SSD

SCIENCE FOR A SUSTAINABLE DEVELOPMENT

FOSTERING SUSTAINABLE BEHAVIORS: COMMUNITY-BASED SOCIAL MARKETING "FSB-CBSM"

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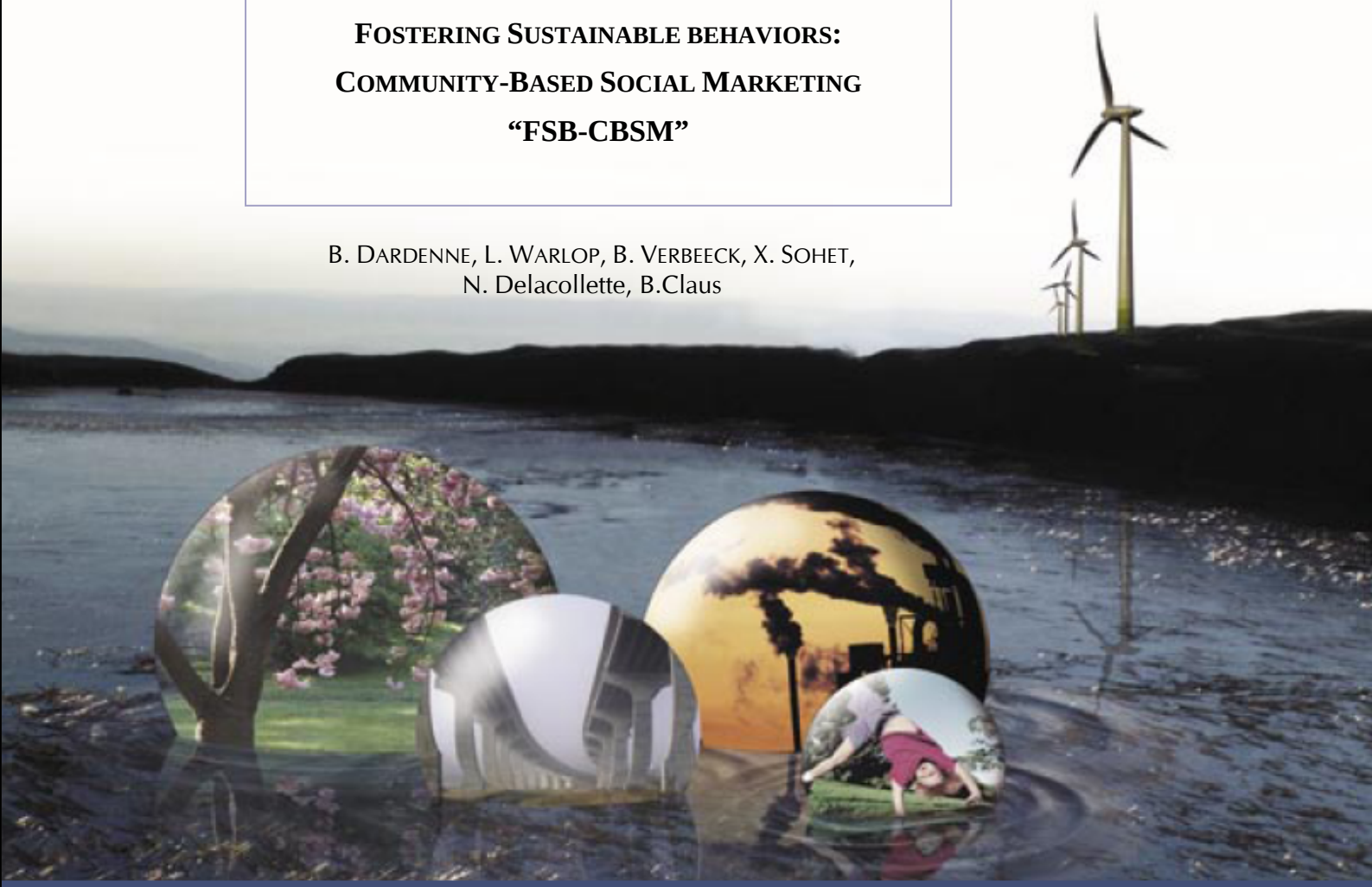

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FINAL REPORT PHASE 1

FOSTERING SUSTAINABLE BEHAVIORS: COMMUNITY-BASED SOCIAL MARKETING

FSB-CBSM

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I. INTRODUCTION

I.1. Context and general overview of the project

Reducing our negative impact on the environment and achieving sustainability is a major objective of governmental policies. However this objective cannot be reached without changing individuals' behaviors. Although most people express positive attitudes toward sustainable development and ecology, they are still reluctant to change their behaviors. Governments and associations often act as social marketers trying to develop campaigns in order to promote sustainable consumption. Unfortunately, these campaigns are not always successful in reaching their goals. Furthermore, their efficiency is seldom assessed. Consequently, the best levers to change people's behaviors still remain unknown. Unsustainable behaviors are likely to be highly resistant to change except if the marketing campaigns target the appropriate psychological levers.

In psychology and related areas, intentions and behaviours are generally envisaged as being determined by three types of variables (Theory of Planned Behavior, Ajzen, 1991[1]): The attitude toward the behavior (*Is it positive or negative? Am I favorable or not?);* the subjective norm (*Do people around me have this behavior? Do they think it's important to have it?*); and the perceived behavioral control (*am I able to engage in this behavior? Do I have control over it?).* However, this model predicting behavior is very cognitive and does not leave space for variables such as feelings and emotions. It has nevertheless been shown that emotions have a strong impact on behavioral intentions[2]. This model also fails to include environmental variables such as the impact of actual physical environment on the intentions and behaviors. We therefore proposed to focus on these possible predictors of sustainable behaviors and to investigate whether they could be efficient levers to change behaviors toward more sustainability.

Furthermore, this research project does not focus on a single behavior, but on a whole set of sustainable behaviors, which are presumably numerous and varied. People are likely to have different representations of these various behaviors. Furthermore, these different behaviors might be sensitive to different variables. Consequently it is important to know exactly what is hidden behind the label "sustainable behaviors" and which behaviors are similar or not.

[1] Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179-211.

[2] See for instance Kaiser, F. G. (2006). A moral extension of the theory of planned behavior: Norms and anticipated feelings of regret in conservationism. *Personality and Individual Differences*, *41*, 71-81. See also Lickel, B., Schmader, T., Curtis, M., Scarnier, M., & Ames, D. R. (2005). Vicarious shame and guilt. *Group Processes and Intergroup Relations*, *8*, 145-157.

The first phase of this project aims at better understanding the representation people have of sustainable behaviors and at identifying cognitive, emotional and psycho-social levers and inhibitors of sustainable behaviors. We will try to give some clues to answer the following questions: What is hidden behind the label "sustainable behaviors"? Which dimensions differentiate these behaviors? What are the cognitive, emotional and psycho-social variables predicting these behaviors? Which variables can be used in order to develop effective green marketing strategies? What is the impact of people's physical environment on their behaviors?
In a second phase of the project, we aim at identifying how to use these levers and inhibitors in marketing campaigns in order to efficiently modify people's behaviors.

I.2. Objectives

This project has 4 main objectives. These objectives are interrelated. The first objective is simply to know what the social representation of sustainable behaviors is and whether the Ecological Footprint measure reflects this representation. The second objective deals with the variables that either facilitate or inhibit sustainable behaviors. The third objective is to develop tools and strategies that could allow to efficiently promote sustainable behaviors. Finally, the fourth and last objective is to communicate about and spread our findings.

A. Determine how people classify sustainable behaviors and which dimensions differentiate these behaviors.

A.1. Classifying ecological behaviors

Sustainable behaviors are likely to be differentiated according to several dimensions, for instance perceived impact on the environment, perceived cost or benefit, individual or collective behavior, etc. These dimensions may also be different for experts and lay people. We thus aimed at investigating the dimensions people use to classify (or cluster together) sustainable behaviors, which may help to determine what type of sustainable behaviors are likely to be influenced by the same levers and inhibitors, and will allow a better targeting of specific behaviors in marketing campaigns. We also intended to compare the representations of sustainable behaviors of experts and lay people. Indeed, it is likely that experts, who design social marketing campaigns, have a different representation from lay people, who are the campaigns targets. In the case of a mismatch between experts' and lay people's representations, social marketing campaigns might not be suited to the latter. It is thus important to know if experts' and lay people's representations differ.

A.2. Ecological Footprint (EF) Measure

The Ecological Footprint is a measure of the space or land required to produce the natural resources a person (a family, an organization, a city, a population…) consumes as well as the

space needed to reprocess the waste produced by this person (family, organization, city, population).

In the first phase of the project, we intended to study the EF measure properties and examine whether we may consider it as a good index of ecological behaviors.

We also aimed at developing the Ecological Footprint as a dynamic marketing tool. This highly publicized measure might indeed be used in a more active way and might become a social marketing tool. The EF score is generally presented in a very vivid way and in comparison to the mean of different populations. This is likely to have an impact on emotions and attitudes related to sustainable behaviors. Consequently, it would have a good potential as a sensitization and even as a behavior modifying instrument.

B. Investigate cognitive, psychosocial and emotional antecedents of sustainable behaviors.

We aimed at identifying the antecedents of sustainable behaviors and developing a psychosocial model of sustainable behaviors. For this purpose, we investigated the link between attitudes and both intentions and concrete behaviors. We gave special attention to the role of affects and moral emotions (such as guilt) elicited by sustainable behaviors or lack of behavior, as they are recognized as an important determinant of behaviors (and given that people mainly hold positive cognitive attitude but do not engage in relevant behaviors).

We also aimed at investigating the link between infrastructures offered to the citizens (as for example, public transport, cycling roads, green spaces…) and sustainable behaviors at the community level. It might indeed be very useful to know which types of infrastructures are likely to favor sustainable behaviors.

C. Develop and assess original social marketing communications.

This last objective is based on objectives A and B results and will mainly be developed during the second phase of the project. We intend to develop marketing techniques and recommendations (for practitioners and politics decision-makers) that could be applied in various real settings. We naturally intend to test these techniques. For this purpose, we will work on both the fundamental and the applied sides.

C1. Fundamental investigation of social marketing communication

We will use controlled settings to delineate precisely the effects of the variables identified in phase 1 and the conditions of apparition of these effects.

C2. Application of social marketing communication in concrete settings

We will use the results obtained during phase 1 (objectives A and B) and also from the first task of the present objective (C1) to create and develop new ecological marketing techniques in representative samples of the population.

D. Communication and results dissemination

The last but very important objective of this project is the communication about our research and results. We intend to publish our results in top international journals. The beginning of phase 2 will be used to reach this objective. The results of objective C research will also be published in both scientific journals and documents targeting a practitioner audience. Finally, these results will be presented in meetings and workshops on sustainable consumption/behaviors.

As this last objective is part of the project second phase, it won't be developed in the present report.

II. METHODOLOGY AND RESUTS

II.1. Objective A

In order to complete the project first objective, we ran a first study on social representations, aimed at identifying how people classify sustainable behaviors and at highlighting the dimensions underlying this classification.
A second study, using a very large data set provided by Ecolife and the WWF, investigated the structure of the EF measure.

II.1.1. Study 1: social representations study

Method

Participants

160 psychology students from the ULg participated in this study.

Procedure and material

Participants were asked to complete a questionnaire at the end of a psychology class.
After a short introduction about ecology and environmental problems, they were asked to write the five ecological behaviors that first came to their mind. Second, they received a list of 20 ecological behaviors (adapted from the EF measure). For each of these behaviors, they were asked to write down 3 words first coming to their mind. Third, they were asked to categorize the 20 behaviors in several groups as a measure of complexity.
When the questionnaire was completed, participants were collectively debriefed.

Results

The words participants generated in response to the 20 behaviors presented in the questionnaire allowed us to compute a similarity score for each pair of behaviors. The similarity score (*Ellegard score*) was calculated as follows:

$$\frac{\text{Number of words in common for behav.1 and behav.2}}{\sqrt{(\text{number of words generated for behav.1} * \text{number of words generated for behav.2})}}$$

With the similarity scores obtained for each pair of behaviors, we computed a similarity matrix for the 20 behaviors. Using this matrix as a data input, we ran a Multidimensional Scaling analysis. This analysis takes into account all the similarity scores and produces a bi-dimensional

representation of the behaviors. This representation allows to see which behaviors are perceived as similar and helps to identify the dimensions people probably use to classify the behaviors.

Here are the graphic results of this Multi-dimensional scaling analysis[3]:

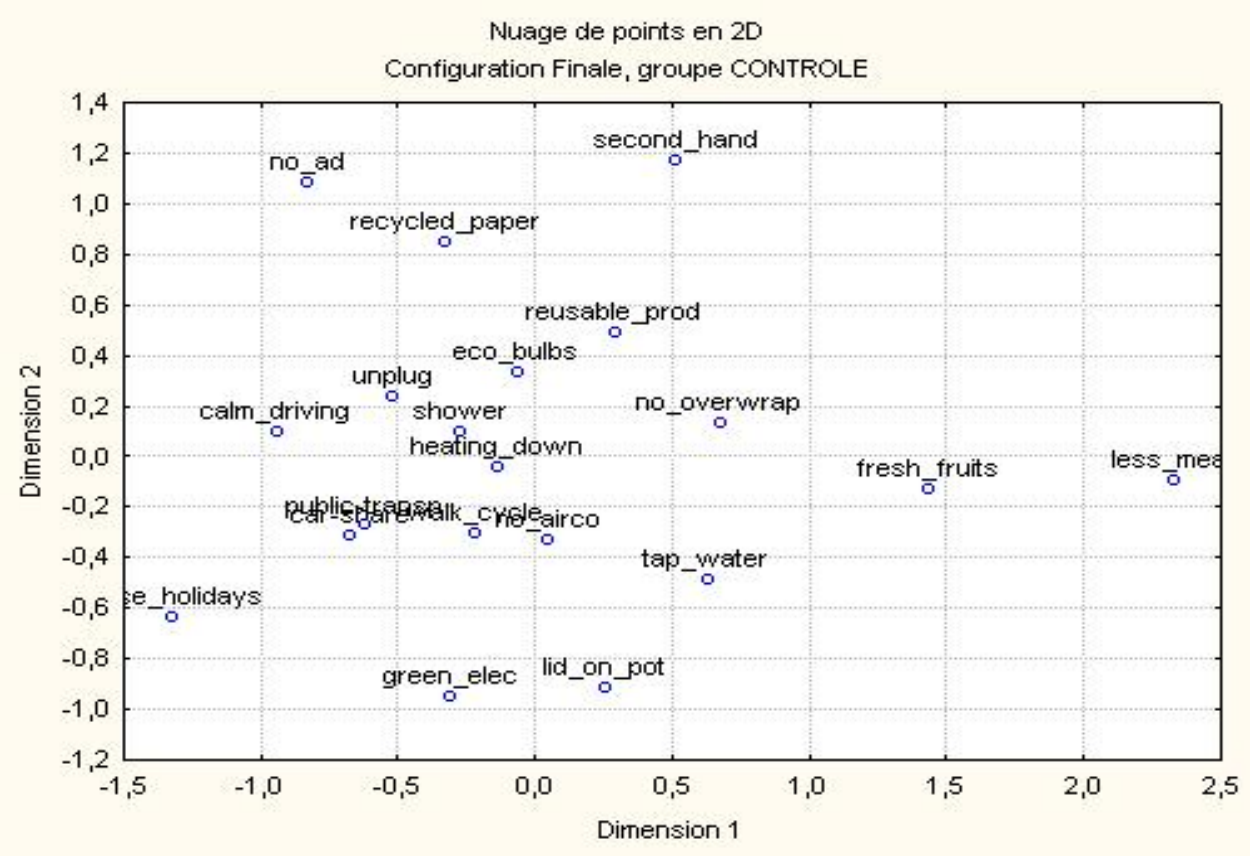

Figure 1: Representation of sustainable behaviors – multidimensional scaling (study 1).

We can observe on figure 1 which behaviors are judged similar to one another and which ones are not. For instance, using public transports, walking or cycling for short distances and sharing cars to go to work or university are perceived as very similar behaviors. To help us locating behaviors groups more precisely, we used a clusters analysis[4]. This analysis allows to identify more clearly the number of clusters according to the aggregation distance between objects subgroups. In this case, the analyses revealed 3 clusters. We then tried to identify what could be the dimensions organizing the representation.

Behaviors were grouped as follows:

- Category 1: buying second-hand products; avoiding to receive advertisings thanks to a sticker "no ad" on the letter box; replacing "usual" paper with recycled paper; buying reusable/refillable/fixable products; using economic light bulbs.

[3] stress = .20.

[4] Hierarchical clustering, also using a distance matrix to determinate how objects are grouped together.

- Category 2: systematically unplugging electric devices (television, DVD, computer…) to avoid leaving them in standby; taking showers rather than baths; driving one's car more calmly; turning the heating down before going to bed or leaving the home; using public transports for everyday trips to work/university; choosing car-sharing to go to work/university; cycling or walking for short distances; not using air conditioned in the car; drinking tap water; cooking with a lid on pots and pans; choosing a "green electricity" provider (using renewable energies); replacing far-away holidays with the plane by a closer trip allowing to travel by train or car.
- Category 3: eating fresh fruits and vegetables rather than deep-frozen ones; eating meat less often and replacing it by a vegetarian meal; avoiding buying over-wrapped products.

The first category seems to be linked to decision-making. Indeed, it mainly includes purchase behaviors or consumer choices (for instance buying second-hand products, recycled paper…). Most of these behaviors can easily been automated. The second category seems to imply behavioral regulation, that is, behaviors that require a continued monitoring. Indeed, behaviors such as driving one's car more calmly or systematically unplugging electric devices, necessitate a continued control and more personal involvement than, for instance, a purchase choice. Finally, the third category might be linked to eating habits which might be seen as a unique and typical sustainable class of behaviors. This interpretation of course needs to be validated. For this purpose, we are currently running a follow-up study including questions about the control required by each behavior, about their automatic aspect and so on.

II.1.2. Study 2 : Ecological Footprint measure

Ecolife provided us with the recorded data of their online footprint measure. The available data include the EF questionnaire itself, measures of engagement towards a series of sustainable behaviors, and some demographics. We used these data to see whether the behaviors as assessed in the EF could be mapped upon the attitudinal structure found in the previous study.

Method

Participants

We used the data collected with the EF measure during campaigns run from October 2006 to October 2007 throughout the country. 16028 respondents filled in the questionnaire completely, including the demographical data, which we used in another study related to Objective B.

Procedure and material

The main measure was the EF measure, a list of ten – «Which of the following behaviors best describes you » – questions. Respondents were also asked to indicate their family size, which was used to weight their answers to the behavior questions (e.g. the EF of a person decreases as he/she shares a car with more family members). After completing questions related to their ecological Footprint, people were asked to provide some demographical data like age (1-6 point scale), occupation, postal code and gender.

Results

A confirmatory factor analysis looking to replicate the findings of II.1.1 yielded partial support for these previous results (see table 1).

Rotated Component Matrix

	Component		
	1	2	3
EF1-Food	-,108	,585	-,059
EF2- Meat	,400	,320	,182
EF3-Sz House	,691	-,067	,182
EF4-Isolation	-,256	,488	-,080
EF5-Heating	,195	,031	,608
EF6-Electricity	,163	,671	-,035
EF7-Paper Use	,344	,551	,144
EF8-Car Use	,755	,088	-,070
EF9-PT Use	-,462	,092	,218
EF10-Holiday	,183	,108	-,729

Table 1: Results of the confirmatory factor analysis on Study 2 data.

We can see factor 1 as more regulatory oriented, whereas factor 2 contains more one-shot decisions. Isolating your house is clearly a one time (or few times) decision, that even can be used as an excuse for letting your guard down on some regulatory aspects. If you have a well isolated house, the perceived as well as real need to monitor your heating consumption might be lower. A car on the other hand is something most of us have, and every time there is an opportunity to use it, we have to make a decision whether to do this or use other means of getting to our destination. The items that load on both factors seem to contain regulatory as well as one-time decision aspects. With meat and paper, there's clearly a shopping (decision) as well as consumption (regulation) aspect.

Unfortunately, the food items in this analysis are not a separate factor, and the three factors found only account for 40% of the variance of the EF scale. The behaviors assessed in the EF questionnaire are therefore multi-faceted and determined by more factors than taken into consideration in this analysis.

II.1.3. Conclusion and prospects

These first two studies clearly indicate that sustainable behaviors are not all perceived the same way. People seem to classify sustainable behaviors into 2 main categories. This distinction between two categories might reveal an important dimension underlying sustainable behaviors perception and classification. Furthermore, it could be important to take this distinction into account when designing social marketing campaigns. For instance, decisions, on the first hand, and regulation of behaviors, on the second hand, are very different processes and these two processes are likely to be influenced by different variables. Furthermore, social marketing campaigns traditionally approach ecological behaviors as a decision making process and fail to consider behaviors needing either regulation over time or a high level of control and/or motivation. However, these different types of behaviors are likely to be affected by different processes and emotions. For instance, one could imagine that regulatory behaviors would be more sensitive to attitudinal ambivalence than mere decisions. Consequently, it is important to know and understand the different types of ecological behaviors. Our follow-up study will help us to identify the meaning of the distinction we found. Nevertheless, the distinction we found might vary according to individuals' characteristics. For instance, experts and lay people are likely to have different representations of the same object. In the case of sustainable behaviors, that might lead to a problem as people designing marketing campaigns might be considered as experts and people targeted by these campaigns might be considered as lay people. If experts' representation of sustainable behaviors is very different from lay people's one, there might be a mismatch between social marketing campaigns and their targets' perceptions. To know if this problem could occur, we decided to run a last follow-up study examining the difference between experts' and lay people's representations. Data will be collected by Ecolife and Espace-Environnement through an internet questionnaire.

II.2. Objective B

To complete the project second objective, we investigated the impact of attitudinal ambivalence (study 3) and emotions (studies 4 to 10) on sustainable intentions and behaviors. We also analyzed very large data sets with the objective of highlighting sustainable behaviors predictors at the community level (study 12).

These studies all contribute to establishing a psychosocial model of sustainable behaviors. Furthermore, variables pointed as significant predictors of sustainable behaviors might be

manipulated in order to trigger sustainable behaviors. In other words, they can be used to create efficient social marketing tools.

II.2.1. Attitudinal ambivalence and intentions toward sustainable behaviors

Study 3a & b

Attitude has been shown to be a determinant of behavior (see introduction). It has generally been conceived as a bipolar judgment (that is, a given behavior is perceived either as good or bad, either as acceptable or not). However, attitudes are known to be much more complex than a bipolar judgment (see for instance Fabrigar, McDonald & Wegener, 2005[5]). The present set of studies focuses on the impact of attitudes structure on intentions and behaviors. More specifically, it aims at differentiating people who have the intention to behave environmentally-friendly or not and finding out if attitudinal ambivalence predicts this intention. Furthermore, we investigated the direct impact of ambivalence on people self-reported general ecological actions (3a) as well as on specific sustainable behaviors (3b). Contrary to what one might believe, people are not necessarily only positive or negative regarding sustainable behaviors, but may instead feel both positive and negative at the same time. Attitudinal ambivalence is a simultaneously positive and negative evaluation of a given object. Indeed, many sustainable behaviors may at the same time be evaluated positively (e.g., positive evaluation of public transportations instead of cars because it has a strong positive impact on environment) and negatively (e.g., negative evaluation of public transportations instead of cars because it reduces one's freedom feelings). The more a person holds extreme and similar positive and negative beliefs/attitudes/emotions concerning a given behavior, the more this person is said to be ambivalent. Our general prediction is that ambivalence is a negative predictor of intention and behavior on top of traditional predictors such as attitude, subjective norms and perceived behavioral control.

Method

Participants

Sample 1: 129 students (mainly 3rd year psychology students) from the ULg. Sample 2: 156 students from a college of Education in Liège. Sample 3: 269 students from the K.U.Leuven.

[5] Fabrigar, L. R., MacDonald, T. K., & Wegener, D. T. (2005). The structure of attitudes. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), The handbook of attitudes (pp. 79–124). Mahwah, NJ: Erlbaum.

Procedure and material

Participants were asked to complete a questionnaire at the end of a psychology class. We assessed traditional predictors of intention, ambivalence and behaviors at two levels.

- First, participants answered a series of **general** questions about ecology and sustainable behaviors (Sample 1). Importantly, no mention was ever made concerning specific ecological behaviors, that is, participants freely instantiated the general category of "ecological behaviors". Amongst the questions, some items measured the "traditional" predictors of intentions: attitude, subjective norm and perceived behavioral control. Other items measured the ambivalence felt toward sustainable behaviors. Ambivalence was measured in two different ways. First, we measured what has been called subjective ambivalence, which correspond to a feeling of ambivalence or discomfort, because the individual is aware of its conflicting attitudes or beliefs. For this purpose, we assessed to which extent participants felt uncertain, confused and hesitant toward sustainable behaviors in general. Second, we evaluated what has been called objective ambivalence. Indeed, people may be ambivalent toward a given object without being aware of it or without feeling any discomfort. For this purpose, we asked participants to rate how much they felt decided, determined, and confident when thinking about the positive sides of sustainable behaviors as well as how much they felt undecided, confused, and hesitant when thinking about the negative sides of sustainable behaviors. We then computed an ambivalence score[6]. Participants also reported on a *yes* or *no* scale if they ever participated in an ecological action (without again any mention of what this action could be).
- Second, participants were asked to evaluate 5 **specific** behaviors (turning off the light, using public transportation instead of personal car, using reusable bags, buying ecological products, recycling paper). This part of the study concerned samples 1 to 3. Participants had first to rate how much they control and feel responsible for these behaviors. We also evaluated objective ambivalence, that is, how much participants feel positive when thinking about positive sides, and then how much they feel negative when thinking about negative sides. Then participants reported how often they perform each of these specific behaviors. Some demographic data were also collected (age and gender). At the end, participants reported their intentions to perform the behaviors in the following weeks.

Results

Study 3a (sample 1): General level analysis

As expected, intention is predicted by attitude, subjective norm, and perceived behavioral control[7], but none of these predictors has a direct effect on action (see Figure 2). Only intention

[6] We used Thompson's formula.

[7] $\beta s > .15$, $ps < .085$; percentage of explained variance $R^2 = .19$.

significantly predicts action[8]. We then added both measures of ambivalence (subjective and objective) as predictors of intention. In addition to the traditional predictors of behavioral intentions, objective ambivalence is a significant additional predictor of the intention to take an ecological action[9]. However, subjective ambivalence does not significantly predict intentions. In other words, even if they are not aware of it, the more people are ambivalent toward sustainable behaviors, the less they take an ecological action.

The main important result of this study is that objective ambivalence significantly improves the prediction of intentions (besides attitude, subjective norm, and perceived behavioral control) and action, both directly[10] as well as indirectly through intention[11]. Furthermore, adding ambivalence on the top of traditional predictors weakens the link between "good" intention and action[12]. This means that highly ambivalent people, in addition to having weaker intentions to take an ecological action, are also less likely to transform their intentions into actual action. Additionally, we were also able to show that participants' indifference and lack of concern (measured in the same way as ambivalence) is an additional significant predictor of intention[13]. The more participants felt indifferent toward ecology and sustainability, the less they intended to take an ecological action. In conclusion, this study showed that both ambivalence and indifference moderate people' intentions to behave in a sustainable way as well as their self-reported action.

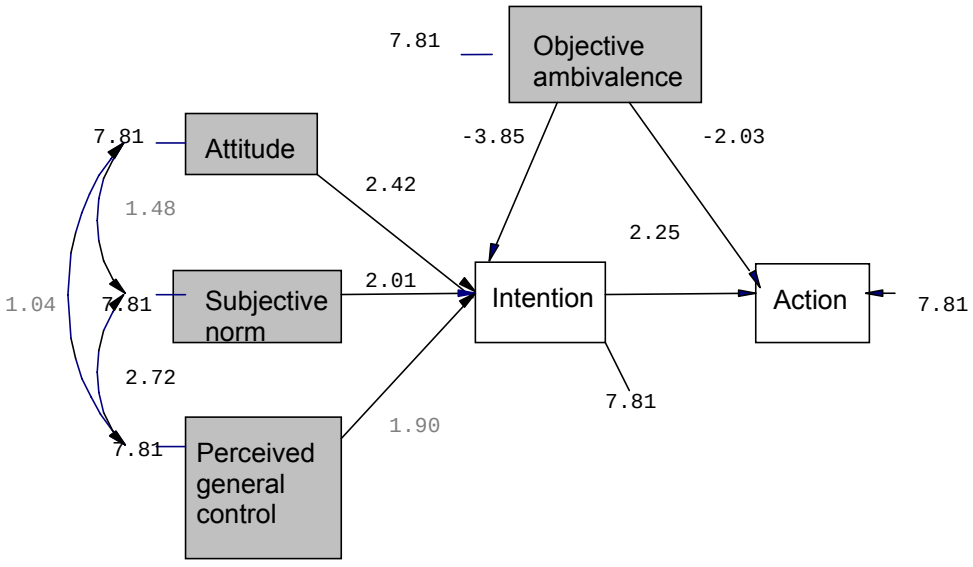

Figure 2: prediction of ecological intention and action by attitude, subjective norm, perceived general control and attitudinal ambivalence.

[8] $\beta = .23$, $p < .01$, $R^2 = .13$.
[9] $\beta = -.39$, $p < .001$.
[10] $\beta = -.19$.
[11] $\beta = -.07$, $p < .05$.
[12] $\Delta\beta = .08$, $p < .05$.
[13] $\beta = -.46$, $p < .001$.

Study 3b (samples 1 to 3: Specific level analysis)

The previous study indicated that ambivalence is clearly an important moderator of the link between "good" global intentions and general action. Even more important, it has a direct effect on action. We then tested if this link holds true when specific behaviors are at stake. Furthermore, we assumed that feeling accountable (that is, in control of and responsible for the behavior) could be an important variable influencing both ambivalence and sustainable behaviors. The model tested is displayed in Figure 3 (tested separately for each specific behavior).

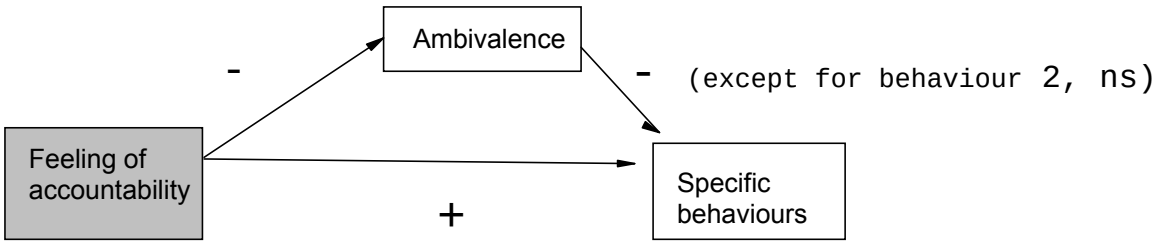

Figure 3: Prediction of specific ecological behaviours by feeling of accountability and attitudinal ambivalence.

Following results from Study 3a, the main important results are[14]:

- Replicating Study 3a, ambivalence always negatively predicts each specific behaviors (with the notable exception of behavior 2 related to public transportation) whereas feeling of being accountable always directly increases the self-reported frequency of behaviors. Furthermore, the more participants feel accountable and the less they report ambivalence.
- The indirect effect of accountability on behavior through ambivalence is always positive, except for behavior 2 for which the indirect effect is non significant.

II.2.2. Moral emotions and sustainable behaviors: correlation studies

In line with objective B, a set of 4 correlational studies investigated the impact of emotions on sustainable intentions and behaviors. We focused on moral emotions (see for instance Tangney, Stuewig, & Mashek, 2007[15]), that is, emotions that are a consequence of the evaluation of a behavior or a situation. For instance, if I have the opportunity to reduce my consumption of energy but fail to do it, I might feel ashamed or guilty when I think about my

[14] significant at $p < .05$.

[15] Tangney, J.P., Stuewig, J., & Mashek , D.J. (2007). Moral Emotions and moral behavior. *Annual Review of Psychology*, *58*, 345-372.

behavior. The most commonly studied moral emotions are pride, guilt, shame and anger. We assumed that, on top of the usual predictors of behaviors (attitude, subjective norm and perceived control), moral emotions can strongly influence behavioral choices toward sustainability. Furthermore, we differentiated vicarious, collective and own emotions, and hypothesized that vicarious emotions are better predictors of sustainable behaviors and ecological actions than own emotions. Vicarious emotions refer to the emotions experienced when one observes someone else's behavior. For instance, if I witness a very close friend behaving without any care for the environment, I might feel guilty, although I did not enacted any negative behavior myself. If I witness the same friend doing effortful actions in order to protect the environment, I'm likely to feel proud, even if I did not make any effort personally. Collective emotions refer to the emotions experienced in response to one's (socially relevant) group behaviors. For instance, I could feel guilty because the inhabitants of my country produce a lot of toxic waste or a lot of CO_2, even if I'm not responsible for this situation. The literature has shown that some vicarious and collective emotions, more specifically guilt feelings, generally lead to a wish to repair for the harm that has been done. On the other hand, own negative emotions are often evacuated through excuses and justifications and consequently are less likely to lead to a wish to repair. We then propose that vicarious and collective emotions have a stronger impact on behaviors that own emotions.

Study 4

Method

Participants

129 students participated in Study 4 (127 valid cases). They were asked to complete a questionnaire at the end of a psychology class at the ULg.

Procedure and material

Participants were asked to complete a questionnaire including questions about:

- Whether they did or did not take an ecological action (see Study 3a).
- The emotion they felt when they conducted some specific sustainable behaviors (see Study 3b): pride.
- The emotions they felt when they did *not* conduct some specific sustainable behaviors: anger, shame and guilt.
- The emotion they felt when someone connected with them (friend or relative) conducted some specific sustainable behaviors: vicarious pride.
- The emotions they felt when someone connected with them (friend or relative) did *not* conduct some specific sustainable behaviors: vicarious anger, shame and guilt.

After completing the questionnaire, participants were debriefed and thanked.

Results

Amongst all personal and vicarious emotions evaluated in the questionnaire[16], only vicarious guilt significantly predicted whether participants had taken or not an ecological action[17]. Highly ambivalent participants more often reported taking an ecological action than lowly ambivalent participants. The other emotions evaluated in the questionnaire were not related to participants' action or lack of action. To our knowledge, this is the first study that ever examined so many moral emotions at the same time and at both personal and vicarious levels. Furthermore, guilt and shame were perfectly discriminated by participants at both the personal and vicarious levels[18].

Study 5

Method

Participants

425 students participated in Study 5. There were 156 students from a college of Education in Liège and 269 students from the K.U.Leuven.

Procedure and material

Participants were asked to complete a questionnaire which included questions about 5 specific sustainable behaviors (see Study 3b and 4):

- The frequency of these behaviors.
- Their guilt feelings when someone connected with them (friend or relative) did *not* have some these behaviors.

Finally, participants answered questions about their intentions to perform sustainable behaviors in the near future.

After completion of the questionnaire, participants were collectively debriefed.

Results

The data collected in Liège and Leuven yielded the same results (with no difference between cities, valid N total = 414). A first analysis was conducted on feeling of guilt, intentions and aggregated behaviors. As can be seen in figure 4, results indicated that vicarious guilt predicted both behavioral intentions and specific sustainable behaviors[19], which is in line with our hypotheses. Intentions predicted self-reported behaviors[20]. Finally, vicarious guilt no longer

[16] in a logistic regression analysis with separate-groups covariance matrix.
[17] Wald = 4.277, $p < .05$; Nagelkerke $R^2 = .235$.
[18] shown by a confirmatory analysis comparing a one to a two-factor model, all $\Delta\chi^2 > 4.93$, all ps $< .05$.
[19] both $p < .001$.
[20] $p < .001$.

predicted self-reported behaviors when intentions were controlled for[21]. More importantly, the indirect effect of vicarious guilt on self-reported behaviors through intentions is significant[22]. Overall, these results indicated that vicarious guilt increased participants' intentions to perform sustainable behaviors, which in turn led to more actual behaviors. In other words, the more participants felt guilty because someone connected with them failed to have sustainable behaviors, the more they had intentions that led them to behave environmentally-friendly. We replicated this analysis at the level of each specific behavior and for each linguistic community with the same results, except for behavior 2 (use of public transportation) which is not directly influenced by the level of guilt.

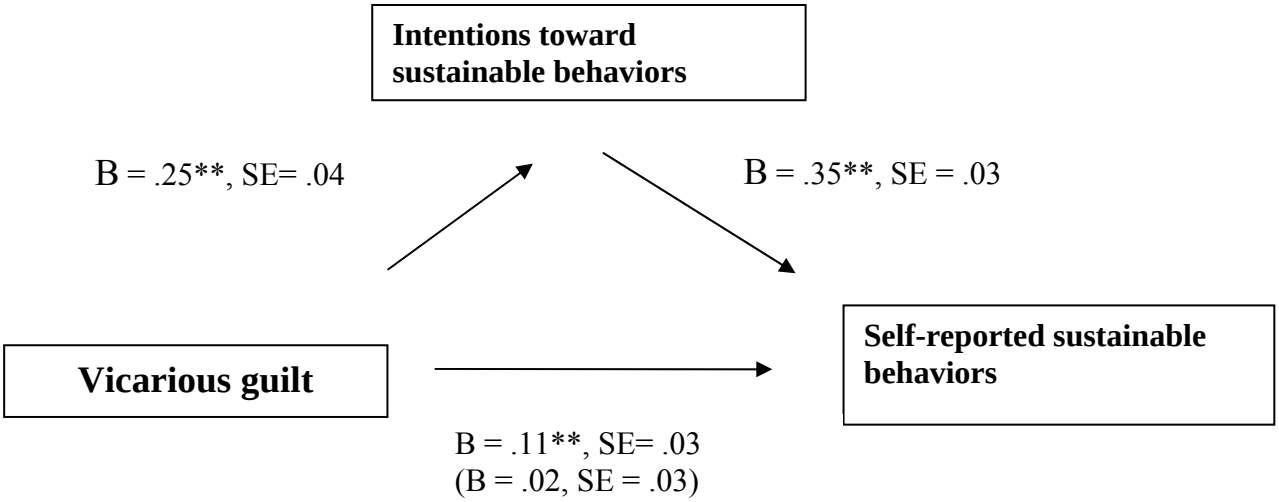

Figure 4: Impact of Vicarious Guilt on aggregated intentions and behaviors – study 5 (B are unstandardized path coefficients).

Study 6

Method

Participants

80 adult participants (non-students) were recruited and accepted to participate in Study 6.

Procedure and material

As in study 5, participants were asked to answer questions about the frequency of 5 specific sustainable behaviors and about their guilt feelings when someone connected with them did *not* perform sustainable behaviors. Then participants answered questions about their wish to repair and implementation intentions. In the literature, the wish to repair has been linked to collective

[21] $p > .50$.
[22] $p < .05$.

and vicarious guilt. The feeling of vicarious / collective guilt would trigger a wish to repair for the other person's "wrong" behavior (or lack of "good" behavior). It might then be a mediator between collective / vicarious guilt and sustainable behaviors. Implementation intentions might also mediate the impact of emotions on sustainable behaviors. Unlike goal intentions (which specify the final goal one wants to reach), implementation intentions specify how one is going to reach his/her goal. They identify how, when and where precisely one is going to act in order to reach his/her goal. We believe that guilt feelings might lead to the creation of this second type of intentions.

After completing the questionnaire, participants were individually debriefed.

Results

In line with the results of the previous studies, study 6 results indicated that vicarious guilt predicted sustainable behaviors[23]. However, this relation between guilt and behaviors was mediated by the implementation intentions. Furthermore, the link between vicarious guilt and implementation intentions was partially mediated[24] by the wish to repair. The links between these variables are represented in figure 5.

It appears that vicarious guilt helps to create implementation intentions and, at the same time, triggers a wish to repair for the other person's lack of sustainable behavior. The wish to repair then reinforces the implementation intentions that lead in turn to the behaviors[25].

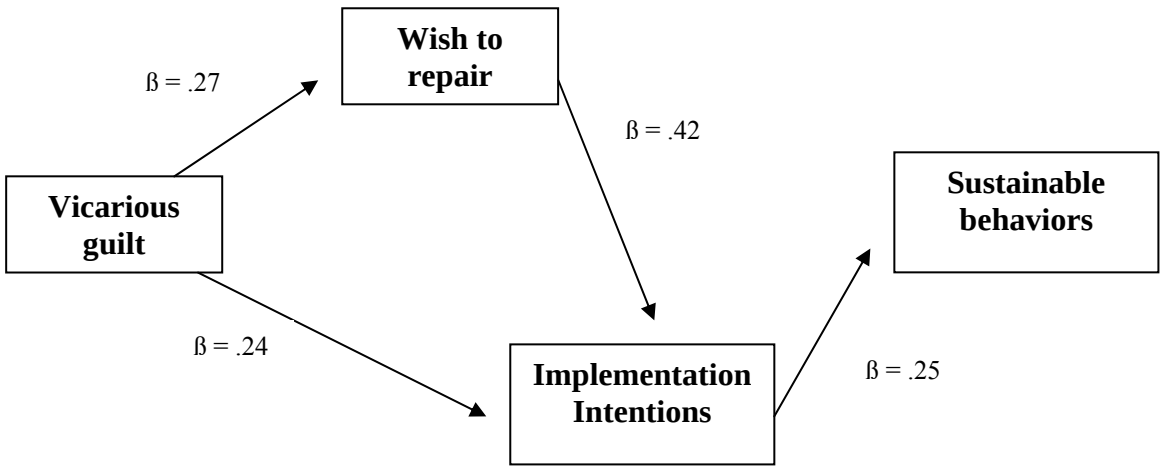

Figure 5: indirect impact of vicarious guilt on self-reported sustainable behaviors[26] – study 6.

[23] β = .09, t(80) = 1.89, p = .06.
[24] p < .05.
[25] The theoretical model adequately fitted the observed data (p > .23).
[26] Chi-Square=2.93, df=2, P-value=0.23154, RMSEA=0.077.

Study 7

Whereas previous studies have focused on self-reported behaviors, study 7 objective was to test the impact of vicarious emotions on *actual* behaviors (and thus to go one step further than studies 4, 5 and 6). In this study, we focused on guilt and anger and the actual behavior was participants' commitment to some ecological actions. We were also interested in the antecedents of emotions.

Method

Participants

40 students were recruited on the campus of the ULg.

Procedure and material

Participants were first asked to complete a questionnaire, related to environment and to close relations' behaviors. Participants first answered questions about some possible antecedents of vicarious emotions (perception of a lack of respect toward environment, perceived interdependence with the other person, and perceived control). Then participants answered questions about the emotions they felt (i.e. guilt and anger) when someone connected with them did not respect environment. They finally completed questions about their own intentions to perform several sustainable behaviors.

After completing the questionnaire, participants were explained that an environmental action group had been created in their university and that this action group was seeking help amongst students to organize several pro-environmental actions. Participants were given a letter from the so-called action group and were afterward asked if they would be willing to help this group for some specific actions. They had to indicate in which actions they would be willing to participate and how much time they would agree to spend. Various actions were proposed, as for instance signing a petition, donating money, collecting money, organizing a pro-environmental conference, participating in sensitization campaigns in schools and so on. According to the answers of the participants, we could then calculate an index of involvement into pro-ecological action. After completing the actions form, participants were debriefed and were given a list of addresses where they could find information in case they would still be willing to engage in pro-environmental actions.

Results

The number of actions to which each participant registered was computed in order to obtain a pro-ecological action index. Then, the impact of anger and guilt on both intentions and pro-ecological action was tested. Results indicated that guilt, but not anger, predicted intentions to

perform sustainable behaviors[27] (see Figure 6). Intentions predicted in turn pro-ecological action[28]. However, neither guilt nor anger directly predicted action[29]. Additionally, amongst the antecedents of guilt, only participants' perceived control on environment and sustainable behaviors influenced guilt[30]. In other words, the more participants felt they could have some kind of control on their own sustainable behaviors, the more they felt guilty when someone connected with them (a friend or a relative) failed to behave environmentally-friendly. The more participants felt guilty, the more they intended to perform sustainable behaviors. Finally, these good intentions led them to commit to pro-ecological actions.

These results again confirm that vicarious guilt is an important predictor of ecological action and sustainable behaviors. Furthermore, the impact of guilt on action was fully mediated through intentions, which is in line with Studies 5 and 6 results.

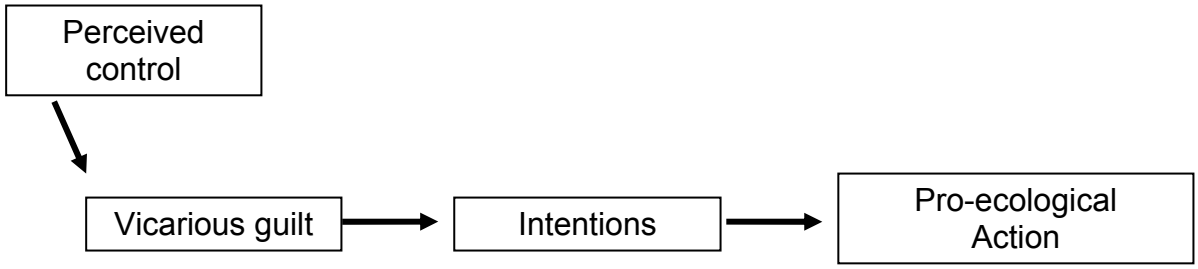

Figure 6: Impact of vicarious guilt on intentions and pro-ecological action – study 7

II.2.3. Emotions induction and sustainable behaviors

As studies 4 to 7 established a correlational link between emotions (mainly guilt) and sustainable behaviors or ecological actions, we went one step further in the next studies by *inducing* these emotions and assessing if we could influence sustainable behaviors by this way. The induction of emotions is in line with the final objective of our project, as we aim at creating effective marketing tools in order to modify people's behaviors. Consequently, studies 8 to 10 already prepared the second phase of the project. In 2 of these studies, we used the Ecological Footprint measure in a dynamic way, in order to induce emotions that could lead to a change in people's behaviors. In these studies, the feedback given to participants after the completion of the EF measure was formulated in order to induce feelings of guilt / pride that were either own or collective emotions. We assumed that feelings of collective guilt would lead to more intentions toward sustainable behaviors than own guilt and (own and collective) pride feelings.

[27] ß = .33, $p < .05$.
[28] ß = .41, $p < .01$.
[29] $p > .3$.
[30] ß = .34, $p < .05$.

Study 8

Method

Participants

114 students from the K.U.Leuven participated in this study.

Procedure and material

Participants first took an Ecological Footprint (EF) test on a computer. The meaning of EF was first explained. Participants could read a definition of EF and what exactly meant a high score or a low score. Then they answered 11 questions assessing their EF. These questions had been adapted for a young audience (for instance, items about car driving were modified). After answering these questions, they received a fake feedback indicating that their own EF (vs. their group's EF) was lower (vs. higher) than that of most people from the same age group. They were either congratulated or blamed for their own (or their group's) behavior. The purpose of these fake feed-backs was of course to induce an emotion. There were 4 experimental groups (own guilt / collective guilt / own pride / collective pride) and a control group (control participants received a feedback on their EF, but there was no comparison with other people/groups).

After receiving the feedback, half of the participants answered questions about the emotions they were feeling (manipulation check). Then participants completed questions about their behavioral intentions toward several sustainable behaviors.

Finally, participants were asked to write a short text about three subjects as a concealed behavioral measure of their efficient use of paper and pencil, as was previously used by Cornelissen et al. (2007[31]).

Results

The manipulation checks yielded fairly good results. Pride was higher in all pride induction conditions. One peculiar finding however is that, apparently, the collective emotion induction appeared to be easy to avoid. Guilt was higher in the own guilt condition, but not in the collective condition. This could be explained by a phenomenon called "diffusion of responsibility" (see for instance Schlenker, 1975[32]) by which one blames others of the assumed group more than oneself. Although one can overtly deny responsibility in a reaction to the induced guilt, this does not necessarily imply that one really avoids the emotion induction. When looking at the results of the study, this scenario is very likely, because the guilt manipulation – although denied at an explicit level - appears to have worked in terms of behavioral intentions.

[31] Cornelissen G, Pandelaere M, Warlop L, Dewitte S, (2007) Positive cueing: Promoting sustainable consumer behavior by cueing common environmental behaviors as environmental. *International Journal of Research in Marketing*, 25(1), pp.46 – 55.

[32] Schlenker, B. R. (1975). Group Members' Attributions of Responsibilities for Prior Group Performance. *Representative Research in Social Psychology*, *6*, 96 – 108.

Results revealed a significant effect of guilt[33]. All the participants in the two guilt conditions taken together expressed significantly more intentions to change their behavior towards more sustainability. However, there was no impact of the collective manipulation on the intentions. That is, inductions of own guilt and collective guilt had the same effect on behavioral intentions. The behavioral measure requires very complex analyses. For this reason, it is still under analysis.

Study 9

Method

Participants

99 students from the ULg were recruited to participate in this study.

Procedure and material

The procedure was identical to study 8 procedure, except that participants completed a group identification measure before completing the EF measure. Furthermore, all the participants completed the manipulation check assessing the emotions they felt after the EF feedback. The behavioral measure also differed from study 8. Indeed, after completing the intention measure, participants were thanked and were told that the study was over. Then, they were asked to participate in another short study. This study was described as a study on advertising and participants were required to taste and evaluate 2 different brands of orange juice. Then they were given a questionnaire allegedly in order to evaluate the juices. In order to taste the juices, they could either choose to take a disposable plastic cup or a glass. We were actually interested in this choice, as choosing a glass is a more sustainable choice than choosing a disposable plastic cup. We assumed that, in the collective guilt condition, participants would choose less plastic cups than in the other conditions.

Results

The analyses revealed a significant effect of the emotions induction on the guilt participants felt[34]. Participants induced with guilt felt guiltier than participants induced with pride, which means that the emotion induction was successful. Then we tested the effect of the emotion induced (guilt vs. pride) and of the own or collective nature of the induction on the behavioral intentions[35]. This analysis revealed a significant effect of emotion[36]. Participants induced with guilt expressed more ecological intentions than participants induced with pride. There was however no effect of the own or collective nature of the induction on intentions.

[33] $F(15, 76) = 2{,}411$, $p < .007$.
[34] $F(4, 80) = 5.74$, $p < .02$.
[35] aggregated in a single index, $\alpha = .60$.
[36] $F(1, 80) = 6.41$, $p < .02$.

We then tested the impact of the emotion induced and the own or collective nature of the induced emotion on the behavioral measure, that is, the choice of either a disposable plastic cup or a glass. As can be seen in Figure 7, the results indicated that participants induced with collective guilt chose significantly less disposable plastic cups than participants in the other conditions[37]. This indicates that the collective nature of the guilt induction is mainly responsible for the choice of a glass instead of a plastic cup. Additionally, intention to behave ecologically was negatively correlated with the choice of plastic cup[38]. In other words, the more participants intended to have sustainable behaviors, the less likely they were to use a disposable plastic cup.

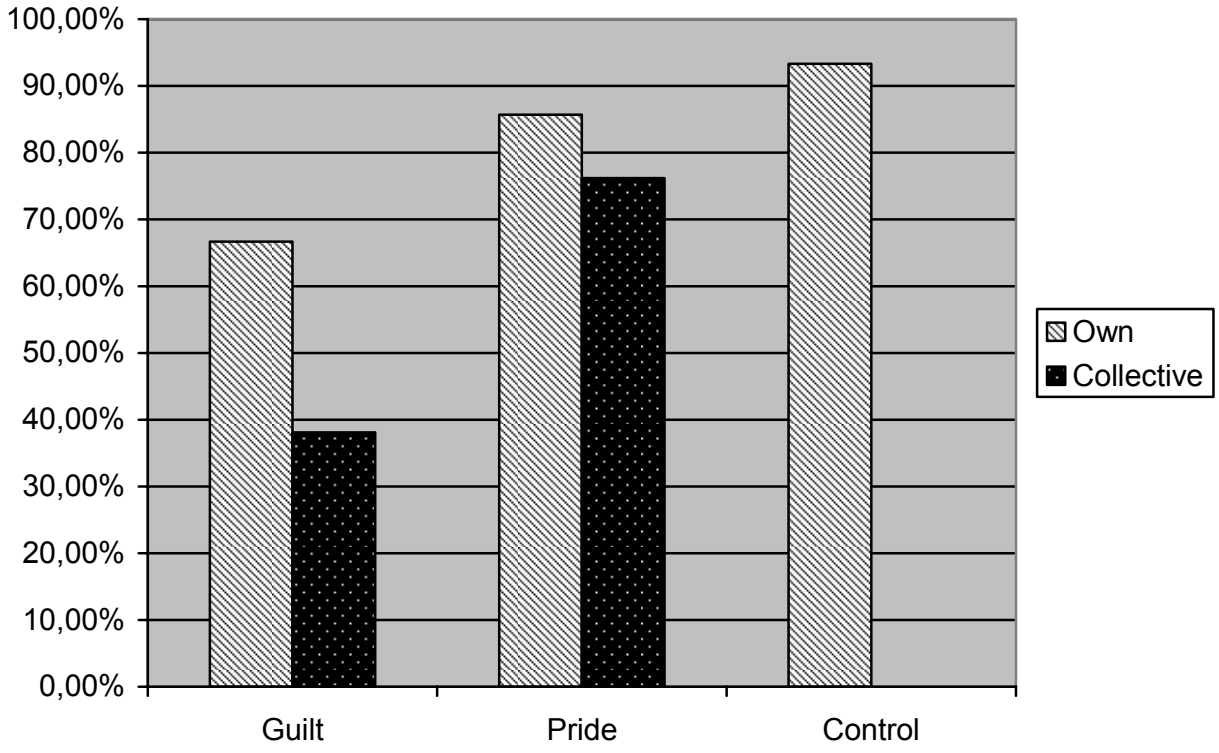

Figure 7: Proportion of plastic cups chosen in each condition of Study 10.

In conclusion, it appeared that collective guilt induction might be an effective strategy in order to trigger sustainable behaviors. These results encourage us to further investigate the impact of collective guilt in social marketing campaigns. Furthermore, the results of Studies 8 and 9 indicate that EF can effectively be used as a dynamic tool and can contribute to changing people's behaviors.

Study 10

[37] A specific contrast comparing collective guilt condition to all 3 other conditions was entered along main effects in a (forward) stepwise logistic regression. It revealed that this additive interaction was the only variable influencing the choice of plastic cup vs. glass ($B = -.41$, $SE = .13$, $p < .005$).
[38] $r = -.41$, $p < .001$.

Method

Participants

106 students from the K.U.Leuven subject pool were recruited to participate in this study. 14 participants were excluded as outliers, having given answers that differed remarkably from those of their peer participants (3sd criterion).

Procedure and material

The goal of this study was to experimentally manipulate the feeling of group belonging of participants, as in previous studies, this feeling tended to be rather low. Additionally, we wanted to check whether we could experimentally separate collective guilt (your group –the subject included implicitly - did bad) from vicarious guilt (a significant other – not the subject – did bad). The procedure was identical to study 8 procedure as far as the emotion induction is concerned. However, subjects only were induced with negative feedback (guilt) versus a control condition, as we concluded from the earlier studies that guilt feelings worked best in inducing changes in subjects' intentions and behavior. The manipulation check was left out, as the guilt induction had proven successful in previous experiments. Additionally, we used a minimal group paradigm induction where we put people together in teams based on the similarity of their score on a bogus questionnaire (Boen et al., 2007[39]), and asked them to remember their partner's name (DeSteno et al. 2004[40]). As a behavioral dependant measure, we asked people to donate money to a charitable, ecologically oriented cause, the WWF.

Results

Unfortunately, no significant effects of the group induction could be found on the behavioral measure. Strikingly, there was no effect of the guilt induction manipulation either, which might be explained by the fact that money might evoke a kind of exchange mindset that suppresses any voluntarism. Some significant effects were found for the behavioral intentions, where vicarious guilt proved to change people's intentions in favor of more sustainable behavior compared to the control condition. As this study appeared to show several flaws, we plan to rerun it using actual existing connections between participants (partners, friends) and a different behavioral measure.

[39] Boen, F., Vanbeselaere, N., Brebels, L., Huybens, W., & Millet, K. (2007). Post-merger identification as a function of pre-merger identification, relative representation and pre-merger status. *European Journal of Social Psychology, 37(2),* 380-389.

[40] DeSteno, D., Dasgupta, N., Bartlett, M. Y., and Cajdric, A. (in press). Prejudice from thin air: The effect of emotion on automatic intergroup attitudes. *Psychol. Sci.* 15: 319–324.

II.2.4. Positive emotions and antecedents of emotions

All the studies described here above focused on several negative emotions (guilt, shame anger) and on one single positive emotion (pride). Indeed, scientific literature has mainly studied pride and the other positive moral emotions have often been ignored. However, some positive emotions (other than pride) might have an impact on sustainable behaviors. To investigate these positive emotions, we are currently running a study.

Study 11

This study aims at investing the impact of several positive and negative emotions on (self-reported) sustainable behaviors. It also investigates some antecedents of these emotions.

Method

Participants

Participants are mainly bank employees. Data are currently collected.

Procedure and material

Participants were asked to complete a questionnaire. They first reported the frequency of several sustainable behaviors. Then they reported the emotions they generally feel when they behave environmentally-friendly (pride, satisfaction, joy, concern for future generation…) or when they fail to perform these behaviors (shame, guilt, anger…). They also expressed some moral judgments concerning their behaviors (such as responsibility, duty…). Then they answered questions about their perceived control and the automatic aspect of these behaviors. Finally, they answered questions about vicarious emotions (what do they feel when someone they are connected to behaves environmentally-friendly or fails to do so?).

Results

Data are still being collected.

II.2.5. Sustainable predictors at the community level

Study 12: Community affordance study

The objective of this study is to examine the differences between communities in order to discover what could explain the presence or lack of different types of sustainable behaviors. Any attempt to change people's voluntary behaviors through psychological mechanisms is naturally bounded by the extent to which the direct physical, social, and economic environment of an

individual affords these behaviors. For instance, one may be motivated to use the bike more instead of driving one's car, but this will not show in behavior if the traffic environment is too dangerous for biking, or if the distances to be traveled are too large. On the other hand, an effort performed by the community to provide for instance better cyclist routes might highlight the perceived importance this community attaches to sustainable mobility, or even to environmental issues. Individual citizens in these communities might then comply more with the perceived group norms, in their bike using behavior or even their ecological behavior in general.

The results from this analysis might teach us how infrastructural changes contribute to or diminish the total ecological footprint of a community *through changes in the behavior of the members of this community.* A detailed analysis and the use of comparative statistics allow us to calculate ratio's such as the real additional acres of footprint of a community *per acre of building grounds* in that community, *per kilometer of highway. Or the corresponding reductions due to measures like adding kilometers of bike path, or increasing the number of bus stops.*

The results of this analysis could have important practical applications for policy makers in terms of justifying measures and regulations to the public, to action groups making a case for a more sustainable policy from their community, to use this information in awareness campaigns, or just to assess the unbiased impact of infrastructural measures.

We analyzed a very large set of data collected by Ecolife, containing EF estimates and its constituent estimates of personal performance in a series of sustainable behavior domains, for more than 16000 Belgian respondents. As the postal codes of the respondents are part of the data, we were able to connect their answers to a host of economic, political, and physical environment indexes associated with these postal codes. We were interested in infrastructural, economic, and social context factors that facilitate or inhibit sustainable behaviors. The collection of these infrastructural data is not complete yet, but we have preliminary results that are quite promising.

Method

As a first and preliminary data source, we used the online data per community made available by the National Bureau of Statistics (NIS). We aimed for as much physical data as possible to avoid perception biases, but to approach some variables that were not available in terms of objective measures (e.g. bicycle roads), we could not avoid including some perception data.

Results

The data structure mentioned above imposes the use of a 3-level Multivariate Multilevel Ordinal Probit. This is computationally hard, and most statistical packages only provide up to 2-level analysis at most, and mostly only straightforward linear or logistic regression, so we are still in

the process of gathering expertise and means for this matter. Relaxing the requirements of this model can deliver us with some preliminary results. However, because we relax the requirements, we have to be most cautious with the interpretation of any results obtained, as the methods used in this case are not actually completely fitted for the analysis of data like these.
A possible way to do this would for instance be to estimate 12 (10 EFP + Total Result + Index of uttered intentions) 2-Level Ordered Logit models, and interpret them "Ad Hoc". Results obtained this way show that some of the EF-items are easier to predict than others, but that in general the impact of infrastructural differences between communities is substantial. In the table below, the row labels are predictors in our data set. The column labels are three interesting dependent variables. We give an overview of some of the results, a + indicating a variable that adds to the dependent measure, a – indicating a reducing effect.

At Level 1:

	Gain Prediction	Car Use	Public Transport Use
Wealth	-	+	+
Internet		-	
Agriculture		-	+
Forrest	+	-	+
Residential	-		
Recreational			+
Built	+	-	
Highway	-	+	
Local Road		-	
Urbanisation			-
More to the North	-	-	+
More to the East		+	-
Tourist	-	-	
Big House			+
Sleeper		+	-
Walking/Bycic/Road		-	
Shopping		-	+
Recreational Use Density	-		
Road Use Density	+		
Population Density	-	-	

Table 2: predictors of gain prediction, car use and public transport use at level 1.

At Level 2:

	Gain Prediction	Car Use	Public Transport Use
Age	-	-	-
Sex		+	-
Family	-	+	+
Footprint Result	-		
Independent (dummy)		+	-
Senior Management (dummy)	+	+	-
Management (dummy)	-	+	-
Employee (dummy)	-	+	
Worker (dummy)	+	+	-
Farmer (dummy)	+	-	-
French (dummy)	+	-	-

Table 3: predictors of gain prediction, car use and public transport use at level 2.

As we mentioned before, the statistical analysis of this model requires more work, but the results look promising.

II.2.6. Conclusions and prospects

The studies linked to our project second objective showed that besides the "classical" predictors of behaviors (general attitude, subjective norm and perceived behavioral control), some other variables have a strong impact on sustainable behaviors.

First, attitudinal ambivalence appeared as negatively related to both the intentions and the sustainable behaviors themselves. Highly ambivalent people are very reluctant to behave environmentally-friendly. Moreover, ambivalence is related to accountability. The more people feel accountable for their behaviors, the less they feel ambivalent and, consequently, the more they perform sustainable behaviors. Although this link between ambivalence on the one hand and intentions and behaviors on the other hand has clearly been demonstrated, the mechanisms through which ambivalence influences behaviors remain unknown. We will consequently investigate this mechanism during the project second phase. For this purpose, we will examine what exactly lies behind both the negative and the positive components of attitudes. One could imagine that these two components are made of very different thoughts and beliefs and consequently influence attitudes through different

processes. For instance, it could be assumed that negative attitudes are generally more concrete whereas positive attitudes would be more abstract, or that negative attitudes would refer to direct and short-term consequences on the individual him/herself, whereas positive attitudes would refer to long-term consequences on strangers.
Furthermore, we will investigate the possibility to alter people's attitudinal ambivalence. As we know that attitudinal ambivalence negatively influences sustainable behaviors, we will try to know whether marketing messages could reduce or increase ambivalence and what would be the consequences on individuals targeted by these messages. The negative impact of ambivalence on behaviors could imply that marketing messages have to necessarily target both positive and negative attitudes at the same time. Targeting only one component of attitudes could increase ambivalence and consequently have a negative impact on behaviors. We will test these assumptions in a last set of studies on ambivalence.

Second, our results indicated that feelings of guilt are strongly related to the intentions to behave environmentally-friendly. Furthermore, it seems that vicarious and collective guilt are more successful in triggering sustainable behaviors than own guilt. Additionally, we showed that tools such as the Ecological Footprint measure could be used in a dynamic and efficient way to influence people's intentions and behaviors. The type of message we used in our studies would be very easy to use in an actual social marketing campaign and thus our results are very promising in terms of new marketing tools and strategy designing. We will investigate this possibility more deeply during the project second phase.
Our results also indicated that the perceived control people have on sustainable behaviors is an antecedent of guilt feelings. In other words, the more people feel they can control their impact on environment, the more they feel guilty when someone they are connected to fails to behave environmentally-friendly, and the more they will perform sustainable behaviors to repair for this other person's "bad" behavior. This means that guilt feelings and, as a consequence, sustainable behaviors could also be influenced through an indirect way, by targeting people's perception of control. During the project second phase, we will thus try to know whether targeting people's perceived control could make marketing campaigns more successful.
Furthermore we will try to better differentiate between vicarious and collective emotions. Finally, we will focus on actual behaviors such as, for instance, driving behaviors.

Third and finally, our results show the importance of infrastructural parameters at the community level in at least facilitating people's behavior, but probably even making people aware of the available alternatives for eco-unfriendly behavior. Based on data from EFP-

campaigns, the preliminary fitted models reveal that, next to socio-demographic differences, infrastructural parameters of one's home community significantly predict differences in self-reported ecological behavior. The potential applications of these results for policy makers are numerous, but further improvements to the models in terms of data input and model sophistication could yield even more pronounced results.

II.3 Objective C

The project third objective is developing and assessing marketing techniques and recommendations that could be applied in various real settings. As this objective is mainly based on the results obtained during the project first phase, it will be developed during the project second phase. We will work both on the fundamental and applied sides in order to develop marketing techniques that could be used in environmental campaigns.
During phase 1, a first pilot study has focused on the framing of ecological message. We compared the impact of a message developing short-term personal consequences of sustainable behaviors to a message developing their long-term consequences on strangers. Although this first study results are not significant, they gave interesting indications that led us to design a follow-up study.

Study 13: Framing of the message

Method

Participants
Unfortunately, only 61 students from a teachers' training college participated in the experiment, instead of the 120 foreseen. This was due to problems encountered by the experimenter.
Procedure and material
In the 3 conditions, participants were told that the study was a simulation of a job hiring test. They first read an article that was either neutral, either pro-ecological with arguments explaining that ecology is good for us and our relatives, now; or pro-ecological with arguments explaining that ecology is good for future generations, especially in developing countries. Then participants were tested on their memory of the text content. After having completed a filler task, they were presented with 5 cars varying according to various criteria, including the CO2 they reject, and they had to indicate which one they would prefer as a company car. Then their willingness to replace the car with a free public transportation pass was assessed. Finally, they evaluated how

important they considered 15 improvements that could be made at their alleged office. Amongst these improvements, 8 were ecological ones. Then they completed a questionnaire assessing their attitudes about ecology.
Finally, they were debriefed and thanked

Results

Results did not reach significance, but revealed some interesting indications. First, it seems that the framing of the message, developing either short-term personal consequences of sustainable behaviors or long-term consequences of these behaviors on strangers, may indeed have an impact on the choice of the car and on the willingness to use public transportation. Second, it seems that the results vary according to gender: women seem to be more sensitive than men to a "short-term personal consequences" frame, and men seem to be more sensitive to a "long-term consequences on strangers" frame. This pattern matches some results about gender difference in helping behaviors.
A second study correcting for the sampling problem is currently run with a working population. This study also assesses the effect of the framing on behavioral intentions.

III. GENERAL CONCLUSION AND RECOMMENDATIONS

During this project first phase, we made several interesting findings that could help to better understand the processes leading to sustainable behaviors and consequently be helpful to create social marketing campaigns.

First of all, we highlighted the importance of attitudes structure. Our results indicated that the overall (positive or negative) attitude is not sufficient to predict sustainable behaviors. The ambivalent nature of attitudes strongly influences people's intentions and behaviors. It first means that attitudes of opposed valences can coexist. Second, it means that simply delivering a message aimed at improving positive attitudes toward sustainability might reveal ineffective if people already hold a strong negative attitude. It might be important that social marketing messages target both positive and negative attitudes at the same time. However, it is still unknown if these messages could alter attitudinal ambivalence. That is, we do not know yet if and how ambivalence could be reduced. Moreover, we do not know exactly how ambivalence exerts its impact on behaviors. These questions will be investigated during the project second phase.

Our results also highlighted the impact of moral emotions on sustainable behaviors. Vicarious and collective guilt were shown to lead to the intentions to behave environmentally-friendly. We thus think that guilt feelings could be used in social marketing campaigns as a successful lever to trigger sustainable behaviors. Furthermore we demonstrated that guilt feelings can be induced in order to lead people to environmentally-friendly behaviors. Three of our studies used for this purpose the Ecological Footprint measure. We induced guilt by the mean of a simple feedback given after the completion of the EF questionnaire. These studies are very interesting as they show that the way a message is formulated is sufficient to elicit very specific emotions and to lead to more sustainable behaviors. Furthermore, this type of emotion induction would be very easy to use in marketing campaigns.

Also, social marketing messages may as well target the antecedents of moral emotions rather than guilt itself. One of our studies indicated that the perceived control people have on ecology and sustainable behaviors is an antecedent of guilt. Consequently, the more people think they have a kind of control, the more they are likely to feel vicarious (or collective) guilt and the more they will intend to behave environmentally-friendly.

Furthermore, we showed that accountability, which is close to a feeling of control, has a negative impact on attitudinal ambivalence. The more people feel accountable for their behaviors, the less they are ambivalent and the more they behave environmentally-friendly.

Together, these results indicate that the control people think they have on ecology and sustainable behavior is an important variable and can either facilitate or prevent sustainable behaviors. This finding can have interesting consequences for social marketing campaigns. That is, they could target this feeling of control in order to trigger sustainable behaviors.

Another interesting finding concerns the representation people have of sustainable behaviors. Our results indicated two large categories of behaviors. The first one was mainly related to decisional processes such as, for instance, consumer choices. These behaviors implied a lower level of control and could easily be automated. The second category seemed to imply regulation processes and included behaviors demanding a higher level of control and requiring greater efforts. It is likely that these two types of behaviors are influenced by different variables. For instance, behaviors from the first category could be more sensitive to guilt feelings, whereas behaviors in the second category could be more easily influenced by the ambivalence of the attitude… Or the opposite. Before answering this question, we first have to understand what the difference between these two categories is. We will examine this question during the project second phase.

Finally, we show that facilities at the community level not only can facilitate people's choice in favour of the sustainable option, our results indicate that differences in terms of these parameters might even have their effects in terms of a generalized raised awareness about sustainability issues. In phase two of the project, we will further develop this model and work towards a translation of the results into a decision support tool for policy makers.

IV. PROJECT SECOND PHASE

Phase 2 mainly focuses on the objective C, developing and assessing original social marketing communications, and on the objective D, communicating about our research and disseminating our findings.

We intend to develop social marketing techniques and recommendations (for practitioners and politics deciders) that could be applied in different settings. For this purpose, we will work on both the fundamental and the applied sides. On the fundamental side, we will use controlled settings in order to delineate precisely the effects of the variables identified in phase 1 and the conditions of apparition of these effects. For instance, we will test several ways of inducing moral emotions (mainly vicarious / collective guilt, as phase 1 results indicated that this emotion had a strong impact on sustainable intentions and behaviors) and their effects on different types of behaviors. We will also test several strategies (based on phase 1 results) aiming at reducing attitudinal ambivalence toward sustainable consumption. We will also examine more deeply the possibilities to use the Ecological Footprint as a dynamic tool.

We will also try to replicate and generalize our findings with different populations. We will include social classes, age, job functions, community characteristics and so on as moderators of our findings. The project second phase will include a large scale survey in order to examine the link between sustainable behaviors, the variables highlighted in phase 1 and some other variables such as for instance socio-demographic variables.

The results obtained in phase 1 and also from the fundamental side of objective C will be used to create and develop new ecological marketing techniques in representative samples of the population.

We will also summarize our findings in order to provide clear recommendations and tools to practitioners and politics decision makers.

The last but very important objective of this project is the communication about our research and results. We intend to publish our results in top international journals. The beginning of phase 2 will be used to reach this objective. The results of objective C research will also be published in both scientific journals and documents targeting a practitioner audience. Finally, these results will be presented in meetings and workshops on sustainable consumption/behaviors.