Psychological Trait and Situation Affecting through Inspiration of Public Mind to Energy Conservation Behavior of Undergraduate Student

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Abstract This research objective was to study psychological trait and situation affected to energy conservation behavior and inspiration of public mind of undergraduate student of KMITL in the first semester of academic year 2012. The sample group of 800 students were sampling with Multi-stage random sampling technique. Questionnaire was used as research tool that was examined for content validity by 5 experts and it was tried out with the group that was not sample group. The reliability in aspects of psychological trait, situation, inspiration of public mind and energy conservation behavior were 0.88, 0.83, 0.93, and 0.85 respectively. Data analysis was conducted by Hierarchical Multiple Regression. The findings showed as followings: 1. The group of psychological trait variables was able to predict the group of energy conservation behavior variables with 35.2%. The most important predictors were future orientation and self control, and mental health. Moreover, it also predicted the group of inspiration of public mind variables with 35.8%. 2. The group of situation variables was able to predict the group of energy conservation behavior variables and more than the group of psychological trait variables with 9.3% (increased from 35.2 to 44.5%) and subgroup more than the group of psychological trait variables by increasing between 28.2%-40.6%. The most important predictors were perception of family role model and media perception.

Key Words: Psychological Trait / Situation / Energy Conservation Behavior / Inspiration of Public Mind

1. Introduction

Human behavior has influenced to environmental quality change. The causes are the rapid growth of population and changing of consumption behavior (Janet, et al., 2011). Electrical energy is a essential energy that it is used for serving the primary demand of people for various daily living activities whether in terms of daily life facilitators, economic development or production matter for industrial activity. Consequently, electrical energy is typically necessary for country development. Thailand has gradually more extended in the population, economy, and industrial sectors in every year. The demand of electrical energy within country for consumption is also increasing as well; therefore it is a responsibility of governmental sector to seek electrical energy for serving the demand adequately (Department of Renewable Energy and Energy Conservation, Ministry of Energy, 2011).

Most of electrical energy in Thailand, has been transformed from natural gases with 69.20 percents, subsequences are coal/lignite with 21.40 percents, fuel oils and diesel fuel with 0.20 percents, and the rest are other renewable energy and other energy with 6.20 percents (Department of Renewable Energy and Energy Conservation, Ministry of Energy, 2011). It is obviously seen that the majority of the transformed energies are able to cause environmental impact and destructive effect to human health in both direct and indirect effects whether in forms of carbon dioxide that is an important greenhouse gases to cause global climate change. It is also essential origin seasonal change and natural

disasters across country or it might spread to over the world. Moreover, it also affected to social and political aspects. Principally, it is an origin of conflict of interest between local people and governmental authority wherever electrical generation power plant is planned to build in any location of country since most of them perceived from the problem taken place in other prior area of country. Furthermore, the forest violation for energy plant cultivation is also currently important problem.

Regarding to interactionism model, there are a large number of research was conducted on the cause of various behaviors of human being. It is obvious found that any behaviors in human society there are four major important causes that included psychological trait of actor, characteristics of present situation or cause outside people. Trait theorists are primarily interested in the measurement of traits, which can be defined as habitual patterns of behavior, thought, and emotion including psychological health and physical health which are inherited trait from parents. There is much debate over how much of whom we are is by nature (genetic) or nurture (environment), and both contribute significantly to our complete expression (Kassin, 2003, Pearson, 2006). In accordance with this perspective, traits are relatively stable over time, differ across individuals, and influence behavior. The feature of present situation or external cause included social support in educational institute, perception of family role model for electrical energy conservation, and got experience from electrical shortage. These might inspire or activate them to realize the important of electrical energy. Therefore, the psychological trait interacts with situation, it can be recognized as mechanical interaction that these might affect to any human behavior expression. The organismic interaction is a result of interaction between psychological situation and psychological trait, consequently, the occurring of attitude to that situation or behavior expressing, anxiety along with situation, and concern according to situation (Bhanthumnavin, 2008). In 1997 the academics in psychology, leading by Magnusson and Endler, proposed the textbook called "Personality at the crossroads" that compiled the theories of human behavior on integration of mind and states together (Bhanthumnavin, 2008, Magnusson, and Endler, 1997, Magnusson, 1999, Magnusson, 2001).

Accordingly, Thiengkamol pointed out on public consciousness or public mind based on inspiration from insight but inspiration is different from motivation because inspiration needs no rewards. Inspiration of public consciousness or public mind, especially, for natural resources and environment conservation, one doesn't receive any reward, admiration or complement for ones act for natural resources and environment conservation. Inspiration of public consciousness might occur due to appreciation in a person as role model or idle, impressive events, notable situations, impressive environment, media perceived such as movies, book, magazine, and internet. (Thiengkamol, 2009a, Thiengkamol, 2009b, Thiengkamol, 2011i, Thiengkamol, 2011j, Thiengkamol, 2012c)

However, considering on the increasing electrical energy demand in country, it is caused by two factors that are population growth and economic progression, but deeply considering, one of cause of energy consumption is human who lacks of knowledge and understanding, good attitude, awareness, consciousness, and value with good practice for energy conservation. In order to solve environmental problem, the research should be studied on psychological trait and situation that affected to environmental conservation and inspiration of public mind because if we know understand the cause factors that influenced to results and understand relationship between causes and results, it will help us to understand the behavior and behavior expression, therefore we can predict the occurred behavior and we can adjust them to be better performance to solve environmental problem.

2. Objective

This research objective was to study psychological trait and situation affecting to energy conservation behavior and inspiration of public mind of undergraduate student of KMITL.

3. Methodology

3.1 Population was 19,074 undergraduate students of King Mongkut's Institute of Technology Ladkrabang (KMITL) in the first semester of academic year 2012. Sample group of 800 undergraduate students were sampling with Multi-stage random sampling technique (Leekitchwatana, 2011).

3.2 Questionnaire was employed as a research tool that was examined for content validity by 5 experts and it was tried out with the 70 undergraduate students that was not sample group. The reliability in aspects of psychological trait, situation, environmental education, inspiration of public mind and energy conservation behavior were 0.88, 0.83, 0.93, and 0.85 respectively.

3.3 Data Analysis was conducted by Hierarchical Multiple Regression.

4. Results

The results were illustrated as followings:

Table 1 Percentage Comparison of Prediction and Predictor of 3 Group Variables of Results of Energy Conservation Behavior of Total group and Subgroup

Group	No.	Stage 1 (1, 2, 3, 4)			Stage 2 (5, 6, 7)			
		$\%R^2$ Total	Predictor order	Beta value	$\%R^2$ Change	$\%R^2$ Total	Predictor order	Beta value
Total	800	35.2	3,2,1,4	.42,.14,.11,.10	9.3	44.5	6,7	.25,.22
Male	349	35.9	3,2,1	.44,.21,.10	9.4	45.3	6,7	.25,.22
Female	451	33.0	3,4	.50,.17	10.2	43.2	6,7	.21,.12
Low GPA	445	40.6	3,2,1,4	.42,.16,.17,.12	9.6	50.2	6,7,5	.30,.20,-.07
High GPA	355	29.8	3,2	.46,.17	8.5	38.3	7,6	.25,.18
Outside	411	35.9	3,2,1	.44,.21,.10	9.4	45.3	6,7	.25,.22
Bangkok and suburban	389	33.0	3,4	.50,.17	10.2	43.2	6,7	.27,.21
Low family income	394	32.5	3,2,1	.36,.20,.17	10.2	42.7	6,7	.28,.22
High Family income	406	38.0	3,2,4	.52,.12,.11	8.1	46.1	6,7	.22,.20
Father low education	493	35.9	3,2,1,4	.35,.14,.20,.10	7.0	42.9	6,7	.24,.17
Father high education	307	35.2	3,2	.52,.19	11.7	46.9	7,6	.27,.26
Mother low education	522	36.1	3,4,1,2	.35,.14,.19,.12	8.4	44.5	6,7	.25,.19
Mother high education	278	36.0	3,2	.52,.19	8.6	44.6	7,6	.24,.21
Education faculty	396	35.9	3,2	.52,.21	7.1	43.0	6,7	.24,.18
Other faculties	404	28.2	3,2	.43,.18	13.4	41.6	7,6	.27,.24

Group of predictors

Stage 1 1 refers locus of control, 2 refers mental health, 3 refers future orientation and self control, 4 refers achievement motive
Stage 2 5 refers social support in institution, 6 refers and perception of family role model, 7 refers media perception

Analysis with Hierarchical Multiple Regression (HMR) for predicting energy conservation behavior and inspiration of public mind, there were 2 stages that predictor would be orderly entered. Stage 1 comprised the group of psychological trait variables with 4 predictors included locus of control, mental health, future orientation and self control, and achievement motive. Stage 2 comprised the group of situation variables with 3 predictors included social support in institution, perception of family role model, and media perception. Every variable is continuous variable.

The aim of HMR analysis is to compare the amount of prediction in stage 2 that it is able to increase how much the prediction is in both total group and 14 subgroups.

1. Prediction of variation of energy conservation behavior by using the group of psychological trait variables and the group of situation variables as predictors.

When energy conservation behavior was analyzed by HMR with predictor in stage 1 that was the group of psychological trait variables with 4 predictors included locus of control, mental health, future orientation and self control, and achievement motive, can predict the group of energy conservation behavior variable with 35.2% (showed in table 1). The predictors were ordered from most importance to less importance that were future orientation and self control, mental health, locus of control, and achievement motive with beta value equaled to 0.42, 0.14, 0.11, and 0.10 respectively. In the subgroup was used to classify general characteristics of undergraduate with low Grade Point Average (GPA), it can predict 40.6% and the least was group of other faculties with 28.2%.

Stage 2, predictor was the group of situation variables with 3 predictors included social support in institution, perception of family role model, and media perception. This group can predict the group of energy conservation behavior variable increased from stage 1 with 9.3% (prediction in stage 1 and 2 were 35.2% and 44.5%, these showed in table 1). The predictors were ordered from most importance to less importance that were perception of family role model, and media perception with beta value equaled to 0.25, and 0.22 respectively. In the subgroup was used to classify general characteristics of undergraduate for 14 subgroups, these 3 predictors can predict energy conservation behavior increased from stage 1 with statistically significant 13.4% (stage 1 and stage 2 were 28.2% and 41.6%). In the group of other faculties, these 3 predictors can predict increased with statistically significant at least in the group of undergraduate with low education father with 7.0% (prediction in stage 1 and 2 were 35.9% and 42.9% respectively).

Table 2 Percentage Comparison of Prediction and Predictor of 3 Group Variables of Results of Inspiration of Public Mind of Total group and Subgroup

Group	No.	Stage 1 (1, 2, 3, 4)			Stage 2 (5, 6, 7)			
		$\%R^2$ Total	Predictor order	Beta value	$\%R^2$ Change	$\%R^2$ Total	Predictor order	Beta value
Total	800	35.8	1,3,2	.44,.22,-.09	11.9	47.7	5,6,7	.26,.17,.14
Male	349	38.9	1,3	.50,.19	11.6	50.5	5,6,7	.27,.18,.10
Female	451	34.3	1,3,2	.36,.27,-.18	11.5	45.8	5,7,6	.26,.15,.16
Low GPA	445	38.0	1,3	.45,.24	10.4	48.4	5,6	.30,.20
High GPA	355	32.5	1	.57	11.4	43.9	5,7,6	.25,.16,.11
Outside	411	38.9	1,3	.49,.19	11.6	50.5	5,6,7	.27,.18,.10
Bangkok and suburban	389	34.3	1,3,2	.36,.27,-.18	11.5	45.8	5,7,6	.26,.15,.16
Low family income	394	35.3	1,3	.45,.20	11.7	47.0	5,6,7	.29,.17,.13
High Family income	406	36.3	1,3,2	.44,.23,-.13	11.0	47.3	5,6,7	.26,.17,.10
Father low education	493	37.2	1,3	.51,.14	10.9	48.1	5,6,7	.28,.15,.10
Father high education	307	33.6	1,3,2	.37,.30,-.12	11.2	44.8	5,6,7	.25,.20,.13
Mother low education	522	32.8	1,3	.46,.16	13.0	45.8	5,6,7	.28,.17,.15
Mother high education	278	42.4	1,3,2	.43,.31,-.18	8.9	51.3	5,6	.28,.15
Education faculty	396	46.5	1,3	.55,.19	8.5	55.0	5,6,7	.29,.12,.08
Other faculties	404	21.1	1,3	.32,.20	13.7	34.8	5,6,7	.26,.20,.12

Group of predictors

Stage 1 1 refers locus of control, 2 refers mental health, 3 refers future orientation and self control, 4 refers achievement motive

Stage 2 5 refers social support in institution, 6 refers and perception of family role model, 7 refers media perception

1. Prediction of variation of inspiration of public mind by using the group of psychological trait variables and the group of situation variables as predictors.

When inspiration of public mind was analyzed by HMR with predictor in stage 1 that was the group of psychological trait variables with 4 predictors included locus of control, mental health, future orientation and self control, and achievement motive, can predict the group inspiration of public mind variable with 35.8% (showed in table 2). The predictors were ordered from most importance to less importance that were locus of control, future orientation and self control, and mental health with beta value equaled to 0.44, 0.22, and -0.09 respectively. In the subgroup was used to classify general characteristics of undergraduate for 14 subgroups, it was found that these 4 predictors can predict inspiration of public mind at highest level in group of education faculty with 46.5% and predict at the least in the group of other faculties with 21.2%.

Stage 2, predictor was the group of situation variables with 3 predictors included social support in institution, perception of family role model, and media perception. This group can predict the group of inspiration of public mind variable increased with statistically significant from stage 1 with 11.9% (prediction in stage 1 and 2 were 38.5% and 47.7%, these showed in table 2). The predictors were ordered from most importance to less importance that were social support in institution, family role model, and media perception with beta value equaled to 0.26, 0.17, and 0.14 respectively. In the subgroup was used to classify general characteristics of undergraduate for 14 subgroups, these 3 predictors can predict inspiration of public mind increased from stage 1 with statistically significant in every group at highest with 13.4% (stage 1 and stage 2 were 21.1% and 34.8%). In the group of other faculties, these 3 predictors can predict increased with statistically significant at least in the group of undergraduate with low education father with 8.5% (prediction in stage 1 and 2 were 46.4% and 55.0% respectively).

5. Discussions

5.1 The group of psychological trait predicted variable the group of energy conservation behavior variable with 35.2%, and subgroup between 28.2%-40.6% with most important predictors that were future orientation and self control, and mental health respectively. It might due to future orientation and self control is ability to forecast and realize the event that will occur in the future together with the ability of self control, therefore, one is able to control oneself to wait the important thing in the future. While, the good mental health is a feature of mind and emotion expressions without feeling of anxiety, but undergraduate would able to concentration and express his/her brave in the proper event. The psychological trait is an important part of expression of diverse behaviors of undergraduate, there were numerous researches revealed the relationship between psychological trait toward environmental conservation behavior such as the group of psychological trait predicted personal electrical energy use, family electrical energy saving and public electrical

energy saving of undergraduate between 36.5%-39.6% with having future orientation and self control as important predictor (Trimetsoontorn, and Pimdee, 2007). This is congruent with the study of Kittisarawanno and Pimdee, (2007) revealed that the group of psychological trait variable predicted personal electrical energy use , family electrical energy saving and public electrical energy saving of undergraduate between 47.0%-47.2% with having future orientation and self control, and locus of control as important predictors. Moreover, it is in the line with Inthasuwan, et al., (2004) also found that general self control and specific self control related to and predicted to consumption behavior with intelligence of student. Moreover, there was a research mentioned on the relationship between mental health and environmental conservation behavior and it was found that the mental health was an important predictor for personal electrical use of student (Piasiri, 2002) and mental health related to resource saving behavior as whole, time saving behavior, expenditure saving behavior of undergraduate (Sananpoo, 2001), moreover, mental health was an important predictor cooperated to other variables to predict waste production avoidance of student with 27.8% (Suwandee, 2000).

The group of psychological trait predicted variable the group of inspiration of public mind variable with 35.8% and subgroup between 21.1%-46.5%, with most important predictors that were locus of control, and future orientation and self control respectively. It might be that undergraduate who has high locus of control will be a high self-confidence as well and he thinks that he can control himself and control the outcome of action while future orientation and self control is ability to anticipate the occurring event in future together with self control to wait for the more important thing in future. A large number of researches were found that of psychological trait toward inspiration of public mind. Such as psychological trait directly affected to inspiration of public mind of undergraduate with 0.67 (Thiengkamol, 2012c) and psychological trait directly affected to inspiration of public mind of undergraduate of Mahasarakham University with 0.15 (Jumrearnsan, 2011). Moreover, future orientation and self control and other variables predicted public mind of undergraduate of Srinakharinwirot University with 38.1% (Thongmeelue, 2007), in the line with the study of Nooroon, (2008) found that locus of control, and future orientation and self control had positively affected to public mind of student at level 3 of School under the control of Srinakharinwirot University.

5.2 The group of situation variables can predict the group of energy conservation behavior variable with 44.5% (increased from psychological trait with 9.3%) and can predict subgroup between 38.3%-50.2% (increased from psychological trait between 7.00%-13.4%). The important predictors were perception of family role model, and media perception respectively. This might due to feature of situation or external cause of person, these might cause the behavior change. In this study, the situations included social support in institute, perception form family role model, and media perception; therefore these variables might stimulate and support the undergraduate to have appropriate behavior. A large number of studies illustrated the relationship between situation variable toward environmental conservation behavior or energy conservation behavior such as the group of situation variable was able to predict personal electrical energy use, family electrical energy saving and public electrical energy saving of undergraduate between 36.5%-39.6% with having future orientation and self control as important predictor (Kittisarawanno, and Pimdee, 2007). Moreover, Thiengkamol, also found that psychological state had directly affected to behavior of global warming alleviation of undergraduate student of Mahasarakham University with 038 38 (Thiengkamol, 2011j) and was congruent to study of Wongphinphet and Wasuwat, on perception of appropriate model mostly influenced to environmental conservation behavior with effect of 0.80 (Wongphinphet, and Wasuwat, 2011) and study of Pimdee, also revealed that undergraduate in 3 situations of nurture with love support and reason use, perception of social norm, and environmental information perception at high level would have behavior of use thing with maximization benefit (Pimdee, 2008). Particularly, environmental information perception had positively relation with participation for electrical energy conservation in the office building of bank officers and bank officers who perceived more energy conservation information and high locus of control would participate in electrical energy conservation in the office building higher than the opposite group. (Ampanukij, 2008)

The group of situation variables can predict the group of inspiration of public mind variable with 47.7% (increased from psychological trait with 11.9%) and subgroup between 34.8%-55.0% (increased from psychological trait between 8.5% and 13.7%). The important predictors were social support in institution, family role model respectively. These variables can stimulate and support the undergraduate to have properly behavior and it is congruent to research of Thiengkamol, discovered that psychological state had directly affect to inspiration of public mind of undergraduate of Mahasarakham University with effect of 0.68 (Thiengkamol, 2011j) and in the line with study of Jumrearnsan, revealed that psychological state had directly affect to inspiration of public mind of undergraduate with effect of 0.14 (Jumrearnsan, 2011) and Meekhuamdee (2004) studied on social psychological factor involving public mind and found that perception of self-competency and popular support positively related to public mind of police officers with 55.9%.

6. Conclusion

6.1 The group of psychological trait variables can predict the group of energy conservation behavior variable with 35.2%. The most important predictors were future orientation and self control, and mental health respectively. Moreover, it can predict the group inspiration of public mind variable with 35.8% and subgroup between 21.1%-46.5% respectively. The most important predictors were locus of control and future orientation and self control respectively.

6.2 The group of situation variables can predict the group of energy conservation behavior variable increased from psychological trait with 9.3% (increased from 35.2% and 44.5% and subgroup increased between 7.00%-13.4% from psychological trait and the important predictors were perception of family role model, and media perception respectively. And predict the group of inspiration of public mind variable increased from psychological trait with 11.9% (increased from 38.5% and 47.7%), and subgroup increased from psychological trait between 8.5%-13.7% and the important predictors of were social support in institution, family role model, and media perception respectively.

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