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Pro-Environmentalists Behavioural Assessment Towards Energy Conservation Among Malaysian University Students

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Abstract: Pro-environmental are the key players in promoting environmental behaviour to the public. This behaviour covers several broader aspects, especially including energy-used behaviour. However, some career pro-environments ignore their behaviour towards the environment which has affected the public expectation towards them especially in terms of energy conservation. The past researcher believed that pro-environmental literacy should be taught from young ages, at least before they become teenagers or before they get a job placement in future. Therefore, this research was conducted on selected university students in Malaysia. Their knowledge and readiness for pro-environmental behaviour towards energy conservation are really important to ensure the sustainability of development, organization, and workplace. The objectives of this research are to identify the key drivers and pro-environmental barriers among students and to analyse the level of the influences of key drivers and barriers to pro-environmental behaviour levels. The quantitative method was used through the questionnaire with 102 sheets distributed to the students. Descriptive statistic and correlation analysis were used for analysing the data. Each student possesses all six of these categories. But what differentiates them is the level of their application in each category to the dependent variables. The results of the study found that the two categories (activist and avoider) are not too burdensome about energy-used behaviour compared to environmental behaviour. Furthermore, this study found that avoider is the least burdensome category of any behaviour while it is included in the PEB category.

Keywords: Pro-Environmentalists, Behavioural Assessment, Energy Conservation.

1. Introduction

Pro-environmental behaviour engages within the aspect of conserve and protects the natural environment (IPCC, 2013). These behaviours may either directly or indirectly improve the environment. It is either intentional or unintentional, on the condition that individuals often engage in behaviours that inadvertently benefit the natural environment. As an example, we ride a bicycle.

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Instead of having a healthy body, it also avoids the gas emissions produced when cars are driven (Gifford, 2014). Thanks to this broad definition of pro-environmental behaviour, actions that fit the definition range widely, from recycling and turning off lights to environmental activism (Gatersleben, 2012).

Changes in human behaviour are essential because efficiency is a key factor in ensuring quality behaviour (Midden, Kaiser, & McCalley, 2007). All changes in pro-environmental behaviour in physical and technical innovation will occur if the individual can accept and understand it well. Pro-environmental behaviour can also be influenced by internal factors such as environmental awareness, values and attitudes and external factors such as social norms, interactions with other individuals and financial constraints. Through this study, social norm factors were selected to achieve the objectives of the study. In theoretical preparation, the younger generation is at a higher risk of exposure to the environment or knowledge than adults. Environmental awareness needs to be applied from an early age so that they can practice love for the environment when entering the workforce.

Pro-environmental behaviour is referred to as behaviour to maintain the importance of environmental protection and protection and aims to protect the environment or a form of respect for a healthy environment (Krajhanzl, 2010; Anggereini, 2017). For example, increased awareness and concern for the environment may be due to advanced environmental knowledge, this may not be sufficient to encourage pro-environmental behaviour. It is said that not everyone sensitive and sensitive to environmental problems is also motivated to practice and behave in an environmentally friendly way (Krajhanzl, 2010). People may know what to do for the best possible environment, but that does not mean that they have the intention to do so.

Somerville (2011) reported that people including pro-environmental members in many countries do not have good information on climate change. Therefore, it is necessary to focus on public perceptions of climate science and environmental risks to find out what the current concept of climate change and global warming is, the reasons for the bad information happening and to find strategies to disseminate important information. In this problem, those who do not know are forgiven. Early awareness can be done to encourage them to imply environmental behaviour in daily tasks. This can be a big problem when pro-environments do not respond as they should. Pro-environmental ignorance causes environmental problems to become increasingly serious. Several research questions have been raised to find out what causes influence pro-environment to ignore environmental behaviour especially in the aspect of energy saving.

What does pro-environment do for energy saving? Based on a study by Clayton and Myers (2009), they finally proposed three broad categories of behaviours on energy saving: Curtailment, behavioural choices and technology choices. Each of these behaviours can be targeted for conservation efforts. Meanwhile, pro-environmental behaviour has been categorized by Stern (2000) with four classification categories as mentioned above. As research is conducted to assess the level of pro-environmental behaviour and environmental issues becoming more critical, research should be done among the younger generation to develop their awareness (Al-Naqbi & Alshannag, 2018).

Therefore, this research focuses on the assessment of the level of pro-environmental behaviour and the influence of environmental knowledge on pro-environmental behaviour among students. In the context of professional bodies, the study of pro-environmentalist levels is important for the improvement of their behaviour. Good behaviour ensures the continuous development of society. For students who have just graduated, these are additional skills observed by each company for employment that meets employment requirements. Therefore, to overcome the indifference of these environmental problems, community behaviour should contribute positively to the environment, one of which is by applying pro-environmental behaviour patterns (Hariyadi & Kurniawan, 2018) among students to creating early awareness.

2. Literature Review

Mesmer-Magnus *et al*. (2012) argued that pro-environmental behaviour has been defined as individual behaviour that contributes to environmental sustainability such as limiting energy consumption, avoiding waste, recycling, and environmental activism. This behaviour may be normal. However, it can help reduce the adverse effects on the environment. For example, by doing mass transit or participating in gatherings for environmental purposes. Some may be personal or private. Compost, for example, does not use air conditioning at home on hot days but takes other initiatives such as a fan or shower. The positive environmental behaviour that individuals engage in as part of their personal lives is a voluntary act rooted in their initiative. While the structure of society, such as having a public transportation system or recycling program in every city or place, can support or hinder pro-environmental behaviour, acting in a way that benefits from the environment eventually become its own.

According to Whitmarsh & O'Neill, (2010) they have shown that pro-environmental behaviour can be grouped or grouped in a way that reflects a common purpose between behaviours. For example, recycling, sorting, and purchasing products with fewer packaging can be combined as waste reduction behaviour. Analytical factors on self-reported behaviour and measures of behavioural intent indicate the existence of three factors: consumer or household behaviour, environmental citizenship behaviour (e.g. voting, writing letters to government officials), and policy support (Shove, 2011). One of the behaviours, activism, does not seem to influence any of the factors in the 1994 study and has been interpreted as a type of behaviour that is not dependent on the environment (Stern, 2000). As a result, the commonly used Stern (2000) classification system categorizes pro-environmental behaviour into four main categories; personal environmental environment, organizational environment, non-activist behaviour and environmental activism. Due to different behavioural categorization, related factors have been studied from different theoretical perspectives (Zorondo-Rodriguez *et al*, 2012). Besides, from the past research, there are varieties of environmental key driver and barrier have been collected since 1992-2010 that cause the behavioural changes. It consists of the organisation's market, external social environment, internal environment, regulation environment, and environmental concern/values.

Based on the study of Steg *et al*. (2012), there is a lot of empirical interest in pro-environmental behaviour i.e. behaviour performed by individuals who preserve and protect the natural environment. With pro-environmental behaviour, energy savings are deliberate actions to reduce energy consumption such as avoiding consumption, finding alternatives that require less energy, reducing reliance on cheaper and available resources, developing and using energy more efficiently using devices and processes (Hall and Hinman, 1983). The benefits of practising energy savings come in many forms. All of these include environmental benefits, economic benefits and social benefits. Viewed in terms of environmental benefits, better energy efficiency will slow down overall greenhouse gas production, prevent climate change and ensure a better and more comfortable environment. From an economic point of view, energy savings reduce energy bills, reduce the burden of companies paying unnecessary energy costs and slow down the country's movement to energy imported status. Social benefits include the sustainability of community development, the energy conflict that can be resolved between countries and the decline of nuclear proliferation and nuclear power plants. Having realized the importance of energy-saving and energy efficiency, it is very important to know the relevant methods to achieve the proper level. According to Wong (1997), there are two methods of saving energy - permanent change and technological operation. Fixed instrument-based technology such as using motion sensor control lights and air seals. On the other hand, operational change is a behavioural approach that requires a change in human behaviour using motivation, awareness and skill development. These two methods are not the same and require different paths to achieve. Sila *et al*. (1983) argued that energy-saving activities can be divided into two types: technology and management. In general, conservation categories include behaviours aimed

at avoiding waste and conserving resources. That is, conservation by reducing consumption, whether reuse, recycling, and resource reuse is the behavioural content of this category.

As above mentioned categories, the energy conservation behaviour is overlapping with some of the pro-environmental behaviour. Clayton and Myers (2009) proposed three broad categories of behaviours: Curtailment, behaviour choices and technology choices. Each of these behaviours can be targeted for the conservational efforts (refer Figure 1).

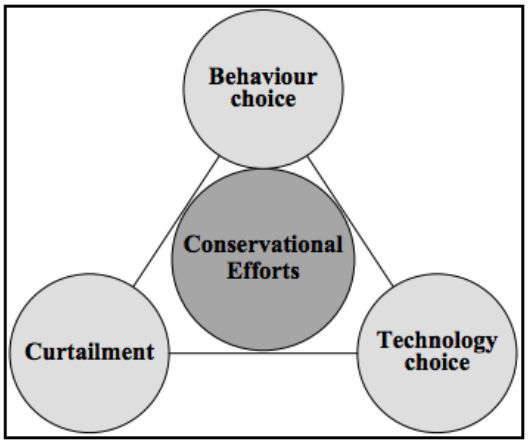

Figure 1: The overlapping of the conservation effort behaviour and pro-environmental behaviour (Clayton & Myers, 2009)

Curtailment behaviour is based on the idea that consuming less and reducing the use of equipment and energy benefits the environment. For example, the community continues to use reduced purchasing power by purchasing only one need, reducing energy consumption, and reducing water consumption. Self-restraint requires a strong change of habit in generally comfortable people and is therefore often seen as a personal sacrifice. According to Macdonald & She (2015), the category of behavioural choices involving decisions no longer includes doing or not, but how to do it. In this category, the focus is on not eating less than something. For example, it focuses on doing things differently, with fewer environmental effects. By supporting such behaviour, the same level of comfort and well-being that people normally wear can be maintained or extended.

The difference is the way people strive to achieve that level of well-being and comfort. For example, the uses of public transport, recycling, reuse and purchase of organic products. These concepts overlap with reduction, as the use of public transport can also be classified in the reduction behaviour which we can certainly reduce fuel consumption. Most behaviours cannot be properly classified into one category of behaviour. Finally, the technology selection category involves the purchase or use of technological innovations (such as hybrid cars, energy-efficient light bulbs and low current showers) that result in a reduction in human impact on the environment.
In conclusion, most behaviours cannot be categorized into a single category simply because they are interrelated. Each category only follows conceptual frameworks and theoretical frameworks to determine and analyse the degree of behaviour change tendency for a pro-environment. Some many interventions/strategies can be applied to encourage environmental behaviour between pro-environment and non-environmentalists.

3. Research Methodology

Two main stages of methodology are highlighted in this paper. The first stage was data collection for the study and focus on achieving the first research objectives - identifying the key drivers and barriers of pro-environmental among students. The second stage focused on analysing the level of the

influences of key drivers and barriers to the level of pro-environmental behaviour. Overview of the research methodology in Table 1.

During stage one, the data were collected through a survey involved 102 universities student. Questionnaires were used to elicit information regarding their pro-environmental behaviour. The questionnaires are divided into 3 parts, part A is details of the respondents, part B is question-related to objective 1 and part C is a question related to objective 2. Part B is to identify the key drivers and barriers of pro-environmental among students. Six variables were tested namely activist, avoider, green consumer, green passenger, recycler and utility saver. Descriptive statistic through frequency analysis was used for analysing the data.

Stage two focuses on analysing the level of the influences of key drivers and barriers to the level of pro-environmental behaviour. Gathered data in part B were analysed together with the data in part C (Energy – used behaviour and Environmental Behaviour). Correlation analysis was used to determine the level of influence.

Table 1: Research methodology overview

Objectives	Method	Variables	Tools	Expected Outcomes
1) To identify the key drivers and barriers of pro-environmental among students. 2) To analyse the level of the influences of key drivers and barriers to the level of pro-environmental behaviour.	Method: -Quantitative -102 replied questionnaires from 300 distributed email to the universities students by using Google form (1 month data collection)	Dependent variables -Energy-used behaviour -Environmental behaviour Independent variables -Activist -Avoider -Green Consumer -Green Passenger -Recycler -Utility Saver	Descriptive statistic & correlation analysis.	-Enable to identify the student's level based on their responses in questionnaires. -Enable to correlate the student's behaviour with their behavioural knowledge.

4. Results and Discussion

A total of 102 respondents are committed to answer the questionnaire. There are 17 males and 85 females with different educational backgrounds from different universities in Malaysia.

(a) Key Drivers and Barriers of Pro-Environmental

Table 2 shows the average student agreement and the percentage of students who are committed in every category of pro-environmental behaviour. There are different numbers of students who are interested in every category. It shows that the categories are key drivers and barriers to pro-environmentalist as they must have their passion for such things. It also shows that most of them know all pro-environmental behaviour categories.

Table 2: Average summary of respondent responses

Categories	Respondents			% of student agree
	Agree	Not sure	Disagree	
Activist	67	22	13	65.7
Avoider	81	12	9	79.4

Green Consumer	72	19	11	70.6
Green Passenger	83	14	5	81.4
Recycler	62	35	5	60.8
Utility Saver	75	17	10	73.5

(b) Influences of Key Drivers and Barriers to the Level of Pro-Environmental Behaviour

Student application in daily life is very important to ensure their true behaviour in the environment because, from the analysis in Part B, researchers realized the students know the environmental and energy-used behaviour. Figure 4.2a below shows the results of student application on environmental behaviour. There are a total of 16 students who are actively participating in environmental awareness programs and 5 students had never joined a program before. Meanwhile, 61and 19 students voted sometimes and rarely. For organizing an awareness program, 15 students are involved in organizing the program. 29 students voted as sometimes in the middle of active and passive. The rest are rarely or even never organizing a program before. For situation 3, students are asked if they have advised their friends about the pro-environmental attitude. Around 33 students actively advised their friends and 23 students passively advised their friends. For situation 4 it can be concluded that 78 students have never thrown away the waste everywhere. Meanwhile, 14 irresponsible students that throw away the waste everywhere which need some disciplinary action. For situation 5, 54 students which are the majority voted sometimes for using plastics or straws. For situation 6, 70 students are using a bicycle or walking to nearby places. For situation 7, around 81 students use public transport rather than their transportation. For situation 8, 65 students are frequently sharing a car or carpooling with their friends to go to someplace. For situation 9, 82 students are willing to dispose of the garbage according to the 3R category. For situation 10, 76 students are creatively re-innovated the goods- tins, bottles and glasses.

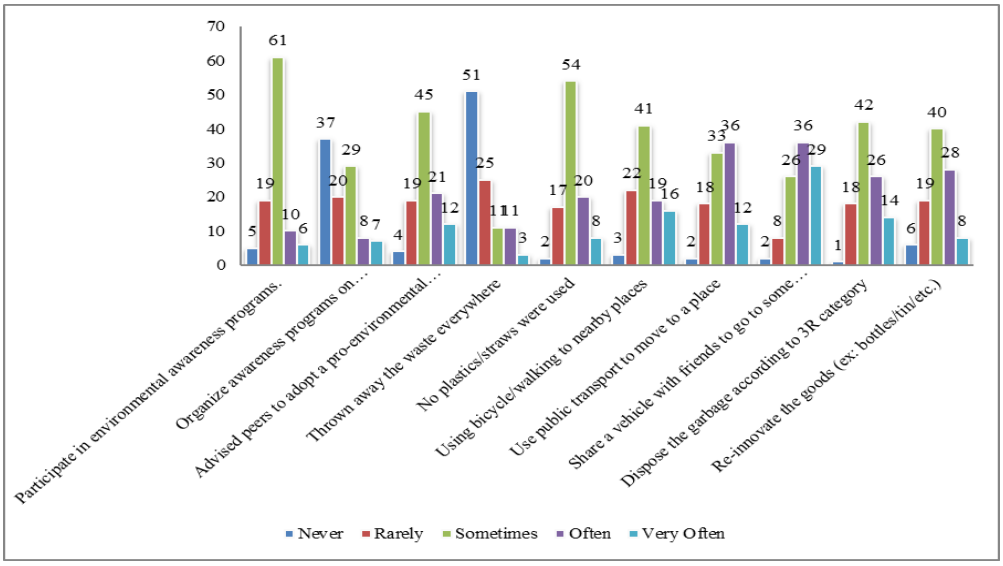

Figure 2: Students application on environmental behaviour

Figure 3 shows the results of student application on energy-used behaviour. For situation 1; 67 students frequently use standby mode when not using the computer or having breaks. Meanwhile, the rest students (34 students) are rarely or never use this method. For situation 2; around 42 students are often dimmer to reduce the amount of energy used. It shows that above 50% of the students rarely or never use/install the dimmer at their home. For situation 3; most of the students (90 students) cleared the heavy curtain from windows for natural light. For situation 4; 74 students replaced their regular lights with compact fluorescent lights. Meanwhile, the others are not. For situation 5; near to 100

which are 95 students are using electrical appliances with the SIRIM logo and the same goes for situation 6 where 89 students are using low flow taps, showers and commodities to reduce electrical waste at home.

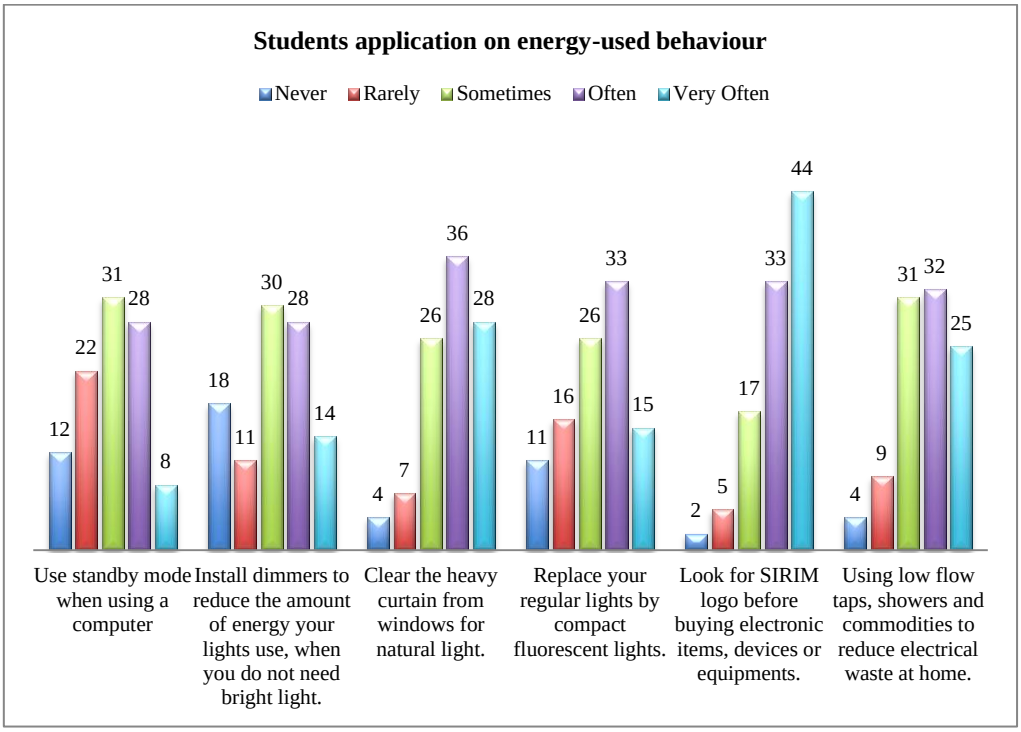

Figure 3: Students application on energy-used behaviour

Pearson's Correlation shows the strength of the reliable relationship between variables. The positive value creates a positive correlation between variables. The stronger the correlation between the variables because the value is near to zero but to ensure the effective correlation must have a p-value less than 0.05. It shows the statistically significant value and shows the evidence that existed in the variable's strength. In this research, energy-used and environmental behaviour are dependent variables. Meanwhile, activist, avoider, green consumer, green passenger, recycler and utility saver are independent variables. Pearson's correlation of energy-used and environmental behaviour is 1 which is perfectly a strong correlation. Pearson's correlation between the independent and dependent variables also shows the correlation strength (refer Table 3).

Energy-used behaviour, activist and avoider show the strength to each other as their Pearson' correlation values are 0.139 and 0.188 which are positive correlations. But both categories do show the statistical significance between the variables as the p-value is greater than 0.05 (p= 0.163 and p=0.59). This shows that no evidence could tell the correlation strength between the variables. Meanwhile, green consumer, green passenger, recycler and utility saver shows a statistical significance as the p-value is less than 0.05. Green consumer shows a significant value at 0.002, green passenger shows a significant value at 0.007, recycler shows a significant value at 0.006 and utility saver shows a significant value at 0.002. All of these four categories show that there is evidence of correlation strength as the p-value is significant at 0.01 between energy used behaviour.

For the next dependent variable- Environmental behaviour, avoiders do not have a significant p-value as it is greater than 0.05 (p=0.433). It shows that there is no evidence for the correlation strength between dependent variables. Meanwhile, the other categories show the correlation strength between the dependent variables. Green passenger (p=0.022) and utility saver (p=0.019) show a significant value less than 0.05. Recycler and green customers show a significant value of less than

0.01. All of these five categories show that there is evidence of correlation strength between environmental behaviour.

From this test, it can be concluded that most of these categories are more familiar with environmental behaviour except for the avoidant categories as it does not correlate. In comparison to energy-used behaviour, only four categories are used to these behaviours and 2 more categories, activist and avoider, do not have any correlation between the energy-used behaviour. This shows that the categories of pro-environmental behaviour cause the ignorance of pro-environmentalist towards energy conservation.

Table 3: Correlation test between variables

Item	Variables	Pearson Correlation	*p*-value
Energy-used Behaviour	Activist	.139	.163
	Avoider	.188	.059
	Green Consumer	.301**	.002
	Green Passenger	.265**	.007
	Recycler	.270**	.006
	Utility Saver	.297**	.002
Environmental Behaviour	Activist	.243*	.014
	Avoider	.079	.433
	Green Consumer	.312**	.001
	Green Passenger	.226*	.022
	Recycler	.310**	.002
	Utility Saver	.232*	.019

5. Conclusion

The issue of neglecting the pro-environmental nature is a question mark as to why this can happen. Therefore, this study aims to examine what factors cause this issue to occur. Based on the results of the study, it turns out that each category of pro-environmental behaviour influences the behaviour of pro-environmentalists. This is evidenced by the fact that each individual has an advantage that tends to their own beliefs or principles. For example, categories for green passengers are more likely to be green consumers rather than utility savers. Therefore, these six categories further reinforce that it is the key driver and barrier to the pro-environmentalists themselves. Through this study, the level of pro-environmentalists can also be identified by making a correlation test between the variables. It was found that the respondents were mostly in intermediate and advanced levels for environmental behaviour. Meanwhile, most of the respondents were not very familiar with energy-used behaviour. It clearly shows the differences while the test conducted. Each student possesses all six of these categories. But what differentiates them is the level of their application in each category to the dependent variables. The results of the study found that the two categories, activist and avoider, are not too burdensome about energy-used behaviour compared to environmental behaviour. Moreover, this study found that avoider is the least burdensome category of any behaviour while it is included in the PEB category. This raises the question of why these 'avoiders' show the least concern or application for energy-used and environmental behaviour while it belongs to the pro-environmentalist characteristics as discussed by Ghazali (2019) and Cleveland *et al*. (2012). Therefore, next researchers need to conduct experiments on energy-used behaviour for future studies especially on the avoider category because however, this category is very important to ensure environmental sustainability, development, and others.

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References

Intergovernmental Panel on Climate Change, IPCC (2013), https://www.ipcc.ch/2013/01/30/ipcc-publishes-full-report-climate-change-2013-the-physical-science-basis/

Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review. *International Journal of Psychology*, n/a.

Gatersleben, B., Murtagh, N., & Abrahamse, W. (2012). Values, identity and pro-environmental behaviour. *Contemporary Social Science*, *9*(4), 374–392.

Macdonald, E.F.; She, J. (2015) Seven cognitive concepts for successful eco-design. J. Clean. Prod., 92, 23–36.

Lavelle, M.J.; Rau, H.; Fahy, F. (2015). Different shades of green? Unpacking habitual and occasional pro-environmental behavior. *Glob. Environ. Chang*., 35, 368–378.

Geng, L.; Xu, J.; Ye, L.; Zhou, W.; Zhou, K. (2015). Connections with nature and environmental behaviors. *PLoS ONE*, 10, 1–11. Jansson, J.; Marell, A.; Nordlund, A. (2010). Green consumer behavior: Determinants of curtailment and eco-innovation adoption. *J. Consum. Mark*., 27, 358–370.

Han, H.; Hwang, J.; Lee, M.J. (2017). The value–belief–emotion–norm model: Investigating customers' eco-friendly behavior. *J. Travel Tour. Mark*., 34, 590–607.

Choi, H.; Jang, J.; Kandampully, J. (2015). Application of the extended VBN theory to understand consumers' decisions about green hotels. *Int. J. Hosp. Manag*., 51, 87–95.

Lavelle, M.J.; Rau, H.; Fahy, F. (2015). Different shades of green? Unpacking habitual and occasional pro-environmental behavior. *Glob. Environ. Chang*., 35, 368–378.

Jansson, J.; Marell, A.; Nordlund, A. (2011). Exploring consumer adoption of a high involvement eco-innovation using value-belief-norm theory. *J. Consum. Behav*., 10, 51–60.

Choi, H.; Jang, J.; Kandampully, J. (2015). Application of the extended VBN theory to understand consumers' decisions about green hotels. *Int. J. Hosp. Manag*., 51, 87–95.

Han, H.; Hwang, J. (2015) Norm-based loyalty model (NLM): Investigating delegates' loyalty formation for environmentally responsible conventions. *Int. J. Hosp. Manag*., 46, 1–14.

Parks-Leduc, L.; Feldman, G.; Bardi, A. (2015). Personality Traits and Personal Values: A Meta-Analysis. *Personal. Soc. Psychol*. Rev., 19, 3–29.

Sánchez, M.; López-Mosquera, N.; Lera-López, F.; Faulin, J. (2018). An Extended Planned Behavior Model to Explain the Willingness to Pay to Reduce Noise Pollution in Road Transportation. *J. Clean. Prod*., 177, 144–154.

Han, H. (2015). Travelers' pro-environmental behavior in a green lodging context: Converging value-belief-norm theory and the theory of planned behavior. Tour. Manag., 47, 164–177.

Steinhorst, J.; Klöckner, C.A.; Matthies, E. (2015). Saving electricity – For the money or the environment? Risks of limiting pro-environmental spillover when using monetary framing. J. Environ. Psychol., 43, 125–135.

Khare, A. (2015) Antecedents to green buying behaviour: a study on consumers in an emerging economy. Mark. Intell. Plan., 33, 309–329.

Jurgen, S., Michael, B., Hans, G. B., Peter, M. L. & Janpeter, S. (2012) Climate Change, Human Security and Violent Conflict: Challenges for Societal. Hexagon Series on Human and Environmental security and Peace. Springer Science & Business Media., 8, 624-625.

Paço, A.; Lavrador, T. (2017) Environmental knowledge and attitudes and behaviours towards energy consumption. *J. Environ. Manag.*, *197*, 384–392.

Kukkonen, J.E.; Kärkkäinen, S.; Dillon, P.; Keinonen, T. (2013). The Effects of Scaffolded Simulation-Based Inquiry Learning on Fifth Graders' Representations of the Greenhouse Effect. IJSE, 36, 406–424.

Shove, E. (2011). Materials from How Social Science Can Help Climate Change Policy: An Extraordinary Lecture and Accompanying Exhibition of Ideas Held at the M.J. Lavelle *et al*. / Global Environmental Change 35 (2015) 368–378 377 British Library January 17, 2011. http://www.lancs.ac.uk/staff/shove/exhibits/ finalcards.pdf.

Inskeep, B. D., & attari, S. Z. (2014). The water short list: The most effective actions U.S. house-holds can take to curb water use. *Environment: Science and Policy for Sustainability Development, 56*(4), 4-15.

Polonsky, M.J.; Vocino, A.; Grau, S.L.; Garma, R.; Ferdous, A.S. (2012). The Impact of General and Carbon-Related Environmental Knowledge on Attitudes and Behaviour of US Consumers. J. Mark. Manag., 28, 238–263.

Heeren, A.J., Singh, A.S., Zwickle, A., Koontz, T.M., Slagle, K.M. and McCreery, A.C. (2016), "Is sustainability knowledge half the battle? An examination of sustainability knowledge, attitudes, norms, and efficacy to understand sustainable behaviours", International Journal of Sustainability in Higher Education, Vol. 17 No. 5, pp. 613-632.

Xiao, C.; McCright, A.M. A test of the biographical availability argument for gender differences in environmental behaviors. Environ. Behav. 2014, 46, 241–263.

Johannes, B., Mariano, R., & Damien, G., (2011) Representation of Ecodesign Practice: International Comparison of Industrial Design Consultancies, MDPI Journal sustainability,3, 1778-1791.

Stern, P.C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. J. Soc. Issues, 56, 407–424.

Whitley, C.T.; Takahashi, B.; Zwickle, A.; Besley, J.C.; Lertpratchya, A.P. (2018). Sustainability behaviors among college students: An application of the VBN theory. Environ. Educ. Res, 2, 245–262.

Han, H. (2015). Travelers' pro-environmental behavior in a green lodging context: Converging value-belief-norm theory and the theory of planned behavior. Tour. Manag., 47, 164–177.

Schwartz, S. H. (2010). Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. *Adv. Exp. Soc. Psychol.* 25, 1–65.

Kiatkawsin, K.; Han, H. (2017). Young travelers'intention to behave pro-environmentally: Merging the value-belief-norm theory and the expectancy theory. Tour. Manag., 59, 76–88.

Hu, J.; Yang, Y.; Jing, F.; Nguyen, B. Awe, (2018). Spirituality and Conspicuous Consumer Behavior. Int. J. Consum. Stud., 42, 829–839.

Arisbowo, N.; Ghazali, E. (2017). Green purchase behaviours of Muslim consumers: An examination of religious value and environmental knowledge. J. Organ. Stud. Innov., 4, 39–56

Cleveland, M.; Kalamas, M.; Laroche, M. (2012). "It's not Easy Being Green": Exploring Green Creeds, Green Deeds, and Internal Environmental Locus of Control. Psychol. Mark., 29, 293–305.

Lee, Y.; Kim, S.; Kim, M.; Choi, J. (2014). Antecedents and interrelationships of three types of pro-environmental behavior. J. Bus. Res., 67, 2097–2105

Jang, J.; Choi, H.; Kandampully, J. (2015). Application of the extended VBN theory to understand consumers' decisions about green hotels. Int. J. Hosp. Manag., 51, 87–95.

Sánchez, M.; López-Mosquera, N.; Lera-López, F.; Faulin, J. (2018). An Extended Planned Behavior Model to Explain the Willingness to Pay to Reduce Noise Pollution in Road Transportation. J. Clean. Prod., 177, 144–154.

Davari, A.; Strutton, D. (2014). Marketing mix strategies for closing the gap between green consumers' pro-environmental beliefs and behaviors. J. Strateg. Mark., 22, 563–586.

Yadav, R.; Pathak, G.S. (2016). Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behavior. J. Clean. Prod., 135, 732–739

Ghazali, E.M.; Mutum, D.S.; Woon, M.-Y. (2019). Multiple sequential mediation in an extended uses and gratifications model of augmented reality game Pokémon Go. Internet Res.

Englis, B.G.; Phillips, D. (2013). Does Innovativeness Drive Environmentally Conscious Consumer Behavior? Psychol. Mark., 30, 160–172.

Gabler, C.B.; Butler, T.D.; Adams, F.G. (2013). The environmental belief-behaviour gap: Exploring barriers to green consumerism. J. Cust. Behav., 12, 159–176.

Kumar, B.; Manrai, A.K.; Manrai, L.A. (2017). Purchasing behaviour for environmentally sustainable products: A conceptual framework and empirical study. J. Retail. Consum. Serv., 34, 1–9.

Larson, L. R., Stedman, R. C., Cooper, C. B., & Decker, D. J. (2015). Understanding the multi-dimensional structure of pro-environmental behavior. *Journal of Environmental Psychology*, *43*, 112–124.

Knoot, T. G. (2010). S. Clayton and G. Myers: Conservation psychology: understanding and promoting human care for nature. *Landscape Ecology*, *26*(2), 297–299.

Garcia-Molina, A., Andrés-Colás, N., Perea-García, A., Neumann, U., Dodani, S. C., Huijser, P., … Puig, S. (2013). The Arabidopsis COPT6 Transport Protein Functions in Copper Distribution Under Copper-Deficient Conditions. *Plant and Cell Physiology*, *54*(8), 1378–1390.

Al-Naqbi, A. K., & Alshannag, Q. (2018). The status of education for sustainable development and sustainability knowledge, attitudes, and behaviors of UAE University students. *International Journal of Sustainability in Higher Education*, *19*(3), 566–588.

Zsóka, Á., Szerényi, Z. M., Széchy, A., & Kocsis, T. (2013). Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of Cleaner Production*, *48*, 126–138.

Krajhanzl, Jan. (2010). Environmental and Pro-environmental Behavior. In Book: School and Health 21, Chapter: Environmental and Pro-environmental Behaviour, Masarykova univerzita,MSD. Brno.

Mesmer- Magnus, J., Glew, D. J., & Viswesvaran, C. (2012). A meta- analysis of positive humor in the workplace. *Journal of Managerial Psychology*, *27*(2), 155–190.

Whitmarsh, L., & O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *Journal of Environmental Psychology*, *30*(3), 305–314.

Pelletier, L. G., Rocchi, M. A., Vallerand, R. J., Deci, E. L., & Ryan, R. M. (2012). Validation of the revised sport motivation scale (SMS-II). *Psychology of Sport and Exercise, 14*(3), 329–341.