



ELSEVIER



CrossMark

Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 143 (2014) 1200 – 1209

Procedia
Social and Behavioral Sciences

CY-ICER 2014

Understanding High School Students' Attitude, Social Norm, Perceived Control and Beliefs to Develop Educational Interventions on Sustainable Development

Astrid de Leeuw ^a*, Pierre Valois ^b, Rita Seixas ^a^aUniversity of Luxembourg, EMACS, Route de Diekirch, L-7201 Walferdange, Luxembourg^bUniversity Laval, Faculté d'éducation, 2320 rue des bibliothèques, Québec G1V 0A6, Canada

Abstract

Education for sustainable development (ESD) is crucial to enhance or change students' ways of thinking and acting in order to create a viable future for all. The present study investigates beliefs of high school students, which might be important to consider when developing an ESD intervention. Two hundred and twelve students participated. Results of multiple regression and correlational analysis reveal that different processes underlie students' intention to engage in environmentally sustainable behaviours, as compared to their intention to perform socially sustainable behaviours. Reasons and ways to consider these divergences when planning an ESD intervention will be discussed.

© 2014 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

Peer-review under responsibility of the Organizing Committee of CY-ICER 2014.

Keywords: Theory of planned behaviour, beliefs, education for sustainable development, high-school students

1. Introduction

Sustainable development (SD) is a great challenge for all mankind to guarantee a viable future and can be defined as a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission, 1987). Sustainable education is believed to be crucial to increase the understanding of the global community about sustainability (Collier, 2004; Sterling, 2009). The United Nations (2002) recognised the importance of the role of education and declared the time period 2005 to 2014 as the decade of education for SD. However, to be successful, education for SD needs to embrace the holistic notion of ecological responsibility, peace and social justice (Bajaj & Chiu, 2009), and teachers worldwide need to

* Astrid de Leeuw . Tel.: +352-466-644-9625
E-mail address: astrid.deleeuw@uni.lu

recognise that the simple transmission of knowledge is not enough (Sterling, 2009). In this regard, studies indicate that the possession of accurate information is not a guarantee of wise judgements (Sheeran & Taylor, 1999) and seems often quite irrelevant to decision making (Ajzen, Joyce, Sheikh, & Cote, 2011). However, the role of attitudes, social norms and perceived control over the behaviour, as defined by the theory of planned behaviour (TPB, Ajzen, 2001), have proven to be successful in studies conducted to understand various types of behaviours related to sustainability, including travel mode choice (Bamberg, Ajzen, & Schmidt, 2003), household recycling (Kaiser & Guter, 2003), waste composting (Mannetti, Pierro, & Livi, 2004), general pro-environmental behaviour (Bamberg & Möser, 2007), volunteering behaviour (Greenslade & White, 2005), buying fair-trade products (de Leeuw, Valois, & Houssemand, 2011) and charitable giving (Schmit & McSweeney, 2007; van der Linden, 2011). Consequently, the current research focuses on the TPB and tries to explain why high-school students might intend to behave sustainably.

1.1. The theory of planned behaviour (TPB)

According to the TPB (see Figure 1), one's intention to adopt sustainable behaviours (SB) should increase to the extent that he/she (a) has favourable attitudes towards SB, (b) perceives to have control over the adoption of SB, (c) thinks that important others are supportive of it (i.e. injunctive norm) and (d) engage themselves in SB (i.e. descriptive norm). Attitudes towards a behaviour are assumed to be based on behavioural beliefs, which are a person's beliefs about the likely consequences of performing the given behaviour (Ajzen, 1991, 2005). When high-school students believe that behaving in a sustainable manner produces mainly positive outcomes, their attitude towards this behaviour will be favourable. Conversely, if they believe that behaving sustainably has mainly negative consequences, attitudes will be unfavourable. Similarly, injunctive norms are based on beliefs what particular referents (e.g. parents, teacher, close friends, etc.) think the person ought to do, and descriptive norms are based on beliefs of what these particular referents themselves do (Rivis & Sheeran, 2003). Finally, the overall level of perceived control depends upon control beliefs, that is perceived beliefs about the presence of factors that can facilitate or impede performance of sustainable behaviour. Once the beliefs of a population of interest are assessed, it is possible to support them, challenge the beliefs or to provide the population with information that leads to the formation of beliefs supportive of the desired behaviour (Ajzen et al., 2011).

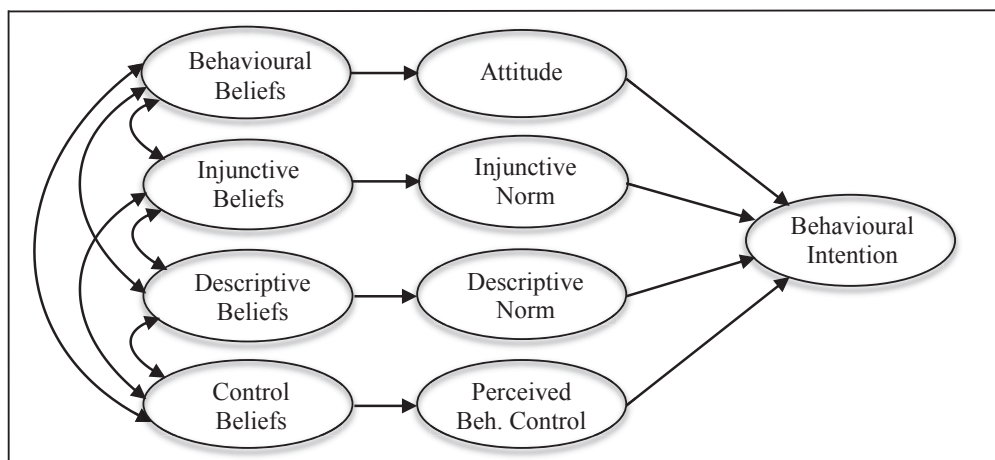


Figure 1. The theory of planned behaviour

1.2. Hypotheses of the study

Based on the principals of the TPB model, in the present study it was hypothesised that attitude, injunctive norm, descriptive norm and perceived control predict intention to engage sustainably. More specifically, it was hypothesised that these variables explain the intention of high-school students to behave in environmentally sustainable (e.g. recycling, shutting down electronic devices when not in use) and socially sustainable ways (e.g. buying fair-trade products, donating clothes, toys or money). In addition, the study explored the underpinnings of the three major predictors in the TPB, i.e. behavioural, normative (i.e. injunctive and descriptive) and control beliefs, as suggested by Fraser, Ajzen, Johnson, Hebert and Chan (2011). In order to analyse the importance of each specific belief, the behavioural, normative and control beliefs were correlated with intention. The stronger the association, the more relevant a belief was argued to be, to understand the intention to adopt SB.

2. Pilot study

Two questionnaires on behavioural intention and their determinants were developed to fulfil the aims of the main study: one questionnaire with the aim to understand the intention to behave environmentally sustainable (Questionnaire A) and one questionnaire seeking to clarify why high-school students may intend to behave socially sustainable, (Questionnaire B). According to the TPB, the identification of the salient beliefs is essential to assure that they are representatives of the target population. In this regard, as recommended by Ajzen and Fishbein (1980), in a pilot study, two open-ended questionnaires were administered to the high-school students to determine the most salient beliefs related to performing environmentally and socially sustainable behaviours, respectively. More precisely, each questionnaire contained examples of corresponding behaviours followed by open-ended questions asking students to indicate (a) perceived advantages and disadvantages of performing these behaviours during the next year, (b) perceived facilitators or barriers to conducting the behaviours and (c) persons or groups of people who could encourage or discourage them to perform these behaviours in the next year. The pilot questionnaires were administered to a sample of 176 secondary students (82 females, 94 males; age range 13-16, $M = 14.03$, $SD = 0.70$). One subgroup of 84 participants answered questions related to adopting the socially sustainable behaviours (41 females, 43 males, age range 13-16; $M = 14.04$, $SD = 0.67$), while the other 92 participants answered questions related to performing the environmentally sustainable behaviours (41 females, 51 males; age range 13-16, $M = 14.02$, $SD = 0.73$). The questionnaires were administered at eight different high-schools from all over Luxembourg. The adolescents answered the questions in class in the presence of the teacher and the researchers. A content analysis of the responses allowed the determination of the most salient beliefs. To increase the validity of the content analysis, two independent researchers examined the responses given by the participants. Spearman's rank correlation coefficient (ρ) and intraclass correlation coefficient (ICC, one-way average random measures model) were used to verify whether the two researchers ranked the elicited beliefs similarly and whether the degree of agreement between them on the frequencies obtained for each elicited belief is acceptable, respectively. The results showed that the two researchers agreed on the most frequently elicited advantages of adopting environmentally sustainable behaviours (Spearman's $\rho = .92$, $p < .001$; ICC = .99, $p < .001$) and adopting socially sustainable behaviours (Spearman's $\rho = .96$, $p < .001$; ICC = .93, $p < .001$), the most frequently elicited disadvantages of adopting environmentally sustainable behaviours (Spearman's $\rho = .79$, $p < .01$; ICC = .80, $p < .01$) and adopting socially sustainable behaviours (Spearman's $\rho = .99$, $p < .001$; ICC = .97, $p < .0001$), and the most important people or groups of people (environmentally sustainable behaviours: Spearman's $\rho = .99$, $p < .05$; ICC = .96, $p < .001$; socially sustainable behaviours: Spearman's $\rho = .99$, $p < .05$; ICC = .99, $p < .001$). Moreover they agreed on the most frequently elicited facilitators (environmentally sustainable behaviours: Spearman's $\rho = .81$, $p < .05$; ICC = .78, $p < .05$; socially sustainable behaviours: Spearman's $\rho = .84$, $p < .05$; ICC = .88, $p < .01$) and barriers (environmentally sustainable behaviours: Spearman's $\rho = .81$, $p < .05$; ICC = .88, $p < .01$; socially sustainable behaviours: Spearman's $\rho = .98$, $p < .001$; ICC = .99, $p < .001$). Those beliefs that were elicited most frequently were used as the basis for the quantitative measures of beliefs (i.e. attitudinal, normative and control beliefs) in the main study.

3. Main study

3.1. Participants

Two hundred and twelve high-school students participated in the main study (107 females and 105 males, mean age = 14.29 years, $SD = .875$ years). One subgroup of 106 participants answered the questionnaire related to adopting the environmentally sustainable behaviours (Questionnaire A; 55 females, 51 males, age range 12-16; $M = 14.25$, $SD = 0.77$), while another subgroup of 102 participants answered questions related to performing the socially sustainable behaviours (Questionnaire B; 50 females, 52 males; age range 13-17, $M = 14.33$, $SD = 0.97$). The questionnaires were administered at 6 different high-schools from all over Luxembourg. As for the pilot study, the adolescents answered the questions in class in the presence of the teachers and researchers. In each class, the two final questionnaires were administered randomly to the students.

3.2. Questionnaire

The questionnaires (A and B) administered to the students were designed to assess the constructs in the theory of planned behaviour. Table 1 shows the means, standard deviations and Cronbach's alpha coefficients for attitude, injunctive norm, descriptive norm, perceived behavioural control and the behavioural intention constructs (i.e. proximal measures; see Figure 1). The means, standard deviations and Cronbach's alpha for the beliefs will not be reported, as the beliefs will not be considered as a scale, but the correlation of each specific belief with intention will be examined separately.

3.2.1. Intentions to behave sustainably

The intention to perform environmentally sustainable behaviours and socially sustainable behaviours were evaluated using three items in each of the questionnaires. Sample items are "I want to perform environmentally sustainable behaviours on a regular basis during the next year" or "I will perform socially sustainable behaviours on a regular basis during the next year". The response alternatives ranged from *no, not at all* to *yes, really* on a 6-point scale.

3.2.2. Attitude

In each questionnaire, attitude was assessed by seven 6-point semantic differential scales. For instance, "For me, performing socially sustainable behaviours on a regular basis during the next year will be..." or "For me, performing environmentally sustainable behaviours on a regular basis during the next year will be..." (a) *useless-useful*; (b) *annoying-pleasant*; (c) *uncool-cool*.

3.2.3. Injunctive norm

To assess the injunctive norm in each of the two questionnaires, the participants were asked to answer three questions and indicated their response on a 6-point scale ranging from *no, not at all* to *yes, really*. A sample item is "In general, people I admire think that I should perform environmentally sustainable behaviours on a regular basis during the next year".

3.2.4. Descriptive norm

Descriptive norm was measured by three items in each questionnaire. The students were asked to indicate their response on a 6-point scale ranging from *no, not at all* to *yes, really*. A sample item is "People who are important to

me will themselves perform environmentally (socially in Questionnaire B) sustainable behaviours on a regular basis during the next year.”

3.2.5. *Perceived behavioural control (PBC)*

Two items were used in each questionnaire to measure the PBC. For example, the participants were asked to rate the following item on a 6-point scale ranging from *very difficult* to *very easy*: “For me, to perform socially (environmentally in Questionnaire A) sustainable behaviours on a regular basis during the next year, will be...”

3.2.6. *Behavioural beliefs*

Belief about the consequences related to the each of the two types of behaviours of interest have been measured using a 6-point bipolar scale, ranging from *no not at all* to *yes really*. Following the stem, “If I adopt some of these environmentally sustainable behaviours on a regular basis during the next year, I think the following things would happen”, 12 items were presented including, for example, the advantage “I would help to protect nature” and the disadvantage “it would reduce my quality of life”. Following the same question relating to socially sustainable behaviours, 12 items were presented including, for example, the advantage “I would help certain people to have a more normal life” and the disadvantage “the money I would donate would not be used for a good purpose”.

3.2.7. *Injunctive beliefs*

Following the stem “The following people think that I should perform environmentally sustainable behaviours on a regular basis during the next year”, students indicated their opinion, for each of the 8 reference persons or groups of people (e.g. your family), on a 6-point scale ranging from *no, not at all* to *yes, really*. The same question relating to each reference person or group considering the socially sustainable behaviours was asked in Questionnaire B.

3.2.8. *Descriptive beliefs*

Following the stem “The following people will themselves perform socially sustainable behaviours on a regular basis during the next year”, students indicated their opinion, for each of the 8 reference persons or groups of people (e.g. fair-trade or human rights organisations), on a 6-point scale ranging from *no, not at all* to *yes, really*. The same question relating to each reference person or group considering the environmentally sustainable behaviours was asked in Questionnaire A.

3.2.9. *Control beliefs*

Beliefs about the factors that can facilitate or impede the performance of each of the two types of behaviours of interest were measured using a 6-point bipolar scale, ranging from *no, not at all* to *yes, really*. In the questionnaire on socially sustainable behaviours, the stem “The following situations would motivate me to perform socially sustainable behaviours on a regular basis during the next year” was followed by 4 items (i.e. perception of facilitating factors), as for instance: “If I would receive more explanations and examples of socially sustainable behaviours at school”. Similarly, after the stem “The following situations would hinder me from performing socially sustainable behaviours on a regular basis during the next year”, 5 items (i.e. perception of factors that can impede the performance) were presented, as for example: “I don’t have enough of my own money to donate.” In the context of Questionnaire A, referring to environmentally sustainable behaviours, the stem about the situations that would motivate the students, and the stem about the situations that would hinder them to perform environmentally sustainable behaviours, were both followed by 6 items, including “If there would be more ecological products

available in the shops and the school canteen” as a facilitator, and “In my high-school, recycling bins are missing (e.g. one bin for glass, one for plastic, and one for paper)” as a barrier.

4. Results

4.1. Multiple regression analyses

Two multiple regression analyses were performed to test whether attitude, injunctive norm, descriptive norm and perceived behaviour control predict high school students’ intention to engage in (a) environmentally and (b) socially sustainable behaviours. The regression coefficients as well as the amount of explained variance are presented in Table 1. The results suggest that the students’ intention to adopt environmentally sustainable behaviours is a positive function of their perceived control over the behaviour ($\beta = .46, p < .01$), their perceived descriptive norms ($\beta = .27, p < .05$) and their attitude towards these behaviours ($\beta = .18, p < .05$). Overall, the model accounted for 59% of the variance in their intention to perform environmentally sustainable behaviours as compared to 52% of the variance in their intention to perform socially sustainable behaviours. The latter intention is found to be a positive function of their perceived control over the behaviour ($\beta = .36, p < .01$) and their perceived injunctive norm ($\beta = .29, p < .05$).

Table 1. Results from the regression analyses for the explanation of intentions

	<i>M</i>	<i>SD</i>	α	β	R ²
Environmentally sustainable behaviours					
Behavioural Intention	3.96	0.89	.80		.59
Attitude	3.94	0.92	.89	.18*	
Injunctive Norm	4.00	1.22	.89	.03	
Descriptive Norm	3.81	1.15	.92	.27*	
PBC	4.12	0.92	.69	.46**	
Socially sustainable behaviours					
Behavioural Intention	3.69	0.85	.87		.52
Attitude	4.13	0.62	.71	.15 ^a	
Injunctive Norm	4.01	0.99	.78	.29*	
Descriptive Norm	3.79	1.01	.87	.10	
PBC	3.86	0.86	.60	.36**	

^a $p = .085$, * $p < .05$, ** $p < .01$.

4.2. Behavioural beliefs – intention correlations

When explaining students’ intentions to adopt environmentally sustainable behaviours, attitudes had a small but significant influence (see Table 1). Although the relative influence of perceived control on intentions was more important than attitude, the examination of specific behavioural beliefs revealed that all 12 salient behavioural beliefs identified in the pilot study had significant correlations with intention. As can be seen in Table 2, the following beliefs were most highly correlated with intentions: performing the behaviours did not take too much of their time and were not annoying. Other strong associations are related to helping to protect nature and to contribute to the survival of human beings.

When explaining students’ intentions to adopt socially sustainable behaviours, attitudes had no significant influence. A closer examination of the behavioural beliefs related to this type of behaviours revealed that only one belief had a significant correlation with intention, that is, by performing these behaviours they would help certain

people to have a more normal life, as for example to give some children in poorer countries the opportunity to visit a school ($r = .28$; $p < .01$).

4.3. Social beliefs – intention correlations

When analysing the beliefs behind the perceived social pressure (i.e. perceived descriptive norm for environmentally sustainable behaviours and perceived injunctive norm socially sustainable behaviours; see Table 1), it seems that behaviours of the father ($r = .28$; $p < .01$), the mother ($r = .32$; $p < .01$), the family in general ($r = .29$; $p < .01$) and the friends ($r = .44$; $p < .01$) are significantly related to the intention to perform environmentally sustainable behaviours. Regarding the students' intention to conduct socially sustainable behaviours, the same persons seem to be important, but it is their opinion (injunctive norm) and not their behaviour (descriptive norm) that is related to the intention. More specifically, the opinions of their parents ($r = .43$; $p < .01$; father, $r = .30$; $p < .01$), their family ($r = .35$; $p < .01$) and their friends ($r = .33$; $p < .01$) are strongly related to their intention to adopt socially sustainable behaviours.

Table 2. Environmental behaviours: Correlations between behavioural beliefs and intention (INT)

Behavioural belief	<i>M</i>	<i>SD</i>	<i>r with INT</i>
1. I would save water	4.50	1.31	.39**
2. I would help to protect animals	4.15	1.25	.31**
3. I would save energy	4.54	1.17	.32**
4. I would think that it makes no sense to perform these behaviours, because not enough people are behaving this way (in other words: nothing would change)	3.37	1.38	-.21*
5. I would help to protect our natural environment	4.39	1.14	.44**
6. I would help to keep our planet clean	4.49	1.10	.36**
7. It would take too much of my time	3.75	1.39	-.42**
8. I would help to protect the trees	4.05	1.28	.32**
9. It would be annoying to me	3.70	1.49	-.44**
10. It would decrease my quality of life	4.50	1.30	-.24*
11. I would help to ensure the survival of human beings	4.25	1.21	.43**
12. I would help my parents to save money	4.69	1.26	.23*

* $p < .05$, ** $p < .01$.

4.4. Control beliefs – intention correlations

Results show that the PBC construct has the highest regression coefficients among the TPB constructs when predicting both types of behaviours (see Table 1). This variable seems thus crucial to understand why students may intend to adopt environmentally and socially sustainable behaviours. The significantly related control beliefs for both behaviours are reported in Table 3. The two facilitating factors most strongly related to the students' intention to perform environmentally sustainable behaviours are the following: if interesting documentaries, movies and articles about our natural environment would exist that would be adapted for teenagers of their age ($r = .44$; $p < .01$) and if the ecological products would be easier to identify ($r = .39$; $p < .01$). The barrier that is significantly negatively related to the intention to perform environmentally sustainable behaviours is that nobody has taught them to perform these behaviours ($r = -.29$; $p < .01$).

Table 3. Correlations between control beliefs (Facilitators, F; Barriers, B) and intention (INT)

	<i>M</i>	<i>SD</i>	<i>r with INT</i>
Environmental control beliefs			
F1. If my parents would show me our electricity and water bills	4.09	1.25	.23*
F2. If I would get explanations and examples of environmentally sustainable behaviours at school	3.82	1.29	.30**
F3. If there were more ecological products available in the shops and school canteens	4.01	1.34	.29**
F4. If there were stickers, boards and voice guides, that would specify which behaviours	3.65	1.35	.29**

one has to perform and how			
F5. If interesting documentaries, movies and articles about the natural environment would exist, that would be adapted for teenagers of my age	4.22	1.21	.44**
F6. If the ecological products would be easier to identify	4.30	1.29	.39**
B1. Nobody has taught me how to perform these behaviours	3.04	1.51	-.29**
Social control beliefs			
F1. If I would get explanations and examples of socially sustainable behaviours at school	4.14	1.00	.45**
F2. If fair-trade and human rights organisations would organise informative meetings to which I would easily have access	4.02	1.12	.40**
F3. If every month a part of my money (e.g. 5€) would automatically be deducted for a good cause	3.84	1.37	.27**
F4. If movies or documentaries would exist that would show me how fair-trade products are produced	3.92	1.22	.30**
B4. I do not have enough money to donate	3.41	1.39	-.29**
B5. The fair-trade products are too expensive for me	3.13	1.40	-.27**

* $p < .05$, ** $p < .01$.

When considering the students' intention to perform socially sustainable behaviours, the facilitating factors most strongly associated with this intention and that would consequently make it easier for them to perform these types of behaviours are: if they would be provided with explanations and examples of socially sustainable behaviours at school ($r = .45$; $p < .01$) and if fair-trade and human rights organisations would organise informative meetings to which they would easily have access ($r = .40$; $p < .01$). The two barriers that are significantly negatively related to their intention, and that thus seem to hinder them to perform socially sustainable behaviours are that they estimate that they do not have enough money to donate ($r = -.29$; $p < .01$) and that fair-trade products are too expensive for them ($r = -.27$; $p < .01$).

5. Discussion

Using the TPB, we were able to explain 59% of the intention of students to perform environmentally sustainable behaviours such as sorting their garbage into the correct recycling bin and 52% of their intention to conduct socially sustainable behaviours such as donating money or clothes for a humanitarian cause. For both types of behaviours it is their sense of control to perform them that seems most determining. In other words, the more the students will have a feeling of control over the adoption of sustainable behaviours, the more likely they will show the intention to perform them. This result implies that educational interventions should target especially this control factor. According to Ajzen (1991), beliefs are the ultimate psychological determinants of intentions and behaviours. As a consequence, to design interventions to alter the intentions of students, one needs to know which salient beliefs are associated with their intention (French & Cooke, 2012). Analysing the control beliefs more specifically indicates that to encourage students to adopt environmentally sustainable behaviours, teachers and social psychologists should consider including interesting documentaries, movies and articles about the natural environment into their educational interventions and that these should be appropriate for teenagers. Moreover, the students report that nobody has taught them to perform environmentally sustainable behaviours and that obtaining examples and explanations about these behaviours at school would encourage them to adopt the behaviours in question. Other control beliefs that were strongly related to their intention were that ecological products should be easier to identify and that there should be more of them available in the shops and school canteens. In this regard, teachers could provide the students with information about the different labels that exist, for instance, what they look like and where students can buy the products in question. Regarding the socially sustainable behaviours, the control beliefs that had the strongest relations with intention were those referring to a lack of information and resources. Just as for the environmental behaviours, students claimed that receiving more examples and explanations at school would help them to adopt more socially sustainable behaviours. Moreover, information sessions organised by fair-trade or human rights organisations, cheaper fair-trade products and more money to donate seem to be a determining factor when encouraging the youngsters to adopt more socially sustainable behaviours. In this sense, schools could organise information sessions with invitees from different humanitarian organisations, and educational interventions

should explain the aims of fair-trade products and why these comestibles are generally more expensive than regularly produced and imported products. In addition, educational efforts by teachers or social psychologists to alter the intention of students to perform socially sustainable behaviours should try to include the family, parents and friends as far as possible. The results of the current study indicate that if the student believes that the more these people approve of him or her performing these behaviours, the more he or she will show the intention to adopt them. In the context of environmentally sustainable behaviours, however, it seems that the positive opinions of their social surroundings are not sufficient. The injunctive norm measure is not significantly related to intention. Instead, it is the descriptive norm measure that is decisive for understanding the students' intention, which implies that they need to believe that the family, parents and friends themselves perform these behaviours, too. This divergence might be due to the fact that environmentally sustainable behaviours (e.g. waste separation, switching off electronic devices when they are not in use, and using both sides of a sheet of paper when writing, drawing or printing) are more frequently adopted by people than socially sustainable behaviours (e.g. donating money, buying fair-trade products and not engaging in any cultural or religious discrimination). It might be difficult or sometimes impossible to observe family and friends performing these socially sustainable behaviours on a regular basis. In this sense it is understandable that it is not the behaviour but the opinion of these persons that is the determining influence. Finally, the results of the present study indicate that educational interventions should also accentuate positive behavioural beliefs (e.g. it is important that the students believe that performing these behaviours is not annoying and does not take much of their time, and that by behaving in this manner, they help to protect the natural environment, to ensure the survival of human beings, to save water and to keep our planet clean). Considering the intention to perform socially sustainable behaviours, only one belief had a significant correlation with intention, notably that the students believe that by conducting these behaviours they will help certain people to have a more normal life. The current research supports the idea that the TPB can be used as a framework to produce interesting avenues for school-based interventions to promote sustainable behaviours in adolescents. Our results suggest that increasing the students' sense of control over the performance of environmentally and socially sustainable behaviours should be particularly associated with a higher intention of the youth to adopt them. The recommendations reported in the present study can be translated into practice and help teachers planning ESD interventions. Further research would be needed to test the efficacy of interventions based on the present results.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational and Human Decision Processes*, 50, 179-211. doi:10.1016/0749-5978(91)90020-T
- Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology*, 52, 27-58. doi:10.1146/annurev.psych.52.1.27
- Ajzen, I. (2005). *Attitudes, personality, and behavior* (2nd ed.). Milton-Keynes, England: Open University Press/McGraw- Hill.
- Ajzen, I., Joyce, N., Sheikh, S., & Gilbert Cote, N. (2011). Knowledge and the prediction of behavior: The role of information accuracy in the theory of planned behavior. *Basic and Applied Social Psychology*, 33, 101-117. doi:10.1080/01973533.2011.568834
- Bajaj, M., & Chiu, B. (2009). Education for sustainable development as peace education. *Peace & Change*, 34, 441-455.
- Bamberg, S., Ajzen, I., & Schmidt, P. (2003). Choice of travel mode in the theory of planned behavior: The roles of past behavior, habit, and reasoned action. *Basic and Applied Social Psychology*, 25, 175-188. doi:10.1207/S15324834BASP2503_01
- Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27, 14-25. doi:10.1016/j.jenvp.2006.12.002
- Brundtland, G. (Ed.). (1987). *Our common future: The world commission on environment and development*. Oxford: Oxford University Press.
- Collier, G. (2004). Reflections on sustainability: Questioning the knowing and the doing. *Geographical Education*, 17, 19-25.
- de Leeuw, A., Valois, P., & Houssemand, C. (2011). Predicting the intentions to buy fair-trade products: The role of attitude, social norm, perceived behavioral control, and moral norm. *OIDA International Journal of Sustainable Development*, 2, 77-84.
- Fraser, R. T., Johnson, K., Hebert, J., Ajzen, I., Copeland, J., Brown, P., & Chan, F. (2010). Understanding employers' hiring intentions in relation to qualified workers with disabilities: Preliminary findings. *Journal of Occupational Rehabilitation*, 20, 420-426. doi:10.1007/s10926-009-9220-1
- French, D. P., & Cooke, R. (2012). Using the theory of planned behaviour to understand binge drinking: The importance of beliefs for developing interventions. *British Journal of Health Psychology*, 17, 1-17. doi: 10.1111/j.2044-8287.2010.02010.x.
- Greenslade, J. H., & White, K. M. (2005). The prediction of above-average participation in volunteerism: A test of the theory of planned behavior and the volunteers functions inventory in older Australian adults. *The Journal of Social Psychology*, 145, 155-172. doi:10.3200/SOCP.145.2.155-172

- Kaiser, F. G., & Guter, H. (2003). The proposition of a general version of the theory of planned behaviour (TPB): Predicting ecological behaviour. *Journal of Applied Social Psychology*, 33, 586-603. doi:10.1111/j.1559-1816.2003.tb01914.x
- Mannetti, L., Pierro, A., & Livi, S. (2004). Recycling: Planned and self-expressive behaviour. *Journal of Environmental Psychology*, 24, 227-236. doi:10.1016/j.jenvp.2004.01.002
- Rivis, A., & Sheeran, P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology*, 22, 218-233. doi:10.1007/s12144-003-1018-2
- Sheeran, P., & Taylor, S. (1999). Predicting intentions to use condoms: A meta-analysis and comparison of the theories of reasoned action and planned behavior. *Journal of Applied Social Psychology*, 29, 1624-1675. doi:10.1111/j.1559-1816.1999.tb02045.x
- Smith, J. R., & McSweeney, A. (2007). Charitable giving: The effectiveness of a revised theory of planned behaviour model in predicting donating intentions and behaviour. *Journal of Community & Applied Social Psychology*, 17, 363- 386. doi:10.1002/casp.906
- Sterling, S. (2009). *Sustainable education: Re-visioning learning and change*. Bristol: Green Books.
- Van der Linden, S. (2011). Charitable intent: A moral or social construct? A revised theory of planned behavior model. *Current Psychology*, 30, 355-374.