International Journal of Multidisciplinary Thought
1(1): 328 - 342 (2010)
© CD-ROM. ISSN 2156-6992

Examination of Environmental Knowledge and Perceived Pro-Environmental Behavior Among Students of University Tun Abdul Razak, Malaysia

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Abstract: To promote environmental action among citizens, may be a challenge to any governments that are seeking to reach environmental targets by encouraging individuals to participate in behaviors that will help to reduce negative impact to the environment and the population at large. Such activities include energy saving, waste reduction, energy conservation, recycling and green consumption. However, before such attitude can be transformed into an actual behavior, the citizens' awareness of environmental problems and knowledge should be strengthened. For that notion, it is the objective of this paper to access the respondents' knowledge on environmental issues and their perceived pro-environmental behavior. Pearson correlations tests were conducted to examine if there are any associations between the hypothesized relationships (the level of environmental knowledge - perceived pro-environmental behavior; and the attitude towards the environment - perceived pro-environmental behavior). Two hundred and twenty-five respondents participated and they were students of Universiti Tun Abdul Razak which is located at Kelana Jaya, Selangor, Malaysia. This study also sought to determine the level of the students' level of awareness on environmental related issues, environmental related terminologies and concepts, and the sources of information for environmental knowledge. The results of the study indicated that in general the respondent's knowledge about the environmental issues was high. However, the respondents were still unfamiliar with certain environmental terms and concepts such as biodegradability and carbon monoxide. It was also found in this study that there is a positive relationship between respondents' environmental knowledge and their perceived pro-environmentally behavior. Assessing the respondents' perceived pro environmental behavior through self-assessment method was not enough to bridge the attitude-behavior gap. Therefore, behavior-based environmental attitude scale was included in the study against the respondents' pro environmental behavior. The findings indicated that out of 6 behavior-based environmental attitude dimensions (energy conservation, mobility and transportation, waste avoidance, recycling, green consumerism and explicit behaviors towards conservation) only 4 that were significantly related to the perceived pro-environmental behavior. Based on the results, analysis on study findings and the implications were made at the last section of the paper.

Keywords: environmental knowledge, behavior-based attitude, consumer behavior, Malaysia

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INTRODUCTION

As consumers, we buy, use and dispose a multitude of goods. Some of our consumption behaviours are performed on a daily bases such as our eating pattern or how we travel to work. Consumption is the reason why anything is produced. Perhaps it may not be too much if we say that human behaviour is a key source to the environmental problems such as global warming, water pollution, fast decline of forests, and energy waste that are threatening the quality of the environment as well as human life (Stern, 2000). This is because some of consumers' consumption habits affect the environment through their demands that influence the production process (Tanner, 1999). Economic growth and increased of household income in Malaysia have led to two important phenomena which are an increase in the proportion of the middle class in the overall labour force, and an overall increase in consumption. As a result, many problems of urban life such as water crises and solid-waste management have become more prominent. Therefore, increasing public environmental knowledge and awareness are potential ways of addressing this issue. Any remedy will require urgent changes in human behaviour and cultural practices to reduce consumption as well as the development of cleaner and more efficient technologies (Bashkaran et.al., 2006).

As a step towards promoting sustainable consumption practices among Malaysians, the Malaysian government has publicized various strategies to implement sustainable development. This includes both production and consumption practices. In addition, the government has also opted for social advertising to educate and increase awareness about such issues among the public with the recommendation that consumer consumption behavior and lifestyle should be changed in line with sustainable consumption concepts. The issue is any strategy or policy used to influence consumers' behavior should be formulated based on a careful study on the consumers' knowledge and awareness on sustainable consumption. This is to ensure that the strategy formulated is effective and able to realize the objective. Given the expanding size of Malaysian labor force, it is thus pertinent to formulate strategies at the early stage and more effort should be geared towards educating the younger generations who are joining the labor force in the near future.

This research focused on the young consumers, who are the students of University Tun Abdul Razak, Malaysia (UniTAR) and currently doing their undergraduate studies, aged between 19 to 23 years old. These are consumers who were born between 1977 and 1994, who are mostly the children of the baby boomers. This study focuses on University students because they are the consumers of the future and capable of making a difference in the next 50 years from now. They will take their habits into their older age and therefore provide policy makers with ample possibilities to create sustainable consumption ambience for this young population. Youngsters could be engaged in developing solution to the problems of the current and future environment condition. Besides being the next generation of adults with consumer power, they can influence the decision on consumption choices in their households.

The objective of the study was to assess the environmental knowledge and perceived pro-environmental behavior among students of UniTAR and the potential that they might have in changing their behaviors. The rationale for carrying out this project is that any programs gearing towards environmental conservation could not be successful without public support, especially from the younger generation no matter how good it is. In addition, the motivation for behavioral change normally begins from a younger age and consideration for the environment could come

only from well-informed citizens who are aware of and fully committed to their rights to a quality environment. Therefore, before any behavior can be changed, it is necessary to evaluate the current state of the consumers' environmental knowledge that directly influences their behavior towards the environment.

OBJECTIVES OF THE STUDY

As expounded earlier, the major aim of this paper is to assess the environmental knowledge and perceived pro-environmental behavior among the students' of UniTAR. Specifically the objectives of the study were to:

1. examine UniTAR students' state of knowledge towards the environmental issues
2. determine the major sources for obtaining information related to environmental issues
3. determine the relationship between students knowledge on environment and their pro environmental behavior
4. examine the relationship between students past experience and their perceived pro environmental behavior

LITERATURE REVIEW

Environmental knowledge

Environmentalism has over the past three decades, become an important issues as a result of environmental damage caused by products, productions process and environmental disaster, (Brown, 2003). For consumers, the 1960s may be describes as a time of "awakening", the 1970s consumers as a "take action" period, the 1980s as an "accountable" time and the 1990s as a "power in the marketplace" era (Makower, 1993). During this period consumer appears to have become aware of the facts that the environment is more fragile than they once believed and there are limits to the use of natural resources (Krause, 1993). This, in turn stimulated a widespread feeling that it is the time for corrective actions has been reflected in increased intention to purchase environmental friendly products. More specifically it has been suggested that consumers with higher level of environmental concern will be more likely to engage in environmental friendly behaviour. These claims have been supported by a number of surveys carried out between 1989 and 1990 which reported a dramatic increase in the number of consumers expressing environmental concerns and claiming to have purchased environmentally friendly products (Roberts, 1991; Shetzer et al., 1991).

Knowledge is recognized in consumer research as a characteristic that influence all phases in decision process. According to Alba and Hutchinsan (1987) knowledge is a relevant and significant construct that affect how consumer gather and organize information, how much information is used in decision making (Brucks, 1985) and how consumer value product and services (Murray and Schlacter, 1990). Laroche et al. (1996) developed ecoliteracy to measure the respondents' ability to identify or define a number of ecologically-related symbols, concepts and behaviors. It was found that it has a correlation with attitude and behavior among consumers towards the environment. Bartkus (1999) stipulated that ecologically conscious consumers will

try to protect the environment in different way, for example involved in recycling activities, taking time on checking a package is made of recycled materials or purchasing only green products. However it is not clear how consumer level of awareness will be correlated with a consumer behavior. For example a consumer who recycled papers and plastic or who buy low-phosphate detergents need not necessarily have exactly the same characteristic on environmental criteria (DeYoung (1989).

Acknowledging the fact that individuals with high knowledge and awareness on environmental issues tend to have pro-environmental behavior, it is thus interesting to examine if there exists any relationship between the two variables. Therefore, the following hypothesis is forwarded:

> Hypothesis 1: The higher the level of knowledge in environmental issues, the higher the perceived pro-environmental behavior would be.

Environmentally Friendly Behaviour and Attitude

Green consumer research was largely developed in social psychology and in marketing. Different terminologies have been used in the past thirty year, such as socially conscious consumers (Webster, 1975), environmentally-conscious consumers, pro-environmental consumer, and ecologically conscious consumer (Robert, 1996). Despite different semantics these expressions relate to the same concept of ecology. A series of beliefs which can be cognitive or evaluative can combine to create an attitude. Beliefs are important in the formation of value which is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable (Seyfang and Gill, 2007). The link between attitudes, intentions and behaviour has been explained primarily by Ajzen and Fishbein (1980). This theory is based on the assumption that human beings usually behave in a sensible manners where they will take into account information available to them and consider the consequences of their actions. Thus people are expected to act in accordance with their intentions to perform a behaviour when they evaluate it positively and belief that important others think they should perform it. This factor deals with subjective norms which are determined by the person's beliefs that "referent" individuals or groups approve of their performing the behaviour. However, people may not always perform intended behaviour because of limitation such as information, skills and abilities and dependences of others (Ajzen and Fishbein, 1980).

Environmental concern is a strong attitude towards preserving the environment and defined as a global attitude with indirect effects on behaviour through behavioral intention (Gill, Crosby and Taylor 1981). People's psychological responses towards the environment as individuals and consumers are also referred to as environmental concern attitude. Some writers have referred to "ecological concern", which refers to the degree of emotionality, the amount of specific factual knowledge, and the level of willingness as well as the extent of the outcomes of these (behavioral intention, recycling behaviour and purchase intention on organic food products) on pollution issues (Harris, 2007).

Based on the previous studies that suggested the link between attitudes and behavior, it is thus logical to imply that pro-environmental attitude in individual could influence his or her actual behavior to the surroundings. We could expect a person with positive attitude towards energy conservation, recycling and green consumerism to behave accordingly in such a way that is friendly to the environment. This leads to the proposal of the hypothesis:

Hypothesis 2: Strong behavior-based environmental attitude is positively related to perceived pro-environmental behavior.

Young consumers and Consumption

Adolescents are often influenced by a variety of outside interests while adopting their own set of self-image, lifestyle, and consumption patterns. A significant amount of research in the social sciences has been devoted to determining how consumers develop these particular consumer behaviors and what variables or factors influence consumers (Vermeir and Verbeke, 2004). Adolescence is a vulnerable period of development and personal adjustment which needs to be recognized and understood when targeting such groups with nutritional education information (Bogner and Wiseman, 1999). As young consumers move into adolescence, they may have more freedom to select foods, in accordance with their own individual preferences. Such independence is exhibited within the home, school and social environments and may fuel the apparent lack of nutritionally balanced food behavior exerted by these consumers. Thus adolescents' independence may affect personal decisions about when, where and what they eat. Many young consumers may seek and develop their own individual food preference behavior, particularly apparent through the number and styles of meal eaten outside the home, and within the school and social environments.

RESEARCH METHOD

Sampling Design and Data Collection

The study was carried out among UniTAR students as a preliminary research and shall be expanded to other students in Klang Valley as well as in the whole Malaysia. Students were selected according to their study program and the respondents are students who are doing their undergraduate program in UniTAR. In addition, selections of respondents were also made based on races which reflect the ethnic proportion in the University. Thus, 55% of the respondents selected were Malays and Bumiputera, 35% were Indians and 10% were Chinese. The subjects of the study were aged 19 to 23 where more than 80% of them are living in the urban area. Based on systematic random sampling, a total of 250 respondents were selected to represent the student population in the University, however only 225 questionnaires were returned which contained the complete necessary information and were thus usable. The questionnaire items cover respondents' socio-demographic and economic background, their attitudes and knowledge about the environment as well as their self-reported environmentally responsible consumption practices.

Research Instruments and Statistical Test

In the present study, several variables were used to examine the respondents' level of awareness and attitude towards the environment. Sections that measured the respondents' basic environmental knowledge, behavioral-based environmental attitude, and pro-environmental behavior were measured using five point Likert scale ranging from (1) strongly disagree to (5) strongly agree. Other sections asked on respondents' understanding on environmentally terms, knowledge on environmental problems, sources of environmental knowledge and demographic information. The questionnaires were pretested to 30 students who were randomly selected from

various study programs. Minor revisions were made after pre-test and revised questionnaires were checked for content validation.

Environmental knowledge can be demonstrated through one's ability to recognize environmental problems, the cause and consequences of such problems, including facts and concepts necessary for explanation (Othman, et. al., 2004). Respondent were tested on their general knowledge of the environment, such as the main causes of air pollution in Malaysia and the need to maintain the environmental balance. The actual intention was to test whether they were aware on environmental issues in Malaysia. The authors have determined the correct and incorrect answers for each item in the section. For example, the item "*Natural resources should be preserved for future generation*" should be answered as either "Agree" or "Strongly agree" to be considered as correct answer, but if the respondents answered either "Strongly disagree", "disagree, or "Know nothing about this", then it is considered wrong answer. The respondents were also tested on their knowledge on terms and concepts related to environment such as greenhouse effect, recycling, CFCs, biodegradability, acid rain and carbon monoxide. These items were measured on a scale of 1 (know nothing at all about it) to 5 (know a lot about it). The next section asked the respondents to select at least 3 main environmental issues that were most prominent in Malaysia. There were ten issues listed like vehicle fume, toxic fume, industrial waste and erosion. This section was followed by another section that asked the respondents to pick at least 3 major sources that provide them with environmental related information. Among the listed sources were radio, newspaper, television and Internet.

Behavior-based environmental attitude is a composite of 30 behavior items of which were adopted from Kaiser and Wilson (2004). The behaviors are grouped into six domains: energy conservation, mobility and transportation, waste avoidance, recycling, consumerism and conspicuous behavior toward conservation. The measure had been taken to make the individual responses more predictable. These question were asked to explore the respondents past experience with regards to their environmental attitude.

The pro environmentally behavior were adopted from the definition of the same concept by Ebreo et. al. (1999). The variables used in this study, intended to measure the respondents' perceived environmental behavior which refers to specific products characteristics that are environmentally friendly, (e.g. energy saving, recyclable) and respondent's practices related to recycling and conservation.

Data Analysis

Descriptive analysis was utilized in most parts of the analysis. However Pearson' correlations were also used to test the relationship between environmental knowledge and environmental behavior, and attitude. Table 1 summarizes the alpha value for the scale of environmental knowledge and pro environmental behavior. The scales used has satisfactory item-total correlation (>0.40) as well as cronbach's alpha (>0.70) (Nunnally and Bernstein, 1994).

Table 1: Cronbach's alpha coefficient of the scales

Scales	No. of items	Alpha value
Environmental Knowledge	14	0.748
Perceived Pro environmental behavior	13	0.849
Behavior-based environmental attitude	30	0.718

Sample Characteristics

As indicated in Table 2, the majority (51.1%) respondents are Malays. All respondents are single and currently studying in undergraduate programs with more than 80% of them live in the urban area. High percentage of the respondents (48%) staying in terrace houses. The statistics on monthly household income indicated 32.9% of the respondents' family received RM1501 to RM5000 and 29.8% received less than RM1500 per month.

Table 2: Sample Characteristics (n=225)

Variables	Frequency	Percentage
Ethnicity		
Malay	114	51.1
Chinese	24	10.8
Indians	75	33.6
Others	10	4.5
Residential		
Urban	189	84.4
Rural	35	15.6
Household Income		
RM1500 and below	67	29.8
RM1501 to 3000	74	32.9
RM3001 to 5000	48	21.3
RM5001 to 10000	24	10.3
RM10001 and above	12	5.3
House Type		
Bungalows	22	9.8
Terrace	107	48
Condominium	38	17
Apartment	35	15.7
Flats	13	5.8
Others	8	3.6

Basic environmental knowledge scale

Table 3 summarizes the number of respondents who answered each item in the knowledge scale correctly. The knowledge scale represents basic and general knowledge related

to the environment. The results show that, in general, a high percentage of respondents answered correctly for almost all the 14 statements. From a total 14 questions, 3 questions received more than 80% correct answers. On three questions, however, less than 50% of the respondents answered correctly. Specifically, when asked if the country will never run short of its natural resources, only 39.5% obtained the correct answer. It is unfortunate that the respondents thought that the natural resources would never be depleted despite of massive development facing by the nation and all around the world.

Similarly, when respondents were asked if the natural environment should be sacrificed in the name of development, only 41.3% disagree to the statement. The younger generations in this study think that economic development is all-important, and that it is alright to sacrifice nature along the way. However, as this misconception reflects poor environmental knowledge, relevant parties should consider what might be done about this. It is no longer acceptable to argue that the more goods and services we produce, the higher the quality of life will be. The challenge for the new generation is to develop a balanced developed that has minimal social-ecological impact without compromising the quality of life.

The respondents also did less well on questions about encouraging the usage of disposable goods because of their convenience. Only 13.4% of the respondents answered correctly. This answer reflect the widespread practices of convenience consumption among Malaysian, with practices such as using disposable materials and eating utensils such as polystyrene take-away boxes and paper/plastic wares in daily activities. Besides general environmental knowledge, respondents' knowledge in the following area was also analyzed.

Knowledge of environmental problems in Malaysia

With growing demand on goods and services, gearing to huge production and depletion of natural resources, the environmental issues is at rise. It is thus pertinent to test the respondents' knowledge on these particular aspects. Referring to Table 4, the respondents ranked the following as the three main environmental issues in Malaysia: Vehicle fumes (76.9%), followed by water pollution (60.4%) and industrial waste as the third environmental problems happening in Malaysia (58.7%). These are the major environmental concern, due to rapid urbanization and increasing population in urban area.

Thus, with the identification of these environmental issues, perhaps is a reflection of the respondents' daily experience related to the issue, because more than 80% of the respondents live in urban area which affected by such problems. Noise pollution was not ranked as the main three environmental problems, despite of its small percentage, it is worth noting that noise pollution was listed by 22.7% of the respondents. This perhaps is due to the increasing number of motor vehicles in urban areas as in Kuala Lumpur and Selangor which contributed to noise pollution.

Table 3: Frequency of correct answers on students' knowledge of the environment

Items of Knowledge Scale	Frequency of correct answers	Percentage
All living things is important in maintaining balance in ecology	178	79.1
Natural resources should be preserved for future generation	203	90.3
The condition of our environment can affect our health	205	91.1
Destruction of forests will cause biological imbalances	187	83.1
A country will never run short of its natural resources	89	39.5
Main cause of air pollution in Malaysia is fumes/smoke from vehicles	175	77.8
Most rivers in Malaysia are polluted	169	75.1
Our country is faced with serious solid waste (garbage) and landfill problems	172	76.5
Alternative energy, e.g. solar energy can be utilized to replace electricity	176	78.3
The natural environment should be forgo in the name of development	93	41.3
Usage of disposable goods should be encouraged as it provides convenience to consumers	30	13.4
Unleaded petrol is better than leaded petrol as it is less harmful to the environment	146	64.9
Using public transport can help reduce air pollution	162	72
Vehicles improperly maintained will cause pollution	170	75.6

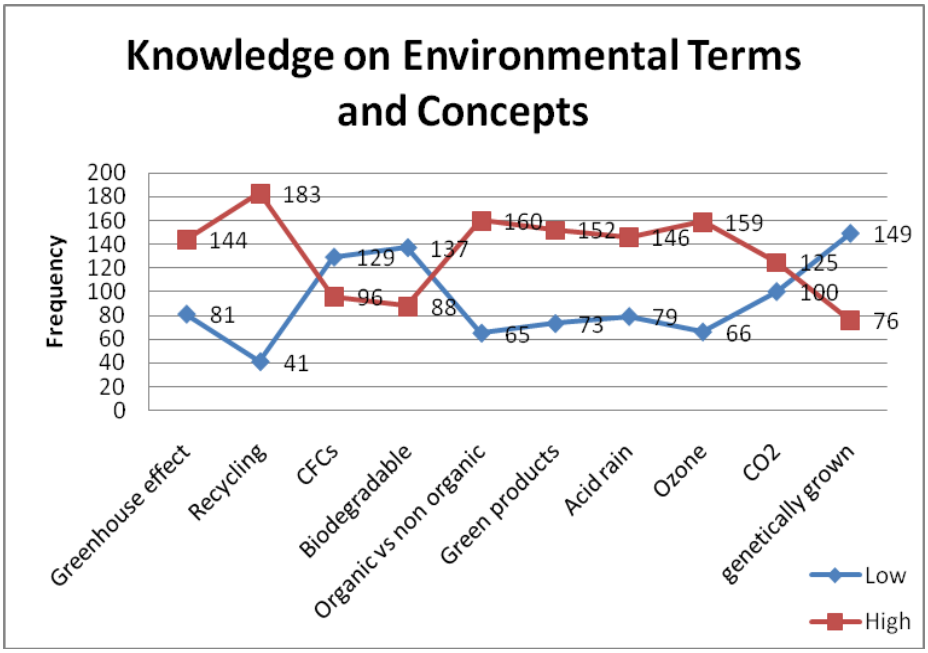
Table 4: Major environmental problems in Malaysia as indicated by the respondents

Issues and Concerns	Frequency	Percentage
vehicles fumes/smoke	173	76.9
water pollution	139	60.4
industrial waste	136	58.7
forest fire and open burning that lead to haze	113	50.2
erosion of land that leads to landslide	70	31.3
deforestation	62	27.6
toxic fumes	59	26.2
natural disaster due to some environmental problems	56	24.9
noise pollution	51	22.7
landfill	40	17.8

Knowledge about environmental-related terms and concepts

Figure 1 showed the respondents' knowledge on concepts and scientific terms related to environment. It indicated that majority (82%) of the respondents knew about recycling, seventy two percent knew about organic over non-organic products and seventy one percent knew about ozone layer. Other environmental terms were also well known by most respondents. Surprisingly, some of what might be assumed to be relatively well known concepts such as carbon monoxide, biodegradability, genetically grown products and chlorofluorocarbons (CFCs) were unfamiliar to the respondents. The low familiarity with carbon monoxide was unexpected because the previous findings in Table 4 indicated that fume from vehicles were considered the most pressing issue in Malaysia. This implied that the respondents were unaware of the fact that the fume actually produced carbon monoxide. Considering the respondents' background that they are doing their bachelor's degree programme, it is worrisome because despite their higher level of education, most of them were still lacking in their knowledge on environmental-related terms and concepts.

Figure 1: Respondents' level of knowledge on Environmental Terms and Concepts



Sources of Environmental knowledge

Table 5 recorded the sources of environmental information listed by the respondents. Most of the respondents indicated that their main source of environmental information was television (87.1%), followed by newspaper (80.9%) and Internet (65.8%). The least sources of information were books, personal sources, magazines and formal sources that obtained less than thirty one percent rating.

Table 5: Sources of Environmental Knowledge

Sources of Environmental issues	Frequency	Percentage
Television	196	87.1
Newspaper	182	80.9
Internet	148	65.8
Radio	109	48.4
Books	71	31.6
Personal Source (e.g. friends and relatives)	70	31.3
Magazine	62	27.6
Formal source (e.g. Seminars, workshops)	42	18.7

Environmental Knowledge and Respondents' perceived pro environmental behavior

Hypothesis 1 sought to test the relationship between basic environmental knowledge and perceived pro-environmental behavior. Pearson correlations test was done the results indicated that the relationship was significant ($r = .145$, $p < .05$) and positive (refer to Table 6). It indicated that the higher the respondents' knowledge on environment the higher is their perceived pro-environmental behavior. Although the relationship showed a low correlation ($r = .145$), it did indicate that knowledge is an important element in encouraging the right environmental behavior, perceived to be carried out by these young respondents. Therefore, there is a need to conduct more rigorous campaign on environmental education to encourage sustainable consumption.

Table 6: Relationship between Pro environmental behavior and basic environmental knowledge among UniTAR students

Variables	Mean	Std Dev	Correlation Coefficient
Perceived Pro Environmental Behavior	34.7022	6.42646	.145*
Basic Environmental Knowledge	54.4622	6.01929	

*Correlation is significant at the 0.05 level (1-tailed)

Perceived pro-environment behavior and behavior-based environmental attitude

Hypothesis 2 was proposed due to the presence of attitude-behavior gap. Psychologists have ceased to believe that attitudes are traceable from people's behavioral attitude. As mentioned earlier in the report, the method of behavior-based environmental attitude was adopted from Kaiser and Wilson (2004). Kaiser and Wilson evaluate the respondents' present behavior based on their past action. If a person holds a particular attitude object, for example the environment, it is expected that this person engage in all sorts of activities which conventionally recognize as environmentally-relevant. Table 7 indicates the relationship between what the respondents perceived he/she is practicing (pro-environmental behavior) against what they have done in their past activities (whether it's environmentally friendly or not). Among these six past environmental attitudes, two (energy conservation and mobility and transportation) were

indicated as insignificant against the respondents' perceived pro environmental behavior. For energy conservation, with the scale of 1 as strongly disagree and 5 as strongly agree, respondents were asked questions such as "As the last person to leave a room, I switch off the lights and air condition", "I normally leave electrically appliances such as computer and TV on standby mode", "In hotel I insist to have my towels changed daily" and "I always turn on air condition /fan whenever I am in a room". Whereby, for mobility and transportation matters, the respondents were asked questions such as "I always take public transportation or walk to college", "I always use car to go to places and "For short distance of 15 minutes, I normally walk or ride a bike". Although respondents are perceived to practice and have a strong a pro environmental behavior, however their past experience in energy conservation and the use of transportation (private car) were not environmentally responsible.

Other behavior-based environmental attitude, such as waste avoidance, recycling, green consumerism, and respondents' explicit conservation were positively correlated to the perceived pro environmental behavior, with the lowest correlation of 0.291 (waste avoidance) and highest of 0.641 (explicit conservation).

Table 7: Relationship between perceived pro environmental behavior and behavior-based environmental attitude among students of UNITAR

	Energy conservation	Mobility	Waste Avoidance	Recycling	Green Consumerism	Explicit Conservation
Perceived Pro Environmental behavior	-.055	.090	.291**	.422**	.517**	.641**
	0.414	0.179	0.00	0.00	0.00	0.00

* Significant at 0.05 level (1-tailed)
** Significant at 0.01 level (1-tailed)

DISCUSSION AND CONCLUSION

The main agenda of this paper is to explore the respondents' environmental knowledge and their perceived pro environmental behavior. The findings of the study indicate that respondents possessed quite low level of complex environmental knowledge which may not get them to actively involve in environmental activities. These results confirm the first hypothesis that the higher the level of knowledge on environmental issue, the greater is the respondents perceived of pro-environmental behavior. The state of one's knowledge about an issue may impact significantly upon decision making. The important of knowledge and the important of lack of knowledge in the decision-making process have been demonstrated in numerous studies. In addition, many studies have shown that knowledge generally influence environmental behavior, which in turn motivates ecologically or environmentally responsible consumer behavior. However, although environmental knowledge is a necessary pre-condition for environmental action, the extent of its influence can be questionable because, some environmentally supportive action such as saving energy or reducing waste in the household can be carried out as a matter of habit that does not require environmental knowledge. However, in the scenario of Malaysian consumers concern towards the important of separating household solid waste and involvement in recycling program is still very low (Othman, et. al.,2004). The

research provides findings that have significant implication for studying environment behavior that would affect people appreciation of how everyday environmental practices are undertaken.

The second hypothesis suggests that stronger behavior-based environmental attitude will leads to a higher perceived pro environmental behavior. The findings of the study rests in the facts that behavior-based environmental attitude simultaneously represents as much as the attitude measurement as it does measure for people's conservation behavior (Kaiser & Wilson, 2004). Environmental attitude can be directly derived from what people claim to do and probably do conservationally. This findings is initiated due to attitude-behavior gap, therefore, conservation psychologists have ceased to believe that attitude are traceable from people's recall of their past experience. Interestingly, although respondents are perceived to practice and have a strong a pro environmental behavior, however their past experience (energy conservation and the use of transportation) were far from being environmentally responsible.

The outcome of this study provides evidence for the view that both government and non-governmental organizations should design strategies to convey environmental awareness and consciousness and impress upon the public the importance of environmentally friendly values. If public environmental knowledge can be further improved, perhaps there will be a good chance that public sustainable consumption behavior will be increased. However, to depend solely on the government actions to change the people attitude towards the environment is impossible. The government has actively promoting environmental action as a way to deal with the range of global environmental problems from recycling household materials to making choice on grocery shopping behavior. Therefore, encouraging environmental behavior must begin from home and from childhood. In addition, the implementation of public education strategies and methods should be tailored to the right target audiences in order to ensure its effectiveness. It may be too much if the change of mindset towards environmentally behavior among people can be realized only if the government to resort the problem with financial incentives or penalties.

REFERENCES

Ajzen, I. and Fishbein, M. (1980). "Understanding attitudes and predicting social behaviour." Englewood Cliffs, NJ: Prentice-Hall.

Alba, J.W. and Hutchinson, J.W. (1987), "Dimensions of consumer expertise", Journal o Consumer Research, Vol.13, March, pp. 411- 454.

Bartkus, K. R., Hartman, C.L., Howell, R.D. (1999), "The measurement of consumer environmental knowledge: Revision and Extensions", Journal of Social behavior and Personality, Vol.14, No. 1, pp.129-146.

Bhaskaran, Polonsky, M., Cary, J. and Fernandez, S., (2006), "Environmentally sustainable food production and marketing", British food Journal, Vol. 108 No.8, pp. 677 -690.

Bogner, F. X., and Wiseman, M. (1999), "Toward measuring adolescent environmental perception", European Psychologist, Vol.4, pp. 139-151.

Brown, C. (2003), "Consumers' preferences for locally produced food: A study in Southeast Missouri", American Journal of Alternative Agriculture, Vol.18, pp. 213-224

Brucks, M. (1985), "The effects of product knowledge on information search behavior", Journal of consumer Research, Vol.12 No. 6, pp. 1 – 16.

Crosby, L.A., J.D. Gill, and J.R. Taylor (1981), "Consumer voter behaviour in the passage of the Michigan Container Law", Journal of marketing, Vo.45, pp.349-354

DeYoung, R. (1989), "Exploring the differences between recyclers and non-recyclers: the role of information", Journal of Environmental Systems, Vol. 18, pp. 341-351.

Ebreo, A., Hershey, J. & Vining, J. (1999), "Reducing solid waste: Linking recycling to environmentally responsible consumerism", Environment and behavior, Vol. 31, pp. 107-134.

Kaiser, F. G., and Wilson, M. (2004), "Goal-directed conservation behavior: The specific composition of a general performance", Journal of Personality and Individual Differences, Vol. 36, pp. 1531-1544.

Krause, D., (1993). "Environmental consciousness: An empirical study", Journal of Environmental and Behaviour", Vol. 25, Issue 1, pp. 126-142.

Laroche M., Toffoli, R., Kim, C. Ad Muller, T.E. (1996), "The influence of culture in pro-environment knowledge, attitude and behaviors: a Canadian perspective", Advances in Consumer Research, Vol. 23, pp. 53 – 62.

M. Harris, Susan (2007), "Does sustainability sell? Market responses to sustainability certification", Management of Environmental Quality: An International Journal, Vol. 18 No. 1, pp. 50 – 60.

Makower, J. (1993). "The E-factor: The Bottom Line Approach to Environmentally Friendly Business", Tilden Press, New York, NY.

Murray, K.B. and Schlacter, J.L. (1990), "The impact of services versus goods on consumer's assessment of perceived risk and variability", Journal of the Academy of Marketing Science, Vol. 18 No. 1, pp. 51 – 65.

Nunally, JC, Bernstein, IH (1994), "Psychometric Theory", McGraw Hill, New York.

Othman, M.N., Ong, F.S. & Lim, M.H. (2004), "Environmental attitudes and Knowledge of teenage consumers", Malaysian Journal of Consumer and Family Economics, Vol. 7, pp. 66-79.

Robert, J.A. (1996), "Green consumers in the 1990s': profile and implication for advertising", Journal of Business Research, Vol.36, No. 3, pp. 217-231.

Shetzer, L., Stackman, R. W., and Moore, L. F., (1991). "Busines environment attitudes and the new environmental paradigm", Journal of Environmental Education, Vol 22, Summer, pp. 14 – 21.

Seyfang, Gill (2007), "Growing sustainable consumption communities", International Journal of Sociology and Social Policy, Vol. 27 no.34, pp. 120 – 134.

Stern, P. C., (2000), "Toward a coherent theory of environmentally significant behavior", Journal of Social Issues, Vol. 56, pp. 407-424.

Tanner, C. (1999), "Constraints on Environmental Behavior", Journal of Environmental Behavior", Vol. 19, pp. 145-157.

Vermeir, Iris and Verbeke, Wim (2004), "Sustainable Food Consumption: Exploring the Consumer Attitude-Behavior gap", working paper.

Webster, F. (1975). "Determining the characteristics of the socially conscious consumer", Journal of Consumer Research, Vol. 2, December, pp. 188 – 196.