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The outer influence inside us: Exploring the relation between social and personal norms

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Abstract

International efforts for a more sustainable society have often resorted to formal agreements. But these commitments are more effective if people, communities and institutions integrate them as relevant behavioural standards, or social norms. In this paper we propose to analyse how social norms are internalized as personal norms and environmental identity, and then how able they are to predict recycling and organic foods purchase behaviour in two countries – Portugal and Brazil. The role of group identification is also analysed. Results show that behaviours are better predicted by personal norms and environmental identity than by more external social norms. Moreover, the influence of social norms on personal norms and environmental identity is in part moderated by group identification: Injunctive norms predict personal norms and environmental identity better when participants are more identified with the group, while descriptive norms predict them more directly.

Keywords: personal norms, social norms, pro-environmental behaviour, recycling, organic purchase, group identity.

1. Introduction

In the last decades several international treaties, conventions and other legal commitments have been implemented with the goal of protecting the environment (Giddens, 2009, Vlek, 2000). Numerous national laws have also been issued to locally assure, for example, resource conservation, biodiversity protection or climate change adaptation, a trend especially strong in European Union member states (Castro, 2012; Poumadère, Bertoldo, & Samadi, 2011). However, these new commitments and laws can only be fully effective if people, communities and institutions change the way they behave. For this to happen, the new formal laws need over time to become also informal social and personal norms (Castro, 2012). It is therefore crucial to study the various aspects of this transformation, identifying how new environmental laws become accepted as social norms, how people internalize these as personal norms, and what type of norms better help predict behaviour.

An analysis of how social norms are internalized as personal norms - i.e. feelings of *personal* obligation associated with one's self-expectations (Schwartz 1977) - would be able to further clarify some aspects of the social processes involved in the social change stimulated by laws (Castro, 2012). Considering that part of this law-driven social change will not happen without the internalization and generalization of these initially external social influences to different contexts, this paper is interested in analysing how practices that are *socially* (externally) motivated become, in time, *personally* (internally) relevant and thus motivated by personal norms (Schwartz, 1977, Staats, Harland, & Wilke, 2004) and, eventually, part of one's environmental identity (Van der Werff, Steg, & Kaizer, 2013). Some practices succeed in becoming social norms after they have been formally regulated through laws, normally at the end of a complex process (Castro, 2012). This process involves the

activity of multiple national mediating institutions that adapt and translate the formal changes for citizens in terms of concrete everyday practices (Castro & Mouro, 2011). In order to be contextually active laws and formal regulations must be contextually integrated in local logics, where social identities, habits and previous social norms can either facilitate or hamper this process (Castro, 2012). These elements contextualize the local social change process through which laws and formal regulations, or in other words new *injunctive norms*, become in time locally active, and therefore observable through practices, or *descriptive norms* (Castro, 2012).

The existence of this type of contextualized national translation of legal requirements also means that the real implementation of commitments made at an international level may vary widely across countries and is done at different paces in different countries (Recchia, 2001). The result is that at a certain point in time different countries are in different moments of the legal enforcement of the globally agreed regulations, and have differently demanding legislations. Portugal and Brazil provide an interesting case for a cross-cultural comparison. These two countries are united by a colonial past and have shared the same political structures until the XIX century. Other than sharing important cultural and linguistic references, these two countries have faced similar events during the second half of the XX century (dictatorships, economic crisis) that obstructed the development of sustained environmental policies (Bertoldo, 2016). But since Portugal joined the UE in the 80s', many pro-environmental, law-regulated practices – including recycling behaviours – have become highly and systematically regulated by implementing UE legislation and institutions (Castro, 2012). In Brazil, institutions and regulations promoting sustainability-related services as recycling are more recent and their implementation is hampered by structural issues (Ferreira & Tavolaro, 2008). Other pro-environmental behaviours such as organic purchase are not

regulated in either country, and are therefore entirely dependent upon informal norms. The joint analysis of the social norms, personal norms and environmental identity motivating pro-environmental behaviours such as recycling (regulated) and organic purchase (non-regulated) therefore constitutes an opportunity to analyse how the *differences in formal norms* (laws) between Portugal (stronger legal enforcement) and in Brazil (weaker legal enforcement) influences the internalization of these formal norms as personal norms in each country.

In this paper we propose to analyse how the different societal contexts that are created by the different levels of implementation of environmental laws in Portugal and Brazil affect the internalization of *social norms (injunctive and descriptive)* as *personal norms* and *environmental identity*, and how these normative motivations are predictive of behaviour. Environmental identity corresponds to the most internalized and meaningful source of motivation to fulfil pro-environmental goals (Kashima, Paladino, & Margetts, 2014; Whitmarsh & O'Neill, 2010).

We must also consider that social norms (descriptive and injunctive) are ordinarily associated with specific social groups whose importance can be more or less important for the individual (Terry, Hogg, & White, 1999). This is why we will also analyse how *group identification* conditions, or moderates, the predictive power of social norms over personal norms and environmental identity (Nigbur, Lyons, & Uzzell, 2010; Terry, Hogg, & White, 1999).

All these different sources of behaviour motivation – social, personal and identity – will be considered in this paper as motivations for compliance that are differently internalized as part of the individual's self-regulation. According to the Self-Determination Theory (SDT; Ryan & Decy, 2000), since childhood and across our lifespan we are exposed to behavioural requests which may or may not become *internalized*. "Internalization refers to people's

‘taking in’ a value or regulation” so that, eventually, these will naturally emanate from the individual (Ryan & Deci, 2000, p. 71).

Below we present first an external, *social* type of motivation: descriptive and injunctive social norms. Then we present a more *internalized* type of motivation: personal norms and environmental identity. Finally, we present a potential moderating factor of the normative influence: identification with the reference group.

1.1 External regulations: Social norms

Behaviours are externally motivated when they “are performed to satisfy an external demand or reward contingency” (Ryan & Deci, 2000, p. 72). Social norms can be considered to be an external type of motivation that is especially observable when social demands are still independent from - or not internalized by - the individual. Social norms imply not only public types of demand, but also public sanctions when they are not observed (Schwartz & Howard, 1984).

Thøgersen (2006) proposed a model organizing the different types of norms that are involved in the motivations discussed by SDT along a *continuum* of increasing integration with the self. In this model, descriptive social norms correspond to the most external type of motivator, followed by injunctive social norms. *Descriptive social norms* refer to the common or usual behaviour presented in a given context, providing information for the intrapersonal goal of behaving accurately in a specific context (Jacobson, Mortensen, & Cialdini, 2011). Thøgersen (2006) considers these norms to be more external than injunctive ones because they are readily available in the ‘outside world’. Still part of the external types of motivations, but already closer to the personally relevant social reality, are the *injunctive social norms*. The injunctive norms involve the perception of approval or disapproval of a

certain behaviour, by a certain social group. This is why the injunctive norms are so important for the interpersonal goal of establishing and maintaining social relationships (Cialdini & Trost, 1998; Jacobson et al., 2011).

But once these social norms, descriptive or injunctive, start to be personally relevant, the motivation to comply with behaviours also becomes internalized as personal norms and finally, as part of one's own identity.

1.2 Internal regulations: Personal norms and environmental identity

Internal regulations are autonomous in relation to external types of regulation since the individual already controls and manages them as his/her own (Ryan & Decy, 2000).

Personal norms

Personal norms can be considered part of a more internal and autonomous type of motivation to comply with pro-environmental behavioural requirements. Personal norms correspond to feelings of personal obligations that are also related with self-expectations (Schwartz, 1977). Schwartz and Howard (1984) describe the specificity of personal norms in relation to social norms in the following terms: “whereas other attitudinal concepts refer to evaluations based on material, social, and/or psychological payoffs, personal norms focus exclusively on the *evaluation of acts in terms of their moral worth to the self*” (p. 245, italics added). The Value-Belief-Norm (VBN) theory has proposed and demonstrated how personal norms are the best predictors of pro-environmental behaviours (Steg, Dreijerink, & Abrahamse, 2005).

Environmental identity

Identity-relevant actions are maintained over time because they become an important part of what an individual recognizes as him or herself – they influence a person's self-

identity (Clayton & Opatow, 2003; Van der Werff, Steg, & Kaizer, 2013). The importance of the environmental identity in predicting pro-environmental behaviours has already been demonstrated by studies showing that this concept predicts recycling behaviour (Castro, Garrido, Reis & Menezes, 2009; Nigbur et al., 2010; Terry, Hogg, & White, 1999) and willingness to buy carbon offsets (Whitmarsh & O'Neill, 2010) over and above Theory of Planned Behaviour (TPB) variables, even after the inclusion of social norms (Nigbur et al., 2010).

However, it is not yet clear whether in order to predict specific pro-environmental behaviour we must always take into account *specific* identity predictors (Nigbur et al., 2010), or if instead, a more *generic* environmental identity measure can provide a robust and realistic predictor for a wide range of pro-environmental behaviours. For example, Whitmarsh and O'Neill (2010) have shown that a general measure of environmental identity was able to significantly contribute to explaining a large number of different pro-environmental behaviours.

In the following section we present one of the most important variables boosting the relative importance of social norms: the identification with the group source of this norm.

1.4 Identification with the reference group

Social norms in general, and in particular, injunctive social norms have been associated with the goal of obtaining social approval from a group (Jacobson et al., 2011). Consistent with this characteristic of injunctive norms, the literature has shown that the influence of the norms of a specific group depends on the individual identification with this group (Terry et al., 1999; Turner, 1991). For example, the perceived norms of a relevant reference group predict a person's intentions to engage in health (Terry & Hogg, 1996) and pro-

environmental behaviours (Terry et al., 1999), but only for participants who strongly identified with their group (see also Smith & Louis, 2008).

The conditioning effect that group identification exerts over the influence of injunctive norms on behaviour is, however, not observed for descriptive norms. Considering that descriptive norms are related with the human need for contextually adapted behaviour (Jacobson et al., 2011), Nigbur et al. (2010) found that irrespective of participants' personal norms or of the extent to which participants identified with the group, descriptive recycling norms *directly* influenced participants' intentions to recycle and recycling behaviours (Nigbur et al., 2010).

In short, the degree to which a group's social norms are influential depends on the strength of participants' identification with these groups (Terry et al., 1999). This has been demonstrated for group norms affecting intentions and behaviours, but results are still inconclusive regarding the actual internalization of injunctive social norms as *personal norms* (Nigbur et al., 2010) or as *environmental identity*. Considering the different human goals behind compliance with descriptive and injunctive norms (Jacobson et al., 2011), it is therefore of paramount importance to extend existing knowledge about how group identification conditions the internalization of social norms as personal norms.

2. Summary and specific goals

In this paper we propose as a first goal to analyse whether the societal context created by the different state of implementation of formal environmental laws in Portugal and Brazil influence the expression of pro-environmental behaviours; the internalization of social types of motivation (descriptive and injunctive) as personal norms and environmental identity; and how well all these variables predict pro-environmental behaviours. We will

therefore analyse whether the influence of recycling and organic food purchase social norms upon personal norms and environmental identity is greater in a context (country or domain) where environmental formal norms have achieved a higher degree of implementation. More specifically, we will (1) compare the pro-environmental (recycling and organic purchase) behaviours expressed by participants from the two countries; (2) compare the capacity of social norms, personal norms and environmental identity to predict these behaviours in Portugal and Brazil and (2) analyse the capacity of (descriptive and injunctive) social norms to predict personal norms and environmental identity.

One important aspect of the internalization of pro-environmental behavioural regulation is the possibility that these behavioural regulations, once internalized, can also be generalized across different types of pro-environmental behaviours (Whitmarsh & O'Neill, 2010). This is why as a second goal we propose to analyse whether these *domain-specific* social norms (recycling and organic purchase) are also able to predict a *general measure* of environmental identity.

And finally, previous literature has demonstrated that social norms (descriptive and injunctive) are associated with social groups whose influence can be more or less personally important (Terry, Hogg, & White, 1999). But it is not yet clear if group identity also moderates the internalization of social norms – i.e., the influence of social norms on personal norms and environmental identity. Therefore as a third goal we propose to analyse how *group identification* moderates the power of descriptive and injunctive social norms to predict personal norms and environmental identity. For participants with a *low* group identification, we expect personal norms to be better explained by the group's *descriptive* norms rather than by its injunctive norms. For participants with a *high* group identification, we expect personal

norms to be better explained by the group's *injunctive* norms rather than by its descriptive norms.

3. Method

3.1 Participants

The total sample consisted of 331 university students. Portuguese participants were 155 students from several universities in Lisbon, with an average age of 22.5 years ($SD = 4.55$, age range: 19-53), 59.2% female; Brazilian participants were 176 students from Federal and State universities, with an average age of 23.7 years ($SD = 4.63$, age range: 17-49), 47.4% female. Students completed the questionnaires individually in a classroom setting.

3.2 Variables

Behaviour

Recycling. Recycling behaviour was measured in relation to different materials. The assessment of the specific frequencies associated with each of these two materials intended to identify possible differences in recycling practices related with either paper or glass recycling in the two countries, which turned out to be non-significant (Portugal: $t(152) = .00$, *ns*; Brazil: $t(174) = .06$, *ns*). Participants indicated the frequency with which they presented the following behaviours on a scale from 1 'never' to 7 'always' "*I separate and place the glass waste in appropriate containers*" and "*I forget to separate and place the paper waste in appropriate containers, throwing it away together with the regular waste*". The behaviours presented a high internal consistency ($\alpha = .93$) and were averaged under a single indicator.

Organic purchase. The purchase of organic products can in general be explained by either egoistical reasons (perceived benefits for one's health) or altruistic factors (perceived

benefits for the environment) (Magnusson, Arvola, Hursti, Åberg, & Sjöden, 2003). In light of these previous studies, the purchase of organic fruits was considered to be simultaneously associated with these two concerns. Participants indicated the frequency with which they presented the following behaviour on a scale from 1 'never' to 7 'always' "*I buy organically grown fruits*".

Descriptive norms

Recycling. Descriptive norms were measured for the group of students at the participants' university. They were asked to rate the extent to which they agreed that most of the students in their university "*recycle domestic metal waste*" and "*recycle domestic paper waste*" using a scale from 1 'totally false' to 7 'totally true'. The two recycling items (Cronbach $\alpha = .73$) were averaged under a single indicator.

Organic purchase. Participants were asked to rate the extent to which they agreed that most of the students in their university "*buy organically grown fruits*" using a scale from 1 'totally false' to 7 'totally true'

Injunctive norms

Recycling. The injunctive norms measured were also related to the group of students at the participants' university. Participants were asked to rate the extent to which they agreed that most of the students in their university expected them to: "*recycle domestic metal waste*" and "*recycle domestic paper waste*" using a scale from 1 'totally false' to 7 'totally true'. The two recycling items (Cronbach $\alpha = .86$) were averaged under a single indicator.

Organic purchase. Participants were asked to rate the extent to which they agreed that most of the students in their university expected them to "*buy organically grown fruits*" using a scale from 1 'totally false' to 7 'totally true'.

Personal norms

Recycling. Participants were asked to rate the extent to which they (1) felt guilty when they did not; and (2) felt a strong personal obligation to: “*recycle domestic metal waste*” and “*recycle domestic paper waste*” using a scale from 1 ‘totally false’ to 7 ‘totally true’. The two items (Cronbach $\alpha = .90$) were averaged under a single indicator.

Organic purchase. Participants were asked to rate the extent to which they (1) felt guilty when they did not; and (2) felt a strong personal obligation to “*buy organically grown fruits*” using a scale from 1 ‘totally false’ to 7 ‘totally true’. The two items (Cronbach $\alpha = .86$) were averaged under a single indicator.

Environmental identity

Environmental identity was measured by means of two general items. Participants were asked to rate the extent to which they agreed with the following statements on a scale from 1 ‘totally false’ to 7 ‘totally true’: “*I think of myself as someone with ecological concerns*” and “*I think of myself as someone engaged in environmental causes*”. The two items (Cronbach $\alpha = .80$) were averaged under a single indicator.

Student group identification

Participants’ identification with the group of university students was measured with a single item: “*to me, being a university student is...*” from 1 ‘not important at all’ to 7 ‘very important’.

4. Results

Table 1 shows that Portuguese participants declare they recycle more and perceive other university students to do so (descriptive norm) more than Brazilian participants. None of the

other norm indicators of recycling or of organic purchase differ significantly between countries.

*****Table 1 about here*****

4.1 Predicting domain-specific behaviour (social norms, personal norms and environmental identity)

Hierarchical multiple regressions were performed to test the power of social norms, personal norms and environmental identity to predict the two domain-specific behaviours (Table 2). In a first bloc, only social norms (descriptive and injunctive) were entered, together with the country (dummy coded 0 = Brazil; 1 = Portugal). In a second bloc of variables, the two more internal variables were added. The use of a hierarchical regression model aimed to compare, in the two countries, the predictive power of more internal and more external norms in relation to recycling and organic purchase behaviours.

*****Table 2 about here*****

In Table 2 we can observe that irrespective of the environmental domain, descriptive norms predict behaviours better than injunctive norms; and that the country does not seem to play a role in this relation. The predictive power of descriptive norms is however greatly reduced when more internal norms are entered in a second bloc: personal norms become then the best predictor of behaviour, over and above a general measure of environmental identity ($\Delta Adj. R^2 = .28, F(2,236) = 50.2, p < .001$). Environmental identity was only a significant predictor of recycling behaviours.

Given the differences observed between recycling behaviours and descriptive social norms between Portugal and Brazil (see Table 1), the moderating role of country was here tested in a third bloc through multiplicative terms. However, this last bloc with the multiplicative terms however did not add any significant contribution to the model ($\Delta Adj. R^2 = .008, F(4,232) = .68, ns$) (Table 2).

The fact that personal norms are the best predictors of behaviours when compared to more external descriptive and injunctive norms is consistent with VBN theory (Schwartz, 1977) and also with SDT (Ryan & Decy, 2003), illustrating how the more motivations are internalized, the more they become stable and predictive of the corresponding behaviour.

Now that we have explored the capacity of external or internal motivations (or norms) to predict behaviour, the relation between external or internal norms will be analysed.

4.2 Predicting environmental identity and personal norms

Given that the more internalized motivations (environmental identity and personal norms) predict behaviours better than more external (social) motivators, we will now analyse whether social norms are able to explain environmental identity and personal norms. These regression analyses will also take into account the importance of the group from which these norms emanate.

Considering descriptive and injunctive norms as predictors and environmental identity and personal norms as outcome variables, four hierarchical regressions were run: two of them explaining environmental identity (each one with predictors from a different ecological domain), another one explaining recycling personal norms with the corresponding norm predictors, and a last one explaining organic purchase personal norms with the corresponding organic purchase predictors. In all of these analyses the country (0 = Brazil; 1

= Portugal) and the student identity (0 = weak; 1 = strong) were entered in the first bloc as dummy variables and, in the following blocs, as interaction terms with the social norms. All the variables used in this analysis were centred before being entered in the regression.

The two levels of group identification were considered as below or over the mean ($M = 6.0$; $SD = 1.24$), so that one group of students (26.9% of participants) presents a *low* student identity ($M = 4.19$; $SD = 1.12$) while the other group (73.1% of participants) presents a *high* student identity ($M = 6.58$; $SD = .49$).

3.2.2 Environmental identity

On the first two analyses, the environmental identity variable was regressed in social norms from each pro-environmental domain: recycling or organic purchase norms. For the norms from each domain, hierarchical analyses were performed in two distinct blocs: a first one where social norms (descriptive and injunctive) were the predictors, along with the dummy variables for student identity and country; and a second one where interaction terms were added (Table 3).

On the first bloc of variables, the significant predictors of environmental identity include, in both pro-environmental domains, injunctive norms and student identity. Only in the organic purchase domain the country was also a significant predictor, which suggests that among Portuguese subjects the level of environmental identity is higher than among the Brazilians when the other variables are controlled for (Table 3). Moreover, the positive association of a high group importance with environmental identity might suggest that those students who are more identified with the students' group are also keener to embrace ecological concerns.

*****Table 3 about here*****

In a second bloc of variables, the interaction terms for student identity were also entered, leading to a significant increase in the explained variance both in the recycling ($\Delta Adj. R^2 = .04, F(2,313) = 7.19, p < .01$) and the organic purchase ($\Delta Adj. R^2 = .04, F(2,312) = 6.6, p < .01$) domains. Interaction terms of student identity with injunctive norms were significant predictors in both the recycling and organic purchase domains. This result suggests that the student identity moderates the internalization of injunctive recycling norms as environmental identity ($ps < .05$); descriptive norms do not produce a similar finding.

In a third bloc, the interaction terms for country were entered, but they did not contribute to increasing the explained variance in the recycling ($\Delta Adj. R^2 = .01, F(2,311) = 1.7, ns$) or in the organic purchase ($\Delta Adj. R^2 = .007, F(2,310) = 1.1, ns$) domains.

4.2.1 Personal norms

On these two hierarchical regression analyses, the *personal norms* of each environmental domain (recycling and organic purchase) were regressed in two separate blocs: a first one containing as predictors social norms (descriptive and injunctive) and the dummy variables for student identity and country; and a second one to which interaction terms were added (Table 4).

*****Table 4 about here*****

Results displayed in Table 4 show that both descriptive and injunctive recycling norms are significant predictors of personal norms, but the dummy variables of student identity and country are not. In a second bloc, the interaction terms for student identity were

entered, leading to a significant increase in the explained variance in the recycling domain ($\Delta Adj. R^2 = .03, F(2,313) = 5.85, p < .01$), and a marginal increase in the organic purchase domain ($\Delta Adj. R^2 = .012, F(2,312) = 2.48, p = .08$). The interaction terms of student identity with descriptive and injunctive norms were both significant in the recycling domain, and only with injunctive norms in the organic purchase domain (p 's $< .05$). This result suggests that the influence of injunctive and descriptive norms on recycling personal norms is moderated by student identity, a finding that will be further demonstrated below. In the organic purchase domain, it is only the injunctive norms effect on personal norms that is moderated by student identity.

In a third bloc, the interaction terms for country were entered, but they did not lead to any significant increase in the explained variance in the recycling domain ($\Delta Adj. R^2 = .01, F(2,311) = 1.25, ns$) neither in the organic purchase domain ($\Delta Adj. R^2 = .00, F(2,310) = .078, ns$).

Considering the consistent significant moderations of the social norms by the student identity, we conducted another series of regression analyses in order to clarify the manner in which student (group) identity moderates the influence of external (social) norms upon internal motivations (personal norms and environmental identity). These regressions aimed to test this influence at different levels of the moderator student identity: first for participants with high and then for participants with low student identity in both environmental domains (Table 5). Data from the different countries will be analysed together here since the country did not moderate the influence of social norms on environmental identity or on personal norms.

*****Table 5 about here*****

Results presented on Table 5 suggest the existence of a similar pattern of internalization of the social norms existing in the two environmental domains. Both environmental identity and personal norms of participants presenting a *high* student identity are better explained by *injunctive norms* in relation to descriptive norms (Table 5). On the other hand, both personal norms and environmental identity of participants who present low student identification are better explained by *descriptive* rather than injunctive norms.

These results suggest that descriptive and injunctive social norms influence either more general (environmental identity) or more specific (personal norms) types of internalized motivators through equivalent processes. They illustrate a potential path through which once social norms are internalized, they might also become also influential as a general orientation to comply with behavioural requests.

5. Discussion

International agreements for environmental social change can only be locally effective when people, communities and institutions change the way they behave. For this to happen, the new formal laws need over time to become also informal social and personal norms (Castro, 2012). This paper analysed specifically how social norms (descriptive or injunctive) of two different pro-environmental domains (recycling and organic purchase) are related with more internalized behavioural motivators - personal norms and environmental identity - and how all of these variables are predictive of behaviours. This analysis was performed in two countries where different societal contexts for pro-environmentalism are

observed: Portugal, where formal environmental laws are more stringent, and older, and Brazil, where such laws are less stringent, and newer (Bertoldo, Castro, & Bousfield, 2013).

The two pro-environmental behaviours analysed (recycling and organic purchase) besides relying on individual motivations are, in relation to environmental laws and regulations restricting collective behaviour, more loosely enforced and variable in function of structural aspects (Ferreira & Tavolaro, 2008) – e.g. availability of facilities for recycled waste disposal, access to organically grown fruits and vegetables.

Results indicate that recycling behaviour is more widely supported in Portugal, where it is more frequent and more normative in terms of descriptive norms than in Brazil (Table 1). This result is clearer in relation to recycling than in relation to organic purchase, which can be linked to the fact that recycling regulations have a longer history in relation to organic purchase concerns and are more easily expressive of pro-environmental concerns than organic purchase, for which consumption goals can be associated with egoistical reasons as one's own health, luxury (Griskevicius, Tybur, & Van den Bergh, 2010); or altruistic reasons as for example the environment and animal well-being (Magnusson et al., 2003). As an example of the stronger association of recycling behaviour with ecological identity, results show that recycling behaviours are predicted by ecological identity, but organic purchase is not (Table 2).

The capacity of social norms (descriptive and injunctive) to predict recycling and organic purchase behaviour was then compared with that of more internalized personal norms and environmental identity. Results indicate that for the two behaviours in question, descriptive norms are better predictors than injunctive norms. But this predictive power is greatly reduced when more internal norms are entered in the model, namely personal norms, which become then the best predictor of behaviour, over and above a general measure of

environmental identity. These results were not different between countries, suggesting that the societal legal and normative context might play a smaller role in the relation between external or internal motivators and pro-environmental behaviours.

These results are also consistent with the propositions of VBN theory – which states that personal norms are the best predictors of behaviours when compared to more external descriptive and injunctive norms (Stern, Dietz, Abel, Guagnano, & Kalof, 1999; Stern, 2000) – and also with SDT (Ryan & Decy, 2003), which posits that the more motivations are internalized, the more they become stable and behaviour-predictive.

Once the capacity of the different types of norms to predict pro-environmental behaviour was explored, our analysis focused on the internalization of social norms. How are external social norms able to predict more internal, stable and predictive constructs such as personal norms (domain specific) and environmental identity (general) in the two different countries? Results suggest that, *in general*, in both countries and in both pro-environmental domains, descriptive norms predict personal norms and environmental identity better than injunctive norms.

These results do however change once *student identity* is taken into account: the injunctive predictive power is moderated by the student identity, both when the dependent variable is personal norms or when it is environmental identity. On the other hand, descriptive influence is moderated by group importance only when the dependent variable is personal norms on recycling. These results are consistent with the literature that has previously demonstrated that the effective influence of injunctive norms on behaviour depends on the strength of group identification (Nigbur et al., 2010; Terry et al., 1999), and that the influence of descriptive norms follows a more direct path from influence to expressed behaviour, depending to a lesser extent on group processes to be effective (Göckeritz et al.,

2009; Nigbur et al., 2010). These results are also in line with the human goals behind the strength of injunctive norms: that of the *social* approval by one's peers (Jacobson et al., 2011). For this reason, injunctive norms lead individuals to focus greater attention on *interpersonal* aspects of self (Jacobson et al., 2011). What the present results add to the previous literature is that a similar processes mediating normative influence at the level of behavior or behavior intention can also be observed in terms of the *internalization* – or the 'taking in' (Ryan & Deci, 2000) – of *these social norms*, so that they become more stable predictors of behaviours.

Overall, these findings suggest an influence pattern where more internalized norms are more affected by external descriptive norms when the reference group is less important and by external injunctive norms when the reference group is more important. This pattern of results has direct and relevant implications for many contexts: for instance, it suggests that when individuals are highly identified with their neighbourhood, or their organization, the injunctive influence – or what the subject believes is expected of him/her by the social group – becomes more important for forming their personal norms. When, instead, individuals are not identified with the organization, or neighbourhood, what they believe others *do* becomes more relevant for shaping their personal norms and identities.

Another important aspect of these results is that the group importance (student identity) moderates the influence of social norms on specific personal norms (e.g. recycling or organic purchase) but also of the more *general concept of environmental identity*. These results indicate one possible process through which some social norms that are socially salient can become personally important and, over time, might integrate what an individual recognizes as his/her (ecological) identity.

In relation to the different societal contexts formed by the different moments that Portugal and Brazil are in the implementation of international environmental agreements, results have demonstrated that the process of internalization of social norms as personal norms and environmental identity can be considered as *similar in both countries*. These results can also be related with to the fact that a student sample was used in both countries. Environmental ideas are normally valued in among a young and well-educated population (Eurobarometer, 2008), making it hard to identify a country-specific effect when both samples are part of a very shared set of contemporary values (Bertoldo et al., 2013).

One limitation of this study is the restriction of our sample to university students. The use of single-item indicators was a further limitation that restricted the methods of analysis at our disposal. Yet, and overall, these results attest to the importance of considering group identification in the process of generalizing environmental social change.

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Table 1. Means and standard deviations of Portuguese and Brazilian samples on the variables under study.

	Portugal (<i>n</i> =155)	Brazil (<i>n</i> =176)	
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
Recycling			
Descriptive norm	3.99 (1.14)	3.27 (1.12)	<i>t</i>(322) = 5.70, <i>p</i> < .001
Injunctive norm	4.78 (1.45)	4.85 (1.63)	<i>t</i> (322) = -.42, <i>ns</i>
Personal norm	5.08 (1.42)	4.82 (1.79)	<i>t</i> (319) = 1.08, <i>ns</i>
Behaviour	5.06 (1.62)	4.44 (2.03)	<i>t</i>(317) = 3.03, <i>p</i> < .01
Organic purchase			
Descriptive norm	2.66 (1.2)	2.83 (1.35)	<i>t</i> (322) = -1.16, <i>ns</i>
Injunctive norm	3.83 (1.65)	4.04 (1.95)	<i>t</i> (320) = -1.05, <i>ns</i>
Personal norm	3.41 (1.67)	3.30 (1.89)	<i>t</i> (322) = .52, <i>ns</i>
Behaviour	3.02 (1.49)	3.19 (1.75)	<i>t</i> (320) = -.96, <i>ns</i>
Environ. identity	5.18 (1.2)	4.94 (1.44)	<i>t</i> (322) = 1.7, <i>ns</i>

Table 2. Recycling and organic purchase behaviours regressed on descriptive and injunctive norms, personal norms, environmental identity and country.

Bloc	Predictors	Recycling					Organic Purchase				
		Adj. R ²	F	df	Beta	t	Adj. R ²	F	df	Beta	t
1	Descriptive	.07	9.5***	3	.24	3.9***	.11	14.7***	3	.32	5.7***
	Injunctive				-.01	-.02				.05	.93
	Country (Portugal)				.10	1.8				-.03	-.68
2	Descriptive	.33	33.3***	5	.12	2.4*	.26	23.8***	5	.23	4.4***
	Injunctive				-.11	-2.2*				-.09	-1.7
	Country (Portugal)				.08	1.8				-.06	-1.3
	Personal norm				.44	7.4***				.42	7.2***
	Ecol. identity				.14	2.4*				.05	.88
3	Descriptive	.32	23.8***	7	.14	1.9*	.26	13.7***	9	.27	3.9***
	Injunctive				-.12	-1.7				-.11	-1.6
	Country (Portugal)				.08	1.7				-.06	-1.3
	Personal norm				.48	6.2***				.49	6.4***
	Ecol. identity				.07	.95				.03	.44
	Descriptive*country				-.02	-.31				-.05	-.80
	Injunctive*country				.02	.35				-.02	.25
	Personal norm *country				-.05	-.68				-.11	-1.51
	Ecol. identity *country				.09	1.36				-.01	-.23

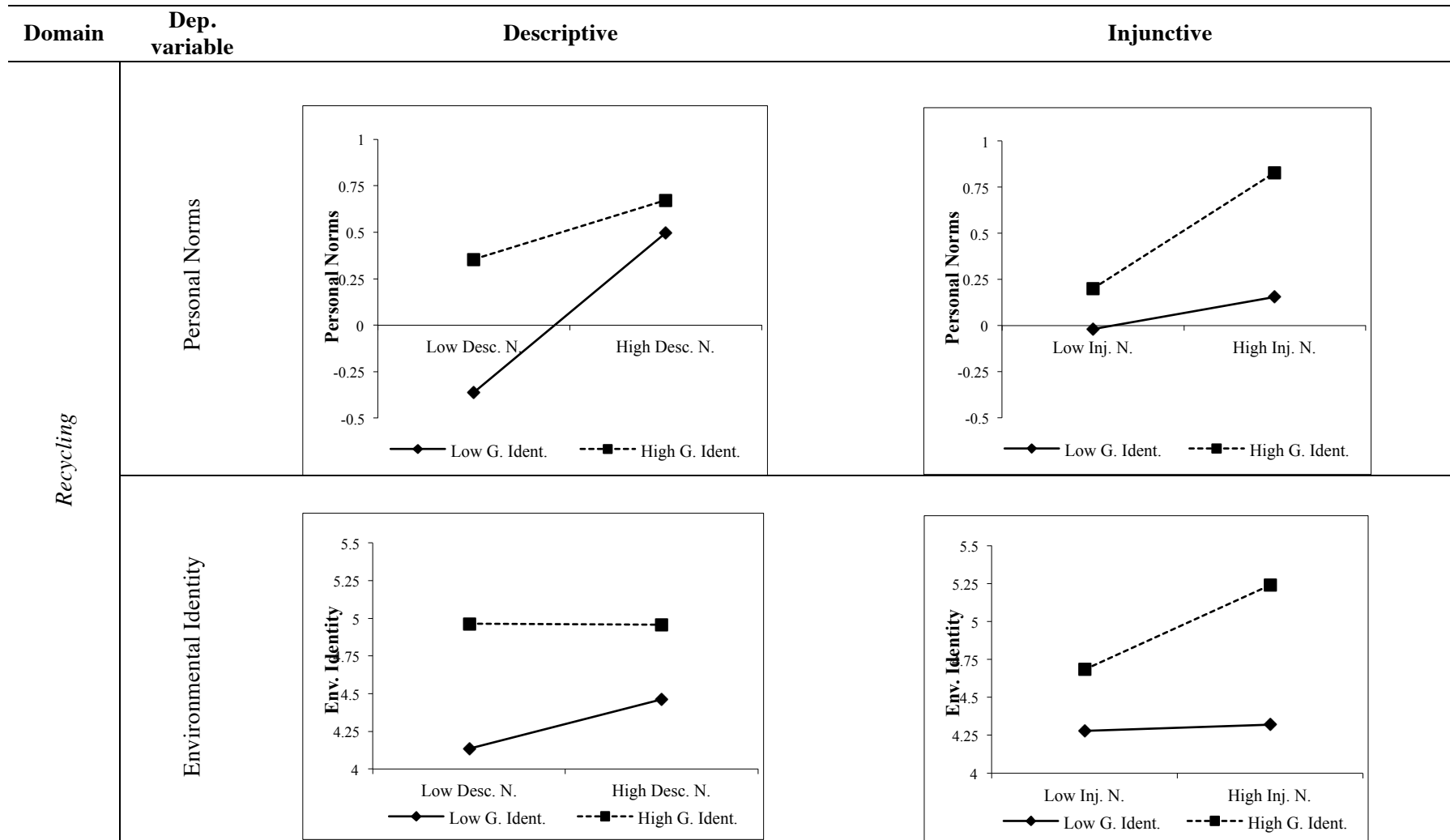
Table 3. Environmental identity regressed on recycling and organic purchase social norms, group identification and country.

Bloc	Predictors	Recycling					Organic Purchase				
		<i>Adj. R</i> ²	<i>F</i>	<i>df</i>	Beta	<i>t</i>	<i>Adj. R</i> ²	<i>F</i>	<i>df</i>	Beta	<i>t</i>
1	Descriptive	.06	6.5***	4	.09	1.4	.03	3.3*	4	-.02	-.28
	Injunctive				.18	3.1**				.12	2.0*
	Student identity (high)				.12	2.1*				.13	2.3*
	Country (Portugal)				.11	1.8				.14	2.4*
2	Descriptive	.10	6.9***	6	.07	1.3	.06	4.5***	6	.00	-.1
	Injunctive				.17	2.9**				.10	1.8
	Student identity (high)				.10	1.9†				.12	2.2*
	Country (Portugal)				.10	1.8				.14	2.5*
	Descriptive*student identity				-.09	-1.7				-.06	-1.1
	Injunctive*student identity				.18	3.3**				.21	3.6*
3	Descriptive	.10	5.6***	8	.16	1.9†	.06	3.68***	8	.02	.29
	Injunctive				.21	2.8**				.03	.46
	Student identity (high)				.10	1.7				.12	2.1*
	Country (Portugal)				.10	1.7				.14	2.5*
	Descriptive*student identity				-.11	-2.0*				-.07	-1.2
	Injunctive*student identity				.16	2.8**				.22	3.8***
	Descriptive*country				-.11	-1.3				-.03	-.45
	Injunctive*country				-.06	-.84				.11	1.5

Table 4. Recycling and organic purchase personal norms regressed on social norms, group identification and country.

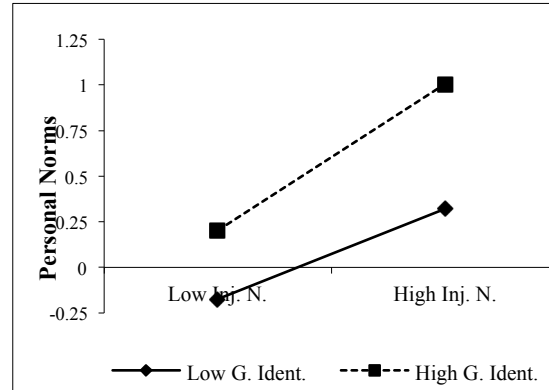
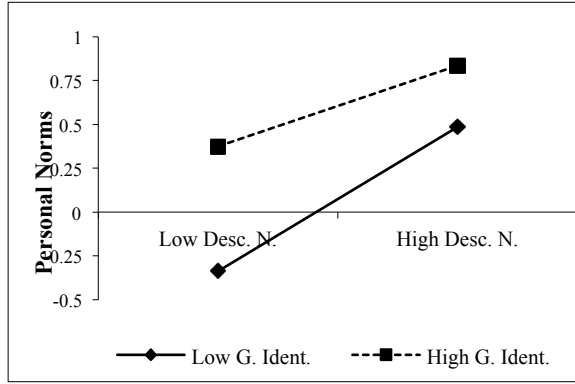
Bloc	Predictors	Recycling					Organic Purchase				
		<i>Adj. R</i> ²	<i>F</i>	<i>df</i>	Beta	<i>t</i>	<i>Adj. R</i> ²	<i>F</i>	<i>df</i>	Beta	<i>t</i>
1	Descriptive	.10	10.65***	4	.22	3.6***	.21	21.9***	4	.21	3.9***
	Injunctive				.19	3.37**				.34	6.3***
	Student identity (high)				.07	1.4				.07	1.3
	Country (Portugal)				.04	.63				.07	1.5
2	Descriptive	.12	8.8***	6	.21	3.58***	.22	15.6***	6	.23	4.2***
	Injunctive				.19	3.35**				.33	6.1***
	Student identity (high)				.06	1.06				.06	1.2
	Country (Portugal)				.03	.52				.07	1.4
	Descriptive*student identity				-.12	-2.35*				-.08	-1.5
	Injunctive*student identity				-.13	2.42*				.11	2.0*
3	Descriptive	.13	7.16***	8	.29	3.63***	.21	11.6***	8	.21	2.9**
	Injunctive				.15	1.96*				.33	4.7***
	Student identity (high)				.05	.96				.06	1.2
	Country (Portugal)				.03	.53				.07	1.4
	Descriptive*student identity				-.13	-2.44*				-.08	-1.4
	Injunctive*student identity				.12	2.23*				.11	2.0*
	Descriptive*country				-.12	-1.54				.02	.37
	Injunctive*country				.06	.79				-.01	-.02

Table 5. Simple slope analysis corresponding to the regression of personal norms and environmental identity on descriptive and injunctive norms at different levels of group (student) identity.



Organic Purchase

Personal Norms



Environmental Identity

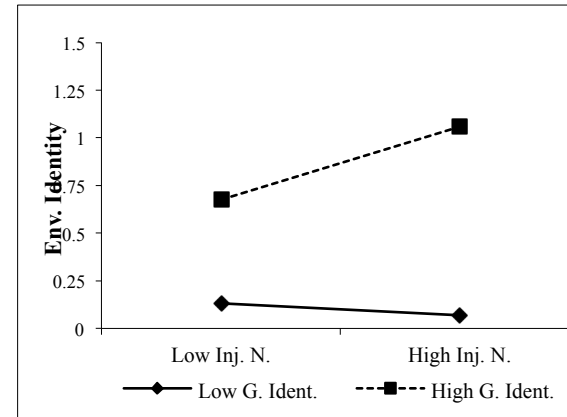
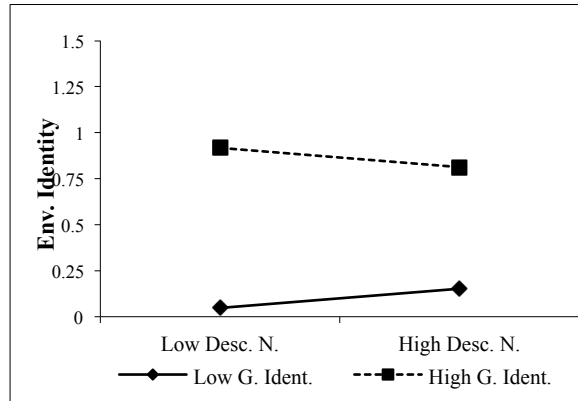


Table 6. Regression of personal norms and environmental identity on descriptive and injunctive norms at different levels of group (student) identity.

Outcome variables	Student identity					
	High			Low		
	Descriptive	Injunctive		Descriptive	Injunctive	
<i>Personal norms</i>						
Recycling	.14*	.26***	Adj $R^2 = .10$, $F(2,239) = 15.46^*$	.47***	-.08	Adj $R^2 = .19$, $F(2,86) = 11.5***$
Organic purchase	.19**	.36***	Adj $R^2 = .21$, $F(2,238) = 32.4***$	.31**	.24*	Adj $R^2 = .20$, $F(2,83) = 11.6***$
<i>Environmental identity</i>						
Recycling	.06	.27***	Adj $R^2 = .08$, $F(2,239) = 12.2***$	.25*	-.19	Adj $R^2 = .05$, $F(2,86) = 3.58^*$
Organic purchase	-.05	.20**	Adj $R^2 = .03$, $F(2,240) = 4.7^*$	.06	-.15	Adj $R^2 = .01$, $F(2,83) = .74$, <i>ns</i>