on intentions is substantially lower the stronger people adhere to conservation values. At high levels of conservation, the direct effect of GSI on INT is insignificant. The indirect effect of GSI on INT trough environmental concern is significant at all three levels of conservation, but becomes stronger the more people find these values important. The indirect effect of GSI on INT through green moral obligation becomes slightly weaker with higher values of conservation. At high levels of conservation, this effect becomes insignificant.

Table 7. Regression models with Conservation (CO) as a moderator

Outcome variable	GSI	CO	EC	GMO	CO x GSI	CO x EC	CO x GMO	R^2
EC	.715 (<.001)	.164 (.107)			-.031 (.166)			.381
GMO	.635 (<.001)	.041 (.759)			.011 (.715)			.328
INT	.333 (.065)	.015 (.929)	.156 (.422)	.222 (.106)	-.046 (.264)	.047 (.270)	-.015 (.615)	.261

Cells are regression coefficients and significance levels in brackets

Table 8. Conditional direct effect of GSI on INT at values of Conservation

CO	*Effect*	*Significance-level*	*Confidence interval*
2.855	.203	.009	[0.051; 0.354]
4.213	.140	.010	[0.034; 0.247]
5.572	.078	.316	[-0.075; 0.231]

Table 9.Conditional indirect effects of GSI on INT at values of Conservation

CO	**Mediator = EC**			**Mediator = GMO**		
	Effect	*Boot SE*	*Confidence interval*	*Effect*	*Boot SE*	*Confidence interval*
2.855	.182	0.052	[0.083; 0.287]	.119	0.049	[0.038; 0.231]
4.213	.208	0.039	[0.131; 0.284]	.107	0.035	[0.045; 0.181]
5.572	.227	0.056	[0.125; 0.344]	.095	0.051	[-0.006; 0.194]

In tables 10-12, the results are shown for the moderator 'self-transcendence'. The more self-transcendent people are, the lower the direct effect of GSI on intentions. At high levels of self-transcendence, this effect is insignificant. The effect of GSI on INT through environmental concern becomes substantially stronger, the more people adhere to self-transcendent values. The same goes for the indirect effect through GMO. At low levels of transcendence, this effect is insignificant.

Table 10. Regression models with Self-transcendence (ST) as a moderator

Outcome variable	**GSI**	**ST**	**EC**	**GMO**	**ST x GSI**	**ST x EC**	**ST x GMO**	**R^2**
EC	.474 (<.001)	.032 (.721)			.017 (.397)			.394
GMO	.493 (<.001)	-.0105 (.930)			.033 (.220)			.336
INT	.543 (.002)	-.037 (.795)	.080 (.662)	.009 (.947)	-.101 (.013)	.067 (.097)	.036 (.233)	.268

Cells are regression coefficients and significance levels in brackets

Table 11. Conditional direct effect of GSI on INT at values of self-transcendence

ST	*Effect*	*Significance-level*	*Confidence interval*
2.901	.248	<.001	[0.105; 0.392]
4.295	.107	.052	[-0.001; 0.215]
5.689	-.034	.687	[-0.201; 0.132]

Table 12. Conditional indirect effects of GSI on INT at values of self-transcendence

ST	**Mediator = EC**			**Mediator = GMO**		
	Effect	*Boot SE*	*Confidence interval*	*Effect*	*Boot SE*	*Confidence interval*
2.901	.143	0.045	[0.059; 0.233]	.067	0.040	[-0.006; 0.147]
4.295	.201	0.038	[0.131; 0.277]	.104	0.032	[0.047; 0.175]
5.689	.263	0.061	[0.151; 0.387]	.146	0.053	[0.047; 0.255]

Finally, Tables 13-15 show the results for the moderator 'openness to change'. These results are very similar to those found for self-transcendence. The more people are open to change, the smaller the direct effect of GSI on intentions. This effect is insignificant at a high level of openness to change. The indirect effect of GSI on INT through environmental concern becomes stronger at higher levels of openness. Similarly, the indirect effect of GSI on INT

through green moral obligation becomes stronger at higher levels of openness. At low levels of openness, this effect is insignificant.

Table 13. Regression models with Openness to change (OC) as a moderator

Outcome variable	**GSI**	**OC**	**EC**	**GMO**	**OC x GSI**	**OC x EC**	**OC x GMO**	**R^2**
EC	.400 (<.001)	-.179 (.074)			.042 (.062)			*.382*
GMO	.494 (<.001)	-.1827 (.169)			.043 (.154)			*.323*
INT	.412 (.028)	-.119 (.461)	*.285 (.147)*	*-.143 (.328)*	-.063 (.127)	*.018 (.675)*	*.066 (.035)*	*.266*

Cells are regression coefficients and significance levels in brackets

Table 14. Conditional direct effect of GSI on INT at values of openness to change

OC	*Effect*	*Significance-level*	*Confidence interval*
2.980	.224	.004	[0.071; 0.376]
4.340	.138	.011	[0.032; 0.243]
5.700	.052	.507	[-.101; 0.205]

Table 15. Conditional indirect effects of GSI on INT at values of openness to change

OC	**Mediator = EC**			**Mediator = GMO**		
	Effect	*Boot SE*	*Confidence interval*	*Effect*	*Boot SE*	*Confidence interval*
2.980	.178	0.049	[0.090; 0.273]	.034	0.047	[-0.050; 0.134]
4.340	.211	0.039	[0.138; 0.288]	.099	0.034	[0.041; 0.174]
5.700	.247	0.063	[0.130; 0.379]	.174	0.057	[0.068; 0.281]

Discussion and conclusions

The basic model of green self-identity driven intention formation is fully confirmed. Green self-identity has a direct impact on the intention to use an electric car, and an indirect impact through teleological and deontological considerations. Environmental concern appears to be a more impactful mediator than green moral obligation.

All four personal values have a moderating effect on the self-identity driven process of electric car usage intention formation. Individuals who think that self-enhancement is very important, are mainly driven by the motivation to express their self-identity directly, and less via the development of environmental concern and moral obligation. This is in line with previous research that indicate that self-enhancing value types are negatively related to pro-environmental attitudes and behaviour (Schultz and Zelezny, 1999; Gärling et al., 2003; Leonidou et al., 2010; Kilbourne and Pickett, 2008). People who value power a lot are to a certain extent self-centered. Jansson et al. (2011) found that egocentric people behave less eco-friendly. If self-enhancement individuals have a green self-identity, they will translate it into positive intentions to behave eco-friendly, but they will not consider environmental consequences of moral obligation arguments to do so.

People strongly adhering to self-transcendence and openness to change mainly translate their green self-identity into intentions through developing more environmental concern and a feeling of green moral obligation, and less on the basis of a direct expression of their self-identity into electric car usage intention. This confirms previous findings that self-

transcendence value types are positively related to pro-environmental attitudes and behaviour (Thøgersen, 1996; Schultz and Zelezny, 1999) and research by Jansson et al. (2011) that showed that social-altruistic values are positively related to eco-innovation adoption. The effect of the value type 'openness to change' is to a certain extent surprising. One could imagine that hedonism and excitement seeking are largely self-centered values and, hence, should lead to less sensitivity to ethical arguments. However, the opposite is the case. One of the reasons for this result may be that people who are very open to change find it attractive to translate their green self-identity into adopting an eco-innovation that makes them feel environmentally concerned and doing the right thing in an exciting, modern way. Indeed, Steenkamp et al. (1999) found that openness to change was positively correlated with innovativeness.

Individuals who strongly adhere to conservation values, mainly express their self-identity through the development of environmental concern and consequently to usage intention, and less through feelings of moral obligation or a direct transfer of self-identity to intentions. This contradicts the findings of Schultz and Zelezny (1999) who found that environmentalism is negatively related to the tradition value. On the other hand, this result is in line with the findings of Ramayaha et al. (2010) who found that conservation values are positively related to attitude on environmental consequences. People valuing conservation a lot want to behave in a way that is consistent with the society they live in and the groups they belong to. Individuals who hold collective, society-directed values are more likely to engage in environmentally and socially responsible behaviours (e.g., Karp, 1996; Schultz & Zelezny, 1999; Stern et al., 1999). Developing eco-friendly behaviour through environmental concern (the preservation of the world as we know it, for the benefit of society and peers) may be an important driver for them, and they are probably less triggered by morality or exposing their self-identity per se.

Limitations and further research

The present study was carried out in one single country and for one single product. Further corroboration of our findings requires replication of the study in different countries and for other types of pro-environmental behaviour. Personal values may be very different in different countries or cultures. Although, in our Belgian sample, there is already a substantial variation in the extent to which people adhere to personal values, these values may have a very different importance in other cultures. Moreover, if the results of our study should be useful for cross-cultural marketing communications or awareness building, they have to be replicated in other cultures. One of the drawbacks of the Schwartz framework is that most European countries have very similar scores on the importance they attach to these personal values. Ideally, to fully gauge the relevance and impact of the Schwartz personal values on eco-friendly behaviour, the study should be replicated in different parts of the world. Alternatively, other personal or cultural value frameworks could be used, such as the Hofstede framework, to investigate the effect of values from a different angle or logic.

Buying electric cars is a very particular type of pro-environmental behaviour. A car is an innovative, highly involving and identity-related product. There are, however, many other types of eco-friendly behaviour. People may buy low-involvement, ordinary day-to-day eco-friendly products, such as household paper, or may avoid generating too much waste, or become active environmental campaigners. Future research should investigate to what extent and how self-identity and personal values play a different role in each of these different types of pro-environmental behaviour.

Implications

The results of our study have implications for car marketers and for pro-environmental organizations that want to build awareness for a more sustainable mobility. Effective communication requires a good understanding of how different target groups can be persuaded. The present study offers insights for communication strategies in which arguments are adapted to the personal value profile of the target groups. Messages are usually evaluated more positively if they are congruent with respondents' values than if they are incongruent (e.g., Han & Shavitt, 1994; Zhang & Gelb, 1996). First of all, for all target groups, green self-identity should be promoted. When talking to target groups for which self-enhancement is important, the focus should be on how they can enhance their self-identity directly by adopting electric cars. They do not need to be pointed at moral obligations or environmental concern, since that would be counterproductive. For highly self-transcendent people and individuals with a high openness to change, the opposite communication strategy should be followed. The link between their green self-identity and environmental concern and moral obligation should be emphasized. For those who value conservation a lot, especially the link to environmental concern should be stressed, and reference to moral obligation should be avoided.

Also countries or cultural groups, on average, differ in the values they find important. Companies or pro-environmental organizations that want to modify their message according to the country or the cultural group they are talking to, could also take our findings into account when developing message strategies for cultural groups that find different values important.

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Appendix 1. Item list per construct and Cronbach's Alphas

	α
Green self-identity (GSI)	.893
I think of myself as someone who is concerned about environmental issues (GSI_1)	
I think of myself as a "green" consumer (GSI_2)	
I would describe myself as an ecologically conscious consumer (GSI_3)	
Environmental concern (EC)	.865
It is important to me how cars usage may affect the environment (EC_1)	
It is important to me whether cars cause the depletion of our natural sources such as petrol (EC_2)	
It is important to me whether car usage causes air pollution (EC_3)	
Green moral obligation (GMO)	.927
I would feel guilty if I drove a car damaging the environment (GMO_1)	
To buy a car that damages the environment would be morally wrong for me (GMO_2)	
Buying a car that affects the environment would go against my principles (GMO_3)	
Intention to adopt eco-friendly electric cars (IA)	.911
Next time I buy a car, I will consider buying an eco-friendly electric car (IA_1)	
I expect to drive an eco-friendly electric car in the near future (IA_2)	
I have the intention to drive an eco-friendly electric car in the near future (IA_3)	

Appendix 2. Short Schwartz's Value Survey

Here are some descriptions of what you may find important in life. Please, rate the importance of each value item as a guiding principle in your life. You have 9 options: -1 Opposed to my values, 0 Not important, 1, 2, 3 Important, 4, 5, 6 Very important, 7 of supreme importance:

1. Achievement: to have success, be competent, ambitious, have influence on people and events
2. Power: to be rich, having authority and social power
3. Security: national security, security for the family, order in society, reciprocate favours
4. Tradition: respect for tradition, humbleness, accept life, moderation
5. Conformity: obedience, respect for parents and elder people, self-discipline, politeness
6. Benevolence: to be helpful, honest, forgiving, loyalty to friends, responsible
7. Universalism: to be broad-minded, loving a world full of beauty, social justice, peace, equality, wisdom, unity with nature, care for nature and the environment
8. Self-direction: creativity, curiosity, freedom to choose your own goals
9. Stimulation: excitement, novelty, and challenge in life
10. Hedonism: to enjoy life, self-indulgence, fun