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## **Positive and negative motives towards the purchasing of eco-friendly products:**

### **A multi-group comparison between “green” and “non-green” consumers, in Italy.**

#### **Abstract**

Notwithstanding the purchase of eco-friendly products has been increasingly recognized as a mainstream issue, what incentives consumers to and what refrains them from buying green goods still requires further theoretical and empirical investigation. In addition, previous research mainly failed to incorporate both established green and non-green consumers in to the same study.

To this end, a novel model to explain and predict the purchasing of eco-friendly products has been developed and tested on both established green consumers (n=453) and non-green consumers (n=473), in Italy.

The structural equation approach confirmed the hypothesised trade-off between positive (both altruistic and selfish) and negative (selfish) motivations to the formation of green purchase intentions and behaviour, in each group, but with a different extent. The multi-group analysis, indeed, confirmed significant differences in green purchasing patterns between green and non-green Italian consumers.

#### **Keywords**

green consumer behaviour, eco-friendly products, structural equation modelling, multi-group analysis.

## **1. Introduction**

Over the last decades, environmental issues have been shifting from a fringe into a mainstream issue. Numerous studies reported how consumers are increasingly concerned about environmental deterioration and are more willing to purchase eco-friendly products (Co-operative Bank, 2009; European Commission, 2009; Mintel, 2010). However, notwithstanding consumers' positive declarations, eco-friendly behaviours are still far away from being common standards of consumption and the current market shares of green products are still rather low (Young *et al.*, 2010).

Italy represents a good example of this inconsistency. A recent study (GPF, 2010) reported that, despite the 34% and 56% of the Italian consumers consider environmental protection as a “very important” and a “rather important” priority, the 54% admit to be still behind with the purchasing of eco-friendly products.

These inconsistencies emphasize how a deep understanding of what incentives consumers to and what refrains them from buying green products requires further theoretical and empirical investigation.

To this end, scholars mostly applied the Theory of Planned Behaviour (Ajzen, 1991), in its original framework (Kalafatis *et al.*, 1999; Chan & Lau, 2001), or by adding variables to increase the predictive validity of the Theory when applied to pro-social behaviours (Shaw & Shiu, 2003). Despite the meaningful contributions to green consumer behaviour knowledge, some limitations seemed to blemish these studies. First, the continuous addition of variables into the Theory has resulted in unmanageably complex models incorporating excessive numbers of constructs, which has led scholars to call for an elementary revision of the theoretical framework (Moisander, 2007).

Secondly, previous research mostly involved unspecified general consumers (Follows & Jobber, 2000; Leonidou *et al.*, 2010) or self-declared green purchasers (Young *et al.*, 2010), which may lead to biased responses and “over-reported” results due to respondents’ tendency to avoid embarrassment and project a favourable image on others (Peattie & Crane, 2005). On the contrary, researchers rarely focused on “established” green consumers as unit of analysis and, furthermore, they failed to incorporate both established green and non-green consumers in to the same study.

In view of this lack of research, the aim of this study is to:

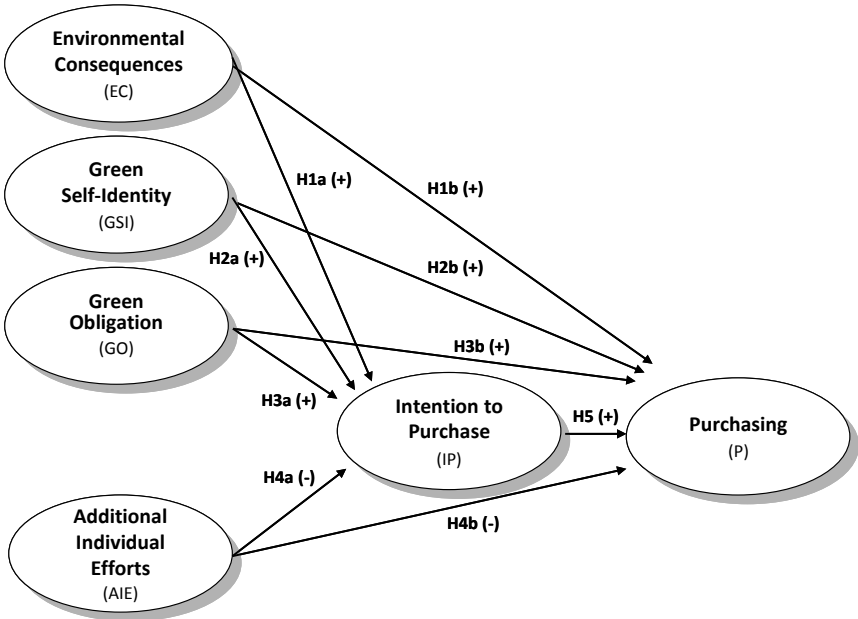
1. *develop a model which both captures the complexity of green purchasing behaviour and predicts the purchasing of eco-friendly products;*
2. *test the model on both established green and non-green consumers, in Italy.*

With reference to the first aim, a novel and parsimonious model has been specifically developed to explain the purchasing of eco-friendly products. By embracing the stream of research pioneered by Follows and Jobber (2000), green purchasing behaviour has been conceptualised as a result of two theoretically opposing antecedents: “positive” and “negative” motives that stimulate or prevent consumers from buying green goods (the first referring to both *teleological* principles - based on the estimated goodness or badness of the consequences of each behavioural alternative - and *deontological* principles - based on the inherent righteousness of each behavioural alternative) have been supposed to incentivise consumers to purchase eco-friendly products (Bagozzi & Dabholkar, 1994).

Hence, measures of *attitude towards environmental consequences* of purchasing specific eco-friendly products, *green self-identity* and *green obligation* have been introduced in the model, and are supposed to impact positively on green purchase intention and behaviour.

In contrast, the “negative” antecedent category refers to a consumer’s selfish *teleological* evaluation of avoiding additional time, monetary and cognitive efforts that are usually required to purchase green goods (Chan *et al.*, 2008). Hence, a measure named *additional individual efforts* has been introduced in the model, and is supposed to reduce both consumers’ green purchase intention and behaviour.

**Fig. 1: Conceptual model**



In accordance with Wheale and Hinton (2007), who tested how consumers may show different attitudes towards the purchasing of eco-friendly products according to the product category involved, and recommended to study green purchase behaviour assessing it for specific product categories, this study refers to the purchasing of eco-friendly *tissue-paper* products (EFTPP). EFTPP can be defined as tissue papers, paper napkins, toilet papers, scrolls, paper towels and paper tablecloths (ACNielsen product category tree for grocery non-food), whose production and consumption affect the environment to a smaller degree than conventional tissue-paper products (Peattie,1995). This product category has been selected because:

- eco-friendly household products show the highest growth in market share among all eco-friendly product categories, presenting a good unit of analysis for eco-friendly purchasing (Co-operative Bank, 2009);
- consumers have no excuses of exhibiting compensatory non-purchasing behaviours since tissue-paper products cannot be recycled after use (OJEU, 2008);
- previous research rarely focused on green commodities while green purchasing models “should be tested with a number of low-involvement products that are purchased on regular basis, such as paper products” (Follows & Jobber, 2000, p. 714).

The second aim of the study is to test the model on both established green and non-green Italian consumers. The involvement of two different consumer targets enables to assess whether the impact exerted by the alleged antecedents on EFTPP purchase intention and behaviour is significantly different between groups of consumers with different psychographic traits. Thus, it enables a statistical evaluation of possible significant differences in the purchasing behaviour patterns between the two groups. In addition, the comparison between green and non-green consumers enables to state how “far away” non-green consumers are from the “greeners”, and it may shed light on the chances for marketing managers to choose between developing more targeted (only for green consumers) or more general marketing strategies.

To pursue the aforementioned research goals, §2 introduces the theoretical framework, §3 explains methodology, §§4 and 5 report and discuss results, respectively, and §6 offers conclusions, limitations and guidelines for further research.

## **2. Theoretical framework**

### *2.1 Attitude towards environmental consequences of purchasing EFTPP*

A dominant reason for why consumers may buy EFTPP is the purely altruistic motive of transcending selfish concern and promote the welfare of nature. Prior research established that values belonging to the *universalism* value type (a broader concern for all people and nature), such as “protecting the environment” and “unity with nature” (Schwartz, 1992), are antecedents of positive attitudes towards the purchasing of eco-friendly products (Banerjee & McKeage, 1994; Follows & Jobber, 2000; Shaw *et al.*, 2005). Consumers who care about environmental degradation are aware of the environmental consequences of their consumption

life-style and are more likely to commit themselves to take remedial actions, i.e. to purchase products which are less damaging for the environment (Freestone & McGoldrick, 2008).

However, up to date, research to support the predictive validity of general measures of environmental concern on the purchasing of eco-friendly products has produced rather conflicting results. Whilst some authors found empirical evidence that consumers with pro-environmental attitudes are more likely to engage in eco-friendly purchasing behaviour (Kilbourne & Pickett, 2008), others observed an attitude-behaviour gap in the marketplace (Young *et al.*, 2010), as consumers may manifest environmental concern with different selective behaviours, in accordance to which behaviours are considered to be ecologically relevant (Leonidou *et al.*, 2010). Consequently, De Pelsmacker and Janssens (2007) stressed the importance of enforcing the principle of *attitude specificity* within green consumerism, as the more specific the attitude is related to a particular behaviour (in terms of action, target, context and time), the more likely the attitude will correlate with the behaviour of interest.

Hence, it is hypothesised that:

**H<sub>1a</sub>:** Attitude towards environmental consequences of purchasing EFTPP has a positive direct effect on the intention to purchase EFTPP.

**H<sub>1b</sub>:** Attitude towards environmental consequences of purchasing EFTPP has a positive direct effect on the purchase of EFTPP.

**H<sub>1c</sub>:** Intention to purchase EFTPP mediates the relationship between consumers' attitude towards the environmental consequences of purchasing EFTPP and the purchase of EFTPP.

## 2.2 Green self-identity

In addition to altruistic considerations, consumers may purchase EFTPP because of the selfish motive to identify themselves as green consumers and convey this status to others. Shaw and Shiu, (2003) stated that “as an ethical (or environmental) issue becomes central to an individual' self-identity, then behavioural intention is accordingly adjusted” (p. 380).

Consumers construct their *self-identity* through specific product/brand choices, based on the congruency between product/brand-user associations and self-image associations (Levy, 1957). The concept of self, “how the individual perceives himself” (Grubb & Grathwohl, 1967, p. 24), is guided by one's personal motivations for self-esteem, self-enhancement and self-understanding and further reinforced by social interaction (e.g. products as symbols of group's membership) (Solomon, 1983). Hence, an individual may purchase eco-friendly products in accordance with his own as well as others' expectations to be identified as a green consumer. In this respect, Clayton (2003) constructed an Environmental Identity Scale (EID)

which demonstrated a significant relationship between environmental identity and different environmental behaviours. Dono *et al.* (2010) found similar results. Sparks and Shepherd (1992) added measures of green self-identity within the original framework of the Theory of Planned Behaviour (Ajzen, 1991) and found a significant influence of self-identity (independently from attitude, subjective norm and perceived behavioural control) on both intention and purchasing of green products.

Hence, it is hypothesized that:

**H<sub>2a</sub>:** Green self-identity has a positive direct effect on the intention to purchase EFTPP.

**H<sub>2b</sub>:** Green self-identity has a positive direct effect on the purchase of EFTPP.

**H<sub>2c</sub>:** Intention to purchase EFTPP mediates the relationship between consumers' green self-identity and the purchase of EFTPP.

### 2.3 Green obligation

Moral or ethical obligation can be defined as “an individual’s internalised ethical rules, which reflect his/her personal beliefs about right and wrong” (Shaw & Shiu, 2003, p. 882), thus, it matching with Hunt and Vitell’s (1986) conceptualization of deontology, defined as the evaluation of the inherent rightness versus wrongness of different behaviours.

Within the narrower domain of green consumerism, a deontological individual adheres to specific eco-friendly principles because it is the right thing to do, and he claims an absolute right to life for animals, plants, or ecosystems, because it is intrinsically right and the violation of which is intrinsically wrong (Leonidou *et al.*, 2010). The perception of a need for a better environment and the consciousness of not behaving in the righteous way may lead consumers to feel guilty and, consequently, to personal distress or sadness. From this point of view, if an individual recognizes the moral and environmental aspect of a particular issue, then the purchasing of green products can be considered as one option to egoistic motivation to relieve one’s own distress (Haines *et al.*, 2008).

Measures of moral obligation have been used to integrate the original framework of the Theory of Planned Behaviour (Ajzen, 1991), and such an addition was found to improve significantly (independently from the other TPB variables) the prediction of intention and behaviours involving strong moral dimensions (Sparks *et al.*, 1995; Shaw & Shiu, 2003).

Hence, it is hypothesised that:

**H<sub>3a</sub>:** Green obligation has a positive direct effect on intention to purchase EFTPP.

**H<sub>3b</sub>:** Green obligation has a positive direct effect on the purchase of EFTPP.

**H<sub>3c</sub>:** Intention to purchase EFTPP mediates the relationship between consumers' green obligation to purchase EFTPP.

#### *2.4 Additional individual efforts*

Empirical evidence suggests that, despite an increasing numbers of consumers reporting a concern about the environment, a change in purchasing behaviour is much less apparent. Stated green intentions rarely translate into actual green purchasing suggesting an intention-behaviour gap in the marketplace (Carrington *et al.*, 2010).

Most previous research attempted to explain this gap by social desirability bias, i.e. respondents' tendency to over-report their willingness to buy eco-friendly products and to pay a *premium price* for them (Carrigan & Attalla, 2001).

More recently, scholars attention has shifted towards the substantial complexity of green purchasing behaviour (Moisander, 2007; Gupta & Ogden, 2009). Boulstridge and Carrigan (2000) identified the lack of availability, narrow product range, higher price and lower quality of eco-friendly products as reasons for less green consumption. D'Souza *et al.* (2006) and Pedersen and Neergaard (2006) found that a large proportion of consumers experience difficulties in selecting eco-product labels due to a rampant proliferation of ambiguous green labels which "confuse consumers and undermine credibility" (De Pelsmacker *et al.*, 2005, p. 515). Picket-Baker and Ozaki (2008) argued that consumers find hard to differentiate between green and non-green products and do not perceive the actual green marketing to be particularly engaging, while Pinkse and Domisse (2009) recommended companies to better communicate the advantages of green products to potential buyers.

The described inconveniences represent barriers to the purchase of green goods (in terms of costs, time and cognitive resources), here referred to as *additional individual efforts*. Thus, individuals who believe they lack the necessary resources and opportunities to buy green goods are unlikely to form strong behavioural intentions. In addition, even when consumers have strong green intentions (as established environmentally minded consumers have), they are prevented to by eco-friendly products at the moment of purchase.

Hence, it is hypothesised that:

**H<sub>4a</sub>:** Additional individual efforts have a negative direct effect on the intention to purchase EFTPP.

**H<sub>4b</sub>:** Additional individual efforts have a negative direct effect on the purchase of EFTPP.

**H<sub>4c</sub>:** Intention to purchase EFTPP mediates the relationship between additional individual efforts to purchase of EFTPP.



### 2.5 Intention to purchase

Numerous studies have substantiated the predictive validity of behavioural intentions on behaviour (Sheeran, 2002).

Thus it is hypothesised that:

**H<sub>5</sub>:** Intention to purchase EFTPP has a positive direct effect on the purchase of EFTPP.

## 3. Methodology

### 3.1 Measures and pilot study

The model for eco-friendly purchasing behaviour was developed based on a thorough review of the literature as well as on results of two exploratory qualitative studies (five focus groups and 51 in-depth, face-to-face, semi-structured interviews), conducted in Italy (Pastore & Barbarossa, 2011; 2012). The aim of the qualitative study was to explore potential additional facets of each construct, in order to add new developed items to those already developed by the previous research, if it was required.

The generated questionnaire was pre-tested by a small sample of 45 Italian shoppers to identify potential problems of clarity and comprehension. This process resulted in some minor changes. Resulting finalized items (and corresponding labels) are described hereafter and in Table 2.

To measure respondents *attitude towards the consequences on the environment of purchasing EFTPP (EC)*, Follows and Jobber's (2000) four-item scale was adapted to the product category at hand, consistently with the "attitude specificity" principle.

Based on respondents' contribution in the conducted qualitative studies, two new items (GS<sub>3</sub> and GS<sub>4</sub>) were added to Sparks and Shepherd's (1992) two-item *green self-identity (GSI)* scale.

To measure respondents *green obligation (GO)* to purchase EFTPP, Sparks and Shepherd's (2002) three-item scale was used and adapted to the chosen product category.

A four-item scale measuring the *additional individual efforts (AIE)* was newly developed, based on a thorough review of the literature and on the qualitative studies' results.

To measure respondents *intention to purchase EFTPP (IP)*, Shaw and Shiu's (2003) one-statement scale was used.

Finally two statements were used to measure *self-reported purchasing of EFTPP (P)* (Follows & Jobber, 2000)

All the items were coded on a 7-point Likert scale anchored by “1= Completely disagree” and “7= Completely agree”, except items measuring the *purchasing* of eco-friendly products that were coded on a 7-point Likert scale anchored by “1=Never” and “7=Always”.

To further discriminate between *green* and *non-green* consumers, Moons *et al.*'s (2010) screening questions (i.e. “Most of the time I buy biologically degradable soaps”, “When doing my grocery shopping, I avoid unnecessary packaging”, “I have invested in solar energy panels”, “I consistently select my garbage”, “I changed most of my lamps to energy saving lamps”, etc.) were introduced in the questionnaire.

### 3.2 Main study, sample and procedure

The main study involved the administration of a questionnaire designed to collect views from adult consumers (aged above 18), in Italy. The questionnaire comprised three parts. The first part comprised the aim of the study and guidelines to complete the questionnaire. As suggested by Chan and Lau (2001), “since different people might have different interpretations of what constitutes a green product, it is necessary to ensure that respondents under study would adopt a common frame of reference when answering” (p. 18). To this end, an opening definition (Peattie,1995) and pictures of EFTPP were provided. The second part comprised screening questions and measurement scales for the predictor variables. The last part, recorded socio-demographic data and thanked the participants.

As targets of the study were established “environmentally minded” and “non-environmentally minded” Italian consumers, respondents were selected from two *purposive* samples, according to a multi-step screening process. “Green” respondents met contemporaneously three requirements, as they were: (1) members of ecological institutions (Inachis, ProNatura, ISDE and Legambiente); (2) who reported to behave “eco-friendly” for the majority of Moons *et al.*'s (2010) screening questions; (3) who declared to be responsible for the grocery shopping. Respondents for the “non-green” sample, instead, were: (1) consumers who declared to be responsible for the grocery shopping; (2) who declared not to behave “eco-friendly” for the majority of Moons *et al.*'s (2010) screening questions.

Data collection was carried out from January until May 2011. Questionnaires were personally delivered by the author online and offline and also forwarded by respondents themselves. In particular, in order to reach properly the green target, questionnaires were also delivered during specific “green” days (like the Day of the Earth), during “eco-meetings” organized by ecological associations, on Legambiente Eco-train and, uploaded on green institutions' web site and sent by e-mails, always respecting the ethical code of data collection.

In the end, 960 useful replies were collected. Among those, 30 questionnaires were incomplete while 930 were fully completed and analyzed. Analyzed questionnaires resulted in: 453 *Italian green* consumers and 477 *Italian non-green* consumers. Descriptive statistics are reported in Table 1, showing similar socio-demographic features between the samples.

**Table 1. Socio-demographic characteristics**

		<i>Italian green</i> (n=453)	<i>Italian non-green</i> (n=477)
Gender	Male	43	34
	Female	57	66
Age	18-24	15	4
	25-34	41	41
	35-44	22	25
	45-55	13	15
	>55	9	16
Education	Junior High School	2	6
	High School	28	29
	Bachelor or Master	64	67

**Notes:** Frequencies expressed as percentage (%).

#### 4. Data analysis and results

Structural equation modeling technique was used to test the ability of the model to forecast the purchasing of eco-friendly products, following Anderson and Gerbing's (1988) two-step approach. The first step involved the assessment of the measurement model by employing confirmatory factor analysis (CFA). The second step concerned the analysis of the full structural model, to assess the fitness of the full model and estimate all the relevant path coefficients. Finally multi-group analysis was performed (Steenkamp & Baumgartner, 1998), as two distinct and independent samples were involved in the study.

##### 4.1 Confirmatory factor analysis (CFA)

A six-factor measurement model was validated by means of CFA using LISREL 8.80 (Jöreskog & Sörbom, 2006). The reliability and convergent validity of the measurement model was assessed through *global* fit criteria, to evaluate the consistency of the measurement model as a whole, and *local* fit criteria, to test the fit of single indicators and factors.

**Table 2. Item list per construct and standardized item loadings**

Constructs and items	CFA-model loadings		Path analysis loadings	
	IG	ING	IG	ING
<i>Attitude towards environmental consequences (EC)</i>				
How tissue paper products may affect the environment is important to me. (EC1)	0.710	0.647	0.712	0.647
It is important to me whether tissue paper products cause the depletion of forests. (EC2)	0.801	0.927	0.801	0.927
It is important to me whether manufacturing tissue paper products causes water pollution. (EC3)	0.848	0.895	0.847	0.895
The amount of energy used to produce tissue paper products it is not important to me. (EC1) (r.i.)	0.655	0.600	0.655	0.600
<i>Green self-identity (GSI)</i>				
I think of myself as someone who is concerned about environmental issues. (GSI1)	0.752	0.763	0.752	0.764
I think of myself as a "green" consumer. (GSI2)	0.776	0.750	0.775	0.740
To buy eco-friendly tissue paper products would make me feel a green consumer. (GSI3)	0.750	0.869	0.750	0.869
I would feel totally satisfied of me if I bought eco-friendly tissue paper products. (GSI4)	0.692	0.878	0.695	0.879
<i>Green obligation (GO)</i>				
I would feel guilty if I bought tissue paper products damaging the environment. (GO1)	0.839	0.909	0.839	0.909
To buy tissue paper products damaging the environment it would be morally wrong for me. (GO2)	0.888	0.939	0.888	0.939
Buying tissue paper products affecting the environment would go against my principles. (GO3)	0.888	0.857	0.889	0.856
<i>Individual additional efforts (AIE)</i>				
I don't like to pay more to buy eco-friendly tissue paper products. (AIE1)	0.850	0.800	0.850	0.800
I don't like to waste time to go to specialized stores to buy eco-friendly tissue paper products. (AIE2)	0.868	0.837	0.868	0.837
While I shopping I can't easily recognize which tissue paper products are eco-friendly. (AIE3)	0.882	0.814	0.883	0.814
Inside the store, I need a lot of time to find eco-friendly tissue paper products out. (AIE4)	0.843	0.739	0.844	0.739
<i>Intention to purchase eco-friendly products (IP)</i>				
Next month I intend to buy eco-friendly tissue paper products. (IP1)	0.957	0.975	0.957	0.975
<i>Purchasing of eco-friendly products (P)</i>				

*Global* fit indices were good, notwithstanding the samples showed high relative ( $\chi^2$ /d.f.) (Table 3). It has to be kept in mind, indeed, that  $\chi^2$  is sensitive to sampling distribution, sample size and the number of indicators, so that it should be evaluated accordingly (Bagozzi & Foxall, 1996). The two samples showed RMSEA lower than 0.08 threshold (Browne & Cudeck, 1993), SRMR lower than 0.05 (Diamantopoulos & Siguawati, 2000), NFI, NNFI and CFI all greater than 0.95 (Hu & Bentler, 1999).

*Local* fit criteria gave very satisfying results. All the items were significantly loaded on their respective constructs ( $p < .001$ ) and factor loadings were substantially greater than 0.60 (Cortina, 1992) (Table 2). Cronbach's alpha ( $\alpha$ ) was calculated for all constructs and results were greater than 0.70, in accordance with Nunnally's (1994) standard of internal consistency (Table 4). Cronbach's alpha for intention to purchase (IP) construct was not calculated as it was composed of one single item. The composite reliability (CR) threshold of 0.70 was achieved for every factor and the average variance extracted (AVE) was always greater than 0.50 (Bagozzi & Yi, 1988). The discriminant validity was confirmed because the squared multiple correlation between pairs of factors was always less than the corresponding AVE (Fornell & Larcker, 1981).

**Table 3. Confirmatory factor analysis: global measures of fit**

	$\chi^2$	d.f.	$\chi^2$ /d.f.	RMSEA	SRMR	NFI	NNFI
<i>Italian green</i>	376.07 2	121	3.10	0.070	0.043	0.967	0.971
<i>Italian non-green</i>	378.89 8	121	3.13	0.067	0.043	0.958	0.962

**Notes:** CFI=Comparative fit index; d.f.=Degrees of freedom; NFI=Normed fit index; NNFI=Non-normed fit index; RMSEA=Root mean square error of approximation; SRMR=Standardized root mean square residual;  $\chi^2$ =Chi-square

**Table 4. Sample mean, relative standard deviation, Cronbach's alpha, composite reliability, and average variance extracted**

<i>Construct</i>	<i>Italian green</i>				<i>Italian non-green</i>		
	$\mu$ ( $\sigma$ )	$\alpha$	CR	AVE	$\mu$ ( $\sigma$ )	$\alpha$	CR
<i>EC</i>	6.35 (0.11)	0.84	0.86	0.61	4.02 (0.19)	0.85	0.8
<i>GSI</i>	5.23 (0.19)	0.83	0.83	0.56	4.34 (0.29)	0.89	0.8
<i>GO</i>	5.28 (0.26)	0.91	0.91	0.77	4.77 (0.30)	0.93	0.9
<i>AIE</i>	4.30 (0.36)	0.92	0.92	0.74	4.58 (0.29)	0.88	0.8
<i>IP</i>	5.52 (0.20)		0.91	0.91	4.21 (0.34)		0.9
<i>P</i>	3.70 (0.43)	0.95	0.95	0.90	2.93 (0.51)	0.94	0.9

**Notes:**  $\alpha$ = Cronbach's alpha; AVE=Average variance extracted; CR=Composite reliability;  $\mu$ =Sample mean;  $\sigma$ =standard deviation.

#### 4.2 Full Structural Analysis

Analysis of the full structural model was performed, using LISREL 8.80 (Jöreskog & Sörbom, 2006) and the Maximum Likelihood Method. The resulting model fitted the data well.

*Global* fit indices gave good results (Table 5). Again, the two samples showed high relative Chi-Square ( $\chi^2/d.f.$ ). However, in both the samples RMSEA was lower than 0.08, SRMR lower than 0.05, and NFI, NNFI and CFI all greater than 0.95.

*Local* fit indices gave very good results. All standardized item loadings were significantly ( $p < .001$ ) greater than 0.60 (Table 2).

Table 5 reports all the hypothesized paths and their significance, while figures 2 and 3, draw the model for each sample.

To statistically test the significance of IP as a mediating variable, Sobel's (Sobel, 1982) and PRODCLIN (MacKinnon *et al.*, 2007) tests were conducted.

Sobel test enables the investigation of statistically significant indirect effects for independent variables, regardless of the significance of their total effects on the dependent variable, as several recent studies have argued that this constraint may be relaxed without hampering the validity of the mediation analysis (Shrout & Bolger, 2002; Preacher & Hayes, 2004; Smith *et al.*, 2005; De Luca & Atuahene-Gima, 2007).

The utility and performance of the Sobel test has been demonstrated frequently (MacKinnon *et al.*, 2002). However, due its sensitiveness to data distribution and sample size, it is recommended to support Sobel's results with other tests that use asymmetric confidence intervals (Preacher & Hayes, 2004), like PRODCLIN (MacKinnon *et al.*, 2007). Hence, PRODCLIN test was conducted, as well.

In our study, Sobel's and PRODCLIN tests supported the significant role played by intention in mediating the relationships between EC, GSI, GO, AIE and P. In both the two groups, significant indirect effect ( $p < .05$ ) were found for EC, GO, GSI, AIE to P via IP, with the exception of the indirect effect of EC on P in the *non-green* sample ( $p > .1$ ).  $H_{1c}$ ,  $H_{2c}$ ,  $H_{3c}$ ,  $H_{4c}$ , were, thus, supported but not  $H_{1c}$  in the *non-green* sample.

**Table 5. Structural equation model: Standardized path estimates and goodness of fit indices**

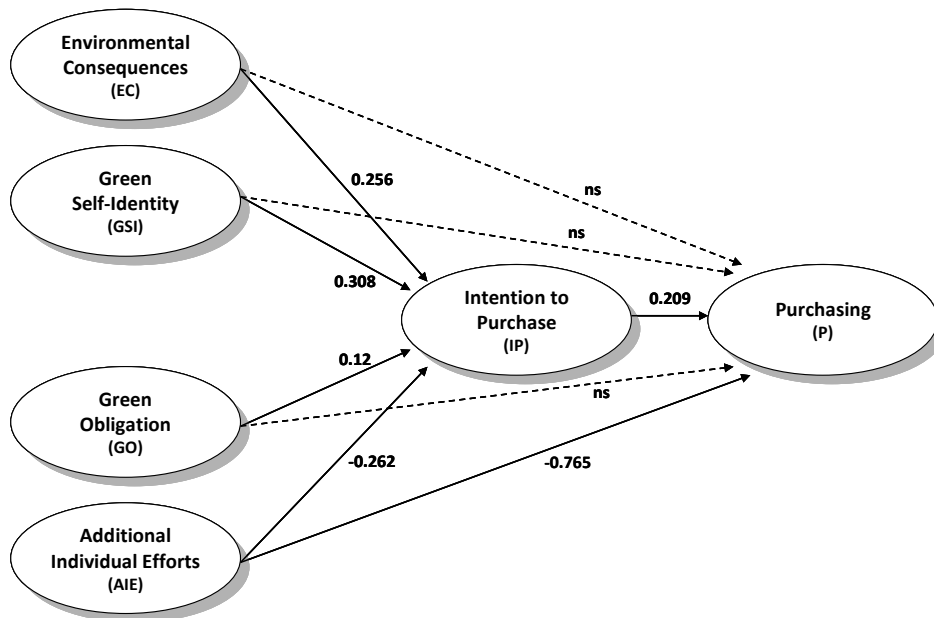
<i>Hypotheses</i>	<i>Paths</i>	Italian green (n=453)		Italian non-green (n=473)	
		Stand. $\beta$	t-value	Stand. $\beta$	t-value
<b><i>Direct effects</i></b>					
H1a: Environmental consequences → Intention to purchase	$\gamma_{1,1}$	0.256	4.61***	0.023	0.53(ns)
H1b: Environmental consequences → Actual purchasing	$\gamma_{2,1}$	0.024	0.08(ns)	0.003	0.39(ns)
H2a: Green Identity → Intention to purchase	$\gamma_{1,2}$	0.308	4.42***	0.335	5.72***
H2b: Green Identity → Actual purchasing	$\gamma_{2,2}$	0.010	1.57(ns)	0.044	4.77***
H3a: Green Obligation → Intention to purchase	$\gamma_{1,3}$	0.120	2.01**	0.228	4.12***
H3b: Green Obligation → Actual purchasing	$\gamma_{2,3}$	0.020	1.02(ns)	-0.025	2.16***
H4a: Individual additional efforts → Intention to purchase	$\gamma_{1,4}$	-0.262	6.37***	-0.353	8.05***
H4b: Individual additional efforts → Actual purchasing	$\gamma_{2,4}$	-0.765	18.25***	-0.227	8.79***
H5a: Intention to purchase → Actual purchasing	$\beta_{2,1}$	0.209	4.32***	0.612	11.80***
<b><i>Indirect effects (via intention to purchase)</i></b>					
H1c: Environmental consequences → Actual purchasing		0.05 4	3.33***	0.014	0.53(ns)
H2c: Green Identity → Actual purchasing		0.06 4	1.84*	0.205	4.92***
H3c: Green Obligation → Actual purchasing		0.02 5	2.90***	0.114	3.87***
H4c: Individual additional efforts → Actual purchasing		- 0.055	3.72***	-0.216	7.37***
<b><i>Global goodness of fit indices</i></b>		$\chi^2/d.f= 388.850/121$ RMSEA=0.070 SRMR=0.043 NFI=0.967 NNFI=0.971 CFI=0.977		$\chi^2/d.f=378.898/121$ RMSEA=0.067 SRMR=0.043 NFI=0.958 NNFI=0.962 CFI=0.970	

CFI=Comparative fit index; d.f.=Degrees of freedom; NFI=Normed fit index; NNFI=Non-normed fit index; RMSEA=Root mean square error of approximation; SRMR=Standardized root mean square residual; Stand.  $\beta$ =Standardized beta coefficient;  $\chi^2$ =Chi-Square; (ns)=Not significant; \*=significant at p<0.1; \*\*=significant at p<0.05; \*\*\*=significant at p<0.01

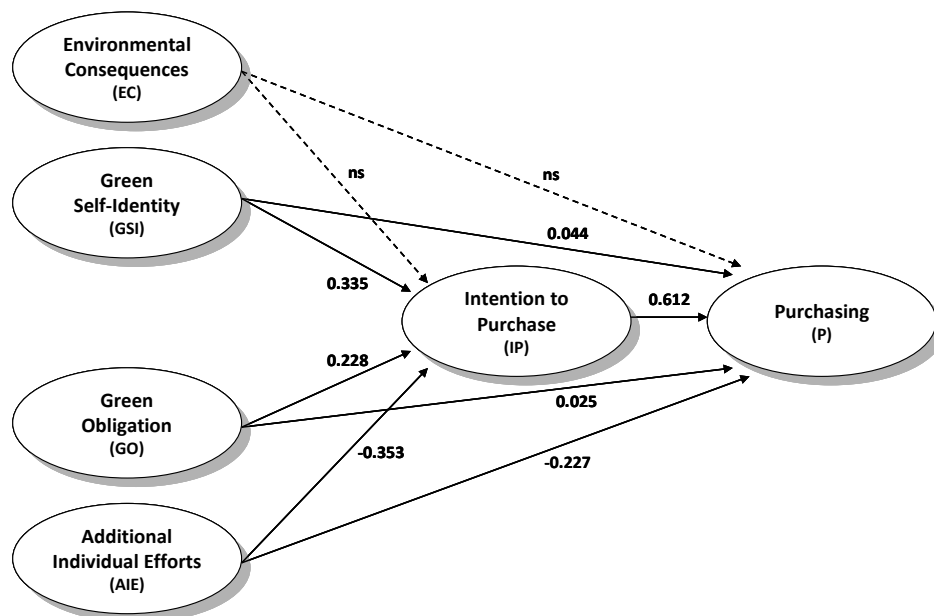
With reference to the *Italian green* sample (Table 5, Figure 2), the direct effects of EC, GSI, GO and AIE on the intention to purchase EFTPP (IP) were all significant, supporting, H<sub>1a</sub>, H<sub>2a</sub>, H<sub>3a</sub>, H<sub>4a</sub>. However the direct effects of the same variables on P were not significant, with the exception of AIE that exerted a strong negative effect on P. Thus, H<sub>4b</sub> was supported, while H<sub>1b</sub>, H<sub>2b</sub>, H<sub>3b</sub>, were not. Based on the magnitude of the effects, GSI exerted the largest effect on IP and P (indirectly) among the positive motives, followed by EC and GO. AIE exerted a strong negative impact especially on P, explaining a certain low correlation between IP and P.

With reference to the *Italian non-green* sample (Table 5, Figure 3), all the direct and indirect effects on IP and P were significant ( $p < .01$ ), with the exception of the effects of EC on IP and P ( $p > .10$ ). GSI exerted the largest impact on IP and P among the positive motives, followed by GO. AIE exerted a negative impact on both IP and P with a similar magnitude of the positive motives. IP predicted P reasonably.

**Figure 2. Italian green sample. Standardized path estimates**



**Figure 3. Italian non-green sample. Standardized path estimates**





#### 4.4 Multi-group analysis

In order to test the equivalence of the factorial measurement and the structural model between the groups, *configural*, *metric* and *structural* invariances were performed on the full sample model (n=930) (Steenkamp & Baumgartner, 1998) (Tables 6 and 7).

**Table 6. Configural, Metric and Partial Metric Invariance**

	C.I.				M.I.				P.M.I.			
	$\lambda$	$\Phi$	SRMR	GFI	$\lambda$	$\Phi$	SRMR	GFI	$\lambda$	$\Phi$	SRMR	GFI
Italian green (n=453)	p<.001	<1	0.040	0.908	p<.001	<1	0.049	0.903	p<.001	<1	0.043	0.909
Italian non-green (n=473)	p<.001	<1	0.043	0.91	p<.001	<1	0.044	0.906	p<.001	<1	0.044	0.906

**Table 7. Full model: Configural, Metric and Partial Metric Invariance**

		$\chi^2$	d.f.	RMSEA	NFI	NNFI	CFI	$\Delta$ CFI	$\Delta\chi^2$	$\Delta$ d.f.	p-value
Full sample (n=930)	C.I.	806.851	242	0.071	0.963	0.967	0.974				
	M.I.	857.068	254	0.071	0.961	0.967	0.972	0.002	50.22	12	0.001
	P.M.I.*	822.537	251	0.070	0.962	0.968	0.972	0.001	15.69	9	0.074

\*unconstrained EC<sub>2</sub>, GSI<sub>3</sub> and GO<sub>4</sub>

*Configural* invariance (C.I.), whether the pattern of fixed and free parameters is the same for the two groups, was met. Each group showed significant (p<.001) factor loadings ( $\lambda$ ), covariances among latent factors ( $\Phi$ ) smaller than 1, SRMR lower than 0.05 and GFI greater than 0.90 (Table 6). Fit indices for the full sample model (n=930) showed good results (Table 7):  $\chi^2(242)$  was 806.851, RMSEA was lower than 0.08, NFI, NNFI and CFI were all greater than 0.95.

*Metric* invariance (M.I.), whether the factor structure is statistically invariant between the two groups, was not observed as the  $\Delta\chi^2$  between the full model computed for metric invariance and the full model computed for configural invariance was significant ( $\Delta\chi^2(12)=50.22$ , p=.001) (Table 7). To locate the source of inequality and discover an invariant measurement model across the samples, a *partial metric* invariance (P.M.I.) test was conducted. Modification indices revealed that the metric inequivalence occurred because of three items (EC<sub>2</sub>, GSI<sub>3</sub> and GO<sub>4</sub>). The items were unconstrained and the model was tested again. Each group showed significant (p<.001) factor loadings ( $\lambda$ ), covariances among latent factors ( $\Phi$ ) smaller than 1, SRMR lower than 0.05 and GFI greater than 0.90 (Table 6, last column). Fit indices for the full sample model (n=930) showed good results, too (Table 7, last row):  $\chi^2(251)$  was 822.537, RMSEA was lower than 0.08, NFI, NNFI and CFI were all greater than

0.95.  $\Delta$ CFI was 0.001, thus lower than 0.01, and  $\Delta\chi^2$  was not significant ( $p=.074$ ). *Partial metric* invariance was finally met, thus the purchasing of eco-friendly products could be meaningfully compared between the two groups.

*Structural* (or path) invariance (S.I.), whether regression weights for each of the structural paths are statistically invariant between the groups, was tested accordingly. Constraining all of the paths of the two samples at the same time yielded a significant delta chi-square ( $\Delta\chi^2(9)=125.31$ ,  $p=.001$ ) indicating significant differences in the structural paths between the groups. To find out paths responsible for the invariance, we started by constraining all structural paths to be invariant between the two groups and then entering the constraints one by one, keeping previous invariant paths constrained, while freeing non-invariant paths (Dens & De Pelsmacker, 2010).

The comparison between *Italian green* (IG) and *Italian non-green* (ING) consumers revealed, among the positive motives to the purchase of eco-friendly products,  $\gamma_{1,1}:EC \rightarrow IP$  as significantly greater for IG than ING consumers ( $\Delta\chi^2(1)=10.82$ ,  $p=.001$ ) while, referring to the negative motives,  $\gamma_{1,4}:AIE \rightarrow IP$  as greater for ING than IG ( $\Delta\chi^2(1)=18.18$ ,  $p=.001$ ) and  $\gamma_{2,4}:AIE \rightarrow P$  greater for IG than ING ( $\Delta\chi^2(1)=88.18$ ,  $p=.001$ ). Finally,  $\beta_{2,1}:IP \rightarrow P$  was greater for ING than IG consumers ( $\Delta\chi^2(1)=33.31$ ,  $p=.001$ ). The reminder paths ( $\gamma_{2,1}$ ,  $\gamma_{1,2}$ ,  $\gamma_{2,2}$ ,  $\gamma_{1,3}$ ,  $\gamma_{2,3}$ ) did not significantly differ between the groups, as  $\Delta\chi^2(1)$  was always not significant ( $p>.1$ ).

## 5. Discussion

The comparison between *Italian green* and *Italian non-green consumers* revealed that the effect of attitude towards the environmental consequences of purchasing eco-friendly tissue paper products (EFTPP) on the intention to purchase EFTPP ( $\gamma_{1,1}:EC \rightarrow IP$ ) is significantly greater for green than non-green consumers, but not the effect of the same variable on the purchase behaviour ( $\gamma_{2,1}:EC \rightarrow P$ ). As expected, the altruistic principle exerts a stronger impact on the formation of eco-friendly purchase intentions for green than non-green consumers. However, its impact ceases at the “intention-purchase” stage, where the effect becomes invariant between the two groups. This result is in line with Chan *et al.*'s (2008) findings of green consumers incorporating also teleological principles in their consumption choices. Furthermore, the vanished effect can be theoretically supported when considering the different role that is played by the “additional individual efforts” variable (AIE) on green

purchase intention ( $\gamma_{1,4}:AIE \rightarrow IP$ ) and behaviour ( $\gamma_{2,4}:AIE \rightarrow P$ ) for green and non-green consumers respectively.

In countries like Italy, where situational barriers still prevent the proliferation of eco-friendly purchasing behaviours, the perception of being forced to make additional efforts to buy EFTPP (AIE) affects non-green consumers mainly at the stage of intention formation while green consumers at the point of purchase (behavioural stage). AIE significantly reduces Italian non-green consumers' willingness to buy EFTPP ( $\gamma_{1,4}=-0.353$ ) which seems to act as reinforcement to follow their intentions of not purchasing green goods. For this sample, indeed, IP correlates with P rather strongly ( $\beta_{2,1}=0.612$ ). On the contrary, AIE reduces Italian green consumers' willingness to purchase EFTPP to a lesser extent ( $\gamma_{1,4}=-0.262$ ), as the general impact of the positive motives is still greater than the impact of the deterrent factors. However, AIE affects the behaviour at the point of purchase considerably ( $\gamma_{2,4}:-0.765$ ), and consequently, notwithstanding the declared willingness to buy EFTPP, IP and P show a small correlation ( $\beta_{2,1}=0.209$ ), supporting the frequently observed intention-behaviour gap among green consumers (Carrington *et al.*, 2010). As stated by Gupta and Holden (2009), "in the event when green and conventional products are not perceived as substitutes, the likelihood that consumers will defect is high. This is the case because the cost of cooperation by buying a product that is an unacceptable substitute of the conventional version presents a big cost to the individual who will attempt to alleviate this cost by defecting and purchasing the conventional product" (p. 381).

The probability of defection is even higher for low involvement products that are purchased on regular basis, like EFTPP, than for high involvement products, like electric cars or solar panels. Consumers perceived a low effectiveness associated with the purchasing EFTPP, as they feel that it significantly does not help the environment. Consequently, they are even less willing to bear additional sacrifices at the moment of purchasing. De Pelsamcker and Janssens (2007) empirically tested how consumers actions are influenced by the perceived degree of effectiveness and how, in turn, the perceived effectiveness is negatively related to the lack of proper and specific information about the impact on the environment of purchasing and consuming specific products (like the amount of natural resources that may be saved by purchasing EFTPP).

The effect of green self-identity on both intention to purchase and purchasing behaviour did not significantly differ between the two samples. One possible explanation may be that Italian green consumers answering the questionnaire being stricter with themselves as opposed to non-green consumers. When asked whether they perceived themselves to be green consumers,

they might have answered according to their “actual self”, due to an awareness that in their everyday life they are still far away from being actual green consumers. On the other hand, non-green consumers who might be aware to a minor degree to what to be green consumers means, might have answered according to their “ideal self”, reflecting a social desirability bias.

Secondly, when asked whether consumers perceived themselves to be green consumers if by purchasing EFTPP, the low-involvement nature of the chosen product category possibly affected the responses, since the perceived positive environmental impact made when buying EFTPP, as compared to conventional tissue-paper products, may have led to a lower identification (GSI) as well as lower moral obligation (GO) with the act of purchasing this particular product. In fact, as previously argued, a lack of product-specific information for green commodities, such as the amount of natural resources that can be saved by purchasing green goods, is negatively related to consumer’s perceived effectiveness.

## **6. Conclusions, limitation and guidelines for further research**

Nowadays, sustainable consumption have shifted from an eco-friendly attitude into a necessary everyday life-style. To ensure environmental protection, EU institutions establish increasing numbers of mandatory remedial solutions (like stricter waste recycling standards), which impose important changes on consumers consumption behaviours and purchasing habits.

However, next to legislative enforcements, the potential of non-mandatory actions taken by consumers, in this case the purchase of eco-friendly products, could play an even more important role and should be incentivised accordingly.

Despite the increasing numbers of consumers who are opting for a greener life-style, the underlying motivations of green purchasing behaviour are still not fully understood and require further empirical investigation.

In this respect, the present study aimed to make a contribution by developing a novel model to explain and predict the purchasing of eco-friendly products, and, differently from previous research, by testing it in specific targets of established *green* and *non-green Italian* consumers.

Some relevant results, arising from the multi-group analysis conducted in the study, confirmed, for example, the trade-off between positive (altruistic and selfish) and negative

(selfish) motivations to the formation of green purchase behaviour, the crucial role played by additional individual efforts in decreasing the probability that non-green consumers will be intended to buy EFTPP as well as green-consumers will not buy EFTPP at the point of purchase.

As a consequence of such results, we recommend firms, in order to increase green and non-green consumers' purchase intentions of EFTPP, to address the positive environmental and individual consequences of purchasing specific green goods. Promotion strategies are recommended to stress the positive environmental consequences of purchasing specific eco-friendly products (like showing the amount of natural resources that consumers may save by purchasing specific green products), in order to enforce the aforementioned principle of "attitude specificity" and increase consumers' perceived effectiveness even for low involvement commodities. In these days, WWF is launching a campaign about the damages on Indonesian forests caused by toilet papers companies ([http://wwf.panda.org/wwf\\_news](http://wwf.panda.org/wwf_news)). Firms selling EFTPP may cooperate with ecological associations to show how EFTPP differ from conventional tissue paper products and, thus, gain credibility.

Secondly, firms selling EFTPP should also emphasize the selfish benefits (status, ease of environmental conscience) that consumers can derive from purchasing eco-friendly products, as self-identity, a selfish motives, contributed to the formation of green purchasing intention to the greatest extent (among the positive motives) for green-consumers, while the impact of the environmental concern (altruistic motivation) was not significant on both IP and P for non-green consumers.

It is further recommended to firms to reduce product-related and situational barriers in order to increase the perception of the substitutability between green and conventional goods.

When implementing the here outlined recommendations, the following limitations should be taken into account.

This study expressly involved purposive samples of established environmentally minded and not environmentally minded consumers. However, testing the model on a statistical sample, more representative of the entire Italian population, may be a worthwhile undertaking.

Finally it would be of interest to test the here proposed model in countries with a different level of environmental concern.

To this end, a study comparing well established green and well established non green consumers, both in Italy and in Belgium (with Belgium having a greater level of environmental concern) has been conducting.

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