Causal Relationship Model of EQ and MQ and Environmental Education

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Abstract

The objective was to propose a structural model Emotional Quotient (EQ), Moral Quotient (MQ) and Environmental Education (EE) affecting environmental behavior for global warming alleviation through inspiration of public consciousness. The population was 37,101 undergraduate students of Mahasarakham University in the second semester of academic year 2013. The Multi-stage simple random sampling technique was employed to collect the sample for 400 undergraduate students. The research instrument was a questionnaire, and it was used for data collecting. LISREL was used for model verification. Results illustrated that the structural model confirmatory factors of Emotional Quotient (EQ), Moral Quotient (MQ) and Environmental Education (EE) were able to explain the variation of endogenous factors of Inspiration of Public Consciousness for Environmental Conservation (IPC) to cause Environmental Behaviors for Global Warming Alleviation (BEH) with 96.00 percent. IPC had the most effect to BEH with 0.69. Consequently, confirmatory factors of Environmental Education (EE), Emotional Quotient (EQ), and Moral Quotient (MQ), were able to explain the variation of confirmatory factors of Inspiration of Public Consciousness for Environmental Conservation (IPC) with 88.00 percent. EE was the effect to IPC with 0.49.

Keywords: model EQ, MQ, environmental education affecting, environmental behavior

Introduction

The rapid growth of global population is a critical environmental problem because people need natural resources for daily living. Moreover, numerous scientists have indicated that human activity is the foremost factor of environmental deprivation and natural resources devastation. It results in degradation of environmental quality and waste accumulation. However, human activities, primarily clearing of forests and the burning of fossil fuels have intensified the natural greenhouse effect to cause global warming[7,32,11,18]

Emotional quotient (EQ) or emotional intelligence quotient is a measurement of a person's ability to observe his or her emotions, to cope with pressures and difficulty. EQ is the capability to assess the concern conditions and connections with other peoples. There various style of EQ test varies according to different interest, but it is hypothesized as questionable or self-reported data. However, the EQ test highlights intensely on problem solving design to determine the ability of the responder to comprehend, and control emotions within themselves and others. High scores indicate high awareness of general social norms. Measurements of people's EQs are used in many situations. Generally, this idea is very well established in the business world, where many businesses use EQ tests to help their employees determine and measure their emotional responses to different situations. Therefore, EQ tests are often used in business to identify strengths and weaknesses in employees so that these employees can learn skills to improve certain aspects of their EQ. EQ is also inherent ability and learned behavior.[5,9,2,1]

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Moral Quotient (MQ) is comparable to environmental ethics. Morality distinguishes from intentions, decisions, and performances between those that are good or right and those that are bad or wrong. A system of morality is relative with a particular philosophy, religion, and culture. Therefore, morality may also be entirely the same with "goodness" or "rightness.".[3,8,14,34] A moral code is the Golden Rule which insists that, "One should treat others as one would like others to treat oneself." MQ is an ability to effectively react to difficulties by noticing from his or her response with a wide range of difficult events. In contrast, groups in the most firm occupations frequently score below the comprehensive mean. However, it is revealed that people are likely to choose occupations based on their MQ.[13]

Environmental Education (EE) is an essential concept for supporting sustainable development via developing the people competence to concentrate on environment and development issues. It should particularly be conducted by means of the education system whether formal, informal, non-formal or lifelong education in order to raise awareness, to change attitude, to cultivate the consciousness, to take responsibility and to practice skill for achieving better environmental behavior based on inspiration of public mind or public consciousness. The principles of EE are congruent to Sustainable Development (SD) in terms of increasing environmental knowledge and understanding, changing people's attitudes and awareness, to have appropriate value and skill to take responsibilty for environmental conservation behavior through inspiration of public mind and for effective public participation. Additionally, to reach the success of EE and SD, it should manage with attention on the dynamics of both the physical/biological and socio-economic environment and human development, should be integrated in all disciplines with effective means of communication.[35,18,19,20,21,22,23,24,25,26]

Thiengkamol discovered, from various researches on inspiration of public consciousness or public mind, and she concluded that it might occur from one' insight with or without any action or it might occur from one's impression on role model, event, environment and media perception. It 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 incentive, respect or gratefulness for one's act for natural resources and environment conservation.[15,16,18,19,21,22,25,26,27,28,29,30]

It is not obviously seen that the research about EQ, MQ, EE affects environmental behavior for global warming alleviation through inspiration of public consciousness including person as role model, impressive event, impressive environment, and media perception [22,23,12,6] when it compared with other aspects of relating factors affecting environmental behavior for global warming alleviation.

Therefore, this research was designed to study all factors relating to the above/ It alone would be able to develop a model of environmental behaviors for global warming alleviation that is affected by EQ, MQ and EE through inspiration of public consciousness.

Objective

The objective was to propose a structural model of EQ, MQ and EE affecting environmental behavior for global warming alleviation through inspiration of public consciousness.

Methodology

The research design was implemented in steps as follows:

1. The population was 37,101 undergraduate students of the second semester in academic year 2013 at Mahasarakham University. Multi-stage random sampling was employed to collect 400 students from different faculties of Mahasarakham University.

2. The research instrument was a questionnaire, and it was used for data collection. The content and structural validity were determined by Item Objective Congruent (IOC) with 5 experts in the aspects of environmental education, psychology, social science and social research methodology. The reliability was done by collecting the sample group from 50 undergraduate students of Rajabhat Mahasarakham University which is nearby Mahasarakham University. The reliability was

determined by Cronbach's Alpha. The reliabilities of Moral Quotient (MQ), Emotional Quotient (EQ), Moral Quotient (MQ), Environmental Education (EE) Inspiration of Public Consciousness (IPC), Behaviors for Global Warming Alleviation (BEH), and the whole questionnaire were 0.919, 0.877, 0.972, 0.977, 0.964 and 0.967 respectively.

3. The descriptive statistics used were frequency, percentage, mean and standard deviation. The inferential statistics used was LISREL by considering on Chi-Square value differs from zero with no statistical significant at 0.05 level or Chi-Square/df value with lesser or equal to 5, P-value with no statistical significant at 0.05 level and RMSEA (Root Mean Square Error Approximation) value with lesser than 0.05 including index level of model congruent value, GFI (Goodness of Fit Index) and index level of model congruent value, AGFI (Adjust Goodness of Fit Index) between 0.90-1.00.

Conceptual Framework

The exogenous latent variables of Intelligence quotient (IQ), Adversity Quotient (AQ) and Environmental Education (EE) had direct and indirect effects to Inspiration of Public Consciousness for Environmental Conservation (IPC) and Environmental Behaviors for Global Warming Alleviation (BEH). IQ was measured by Conceptual Creation (X1), Talent Expression (X2), Relationship Perception (X3), AQ was measured by Personal Challenge (X4), Family Challenge (X5), and Social Challenge (X6). EE was measured by Knowledge and Understanding (X7), Environmental Awareness (X8), Environmental Participation (X11), and Environmental Evaluation (X12). The endogenous latent variable of BEH was measured by Consumption Behavior (Y1), Energy Conservation Behavior (Y2), Recycling Behavior (Y3), Waste Management Behavior (Y4), Traveling Behavior (Y5), Knowledge Transferring Behavior (Y6) and IPC was measured by Person as Role Model (Y7), Impressive Event (Y8), Impressive Environment (Y9), and Media Receiving (Y10).
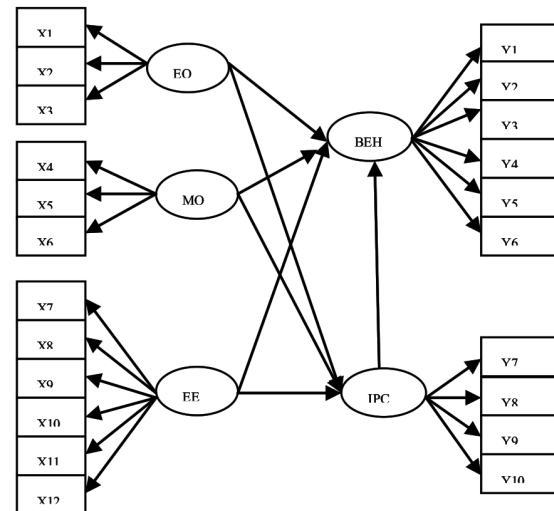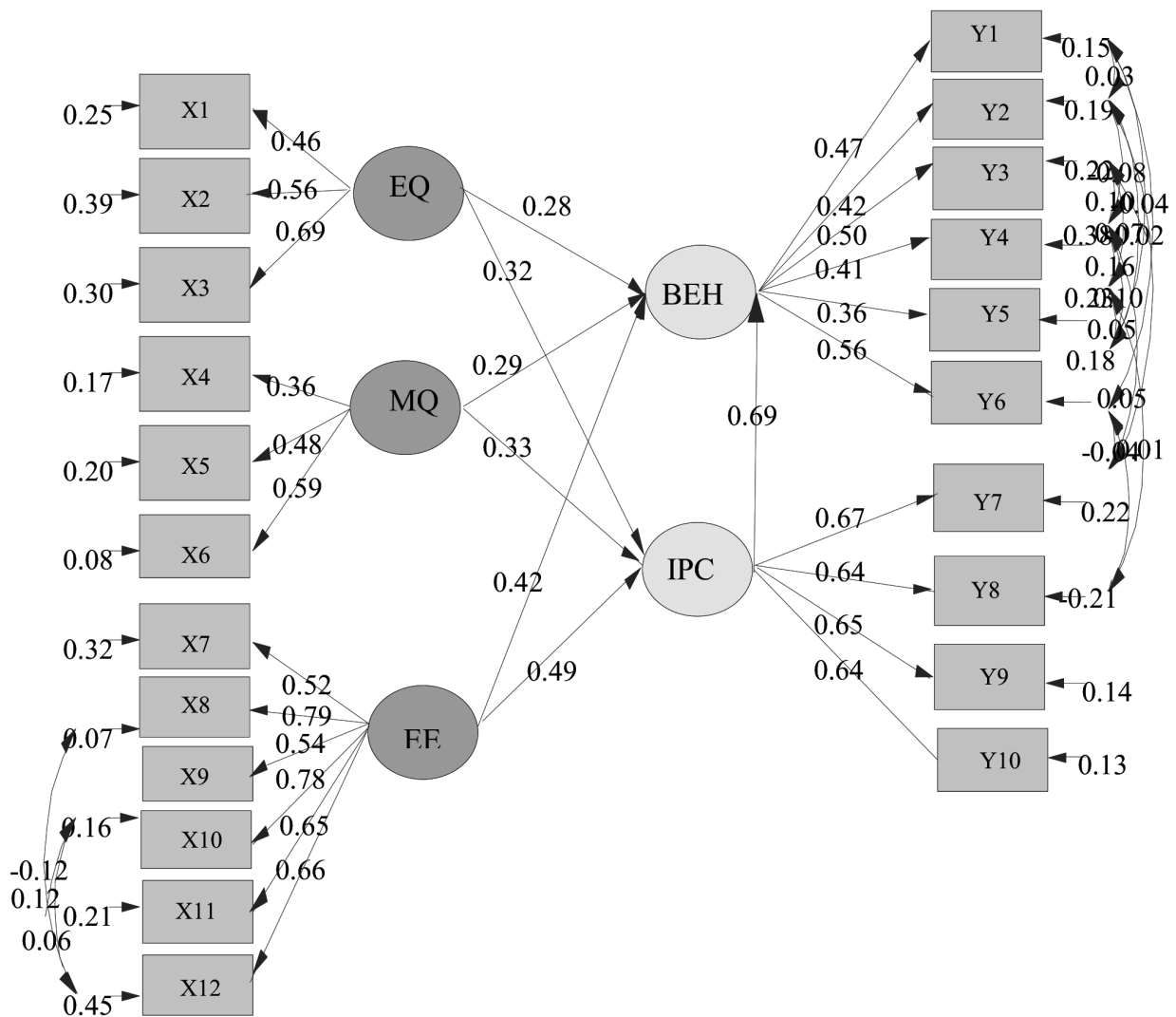

Results

1.   Results of Effect among Variables in the Model in Terms of Direct Effect

1)   Confirmatory factors of Emotional Quotient (EQ), had a direct effect on the Inspiration of Public Consciousness for Environmental Conservation (IPC) and Environmental Behaviors for Global Warm 0.32 and 0.28. Moreover, model Emotional Quotient (EQ), had a indirect effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant level of 0.01 with effect of 0.22.

2)   Confirmatory factors of Moral Quotient (MQ) had a direct effect on Inspiration of Public Consciousness for Environmental Conservation (IPC) and Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of 0.01 with effect of 0.33 and 0.29. Moreover, confirmatory factors in aspect of Moral Quotient (MQ) had indirect effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of 0.01 with effect of 0.23.

3)   Confirmatory factors of Environmental Education (EE) had a direct effect on Inspiration of Public Consciousness for Environmental Conservation (IPC) and Environmental Behaviors for Global Warming Alleviation (BEH) with a statistically significant level of 0.01 with effect of 0.49 and 0.42. Moreover, confirmatory factors in aspect of Environmental Education (EE) had indirect effect to Behaviors for Global Warming Alleviation

(BEH) with no statistically significant at level of 0.01 with effect of 0.34.

    4)   Confirmatory factors of Inspiration of Public Consciousness for Environmental Conservation (IPC) had direct effect Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of 0.01 with effect of 0.69.

    5)   Considering the structural model confirmatory factors of Moral Quotient (MQ) Emotional Quotient (EQ), and Environmental Education (EE) they were able to explain the variation of endogenous factors of Inspiration of Public Consciousness for Environmental Conservation (IPC) to cause Environmental Behaviors for Global Warming Alleviation (BEH) with 96.00 percent as follows in Equation (1).

$$BEH = 0.29{*}MQ + 0.28{*}EQ + 0.42{*}EE + 0.69{*}IPC \ldots\ldots (1)$$
$$(R^2 = 0.96)$$

    Equation (1) factors that had the most effect to Environmental Behaviors for Global Warming Alleviation (BEH) were Inspiration of Public Consciousness (IPC) with an effect of 0.69, and subsequences were Environmental Education (EE), Moral Quotient (MQ) and

Emotional Quotient (EQ) with effect of 0.42, 0.29, and 0.28 respectively. These were able to explain the variation of Environmental Behaviors for Global Warming Alleviation (BEH) with 96.00 percent.

    Consequently, confirmatory factors of Environmental Education (EE), Emotional Quotient (EQ), and Moral Quotient (MQ), were able to explain the variation of confirmatory factors of Inspiration of Public Consciousness for Environmental Conservation (IPC) with 88.00 percent. Therefore, the equation can be written as follows Equation (2).

$$IPC = 0.49{*}EE + 0.33{*}MQ + 0.32{*}EQ \ldots\ldots\ldots\ldots (2)$$
$$(R^2 = 0.88)$$

    Equation (2) factors that had the most effect to Inspiration of Public Consciousness for Environmental Conservation (IPC) was Environmental Education (EE) with an effect of 0.49, subsequences were Moral Quotient (MQ) and Emotional Quotient (EQ), with an effect of 0.33 and 0.32. These were able to explain the variation of Inspiration of Public Consciousness for Environmental Conservation (IPC) with 88.00 percent.

Table 1 Direct and Indirect Effect of EQ, MQ and EE Affecting BEH through IPC

Causal variable	Result variables					
	IPC			BEH		
	TE	IE	DE	TE	IE	DE
EQ	0.32** (0.065)	-	0.32** (0.065)	0.50** (0.035)	0.22** (0.031)	0.28** (0.034)
MQ	0.33* (0.061)	-	0.33** (0.061	0.52** (0.040)	0.23** (0.029)	0.29** (0.042)
EE	0.49** (0.044)	-	0.49** (0.044)	0.76** (0.064)	0.34** (0.032)	0.42** (0.061)
IPC	-	-	-	0.69** (0.055)	-	0.69** (0.055)

χ^2 = 286.76; df = 181		CN = 245.81	χ^2/df = 1.590
GFI = 0.94;	AGFI = 0.91	RMSEA = 0.003	RMR = 0.0048

TE: Total Effect, IE: Indirect Effect, DE: Direct Effect

Chi-Square=285.76, df=181, P-value=0.20001,RMSEA=0.003

Figure 1 Model of Direct and Indirect Effect of EQ, MQ and EE through IPC Affecting BEH

Discussion

The results revealed that confirmatory factors of Emotional Quotient (EQ) had a direct effect on Environmental Behaviors for Global Warming Alleviation (BEH) and were statistically significant at level of 0.01 with an effect of 0.28, and had an indirect effect to Environmental Behaviors for Global Warming Alleviation (BEH) with a statistically significant level of 0.01 with effect of 0.22. Furthermore, Emotional Quotient (EQ) had a direct effect to Inspiration of Public Consciousness (IPC) with statistically significant at level of 0.01 with effect of 0.32

Therefore, it is evident that Emotional Quotient (EQ) composed of Emotional Realization (X1), Emo-

tional Control (X2) and Performance and Decision Making (X3) affect Environmental Behavior for Global Warming Alleviation (BEH) through Inspiration of Public Consciousness (IPC) composed of Person as Role Model (Y7), Impressive Event (Y8), Impressive Environment (Y9), and Media Receiving (Y10). Therefore the results of this study are harmonious to various studies of Thiengkamol and her colleagues (Thiengkamol, 2011i; Thiengkamol, 2011j; Thiengkamol, 2012c; Thiengkamol, 2012d; Thiengkamol, 2012e; Donkonchum, et al., 2012a; Gonggool, et al., 2012b; Morrasri, et al, 2012b; Ruboon, et al., 2012a; Udonboon, et al, 2012b; Waewthaisong, et al., 2012a) .

Simultaneously, the results revealed that confirmatory factors of Moral Quotient (MQ) had a direct effect on Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of 0.01 with effect of 0.29, and had indirect effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistical significance at level of 0.01 with effect of 0.23. In addition, Moral Quotient (MQ) had a direct effect to Inspiration of Public Consciousness (IPC) with statistically significant at level of 0.01 with effect of 0.33.

Therefore, it is clearly seen that Moral Quotient (MQ) composing of Personal Ethics (X4), Personal Ethics (X5) and Social Norm (X6) affecting Environmental Behavior for Global Warming Alleviation (BEH) through Inspiration of Public Consciousness (IPC) composing of Person as Role Model (Y7), Impressive Event (Y8), Impressive Environment (Y9), and Media Receiving (Y10), therefore the results of this study are harmonious to various studies of Thiengkamol and her colleagues[22,23,25,26,27,4,6,10,12,31]

The exogenous factors of Emotional Quotient (EQ), Moral Quotient (MQ) and Environmental Education (EE) were able to explain the variation of endogenous factors of Inspiration of Public Consciousness (IPC) to caused Environmental Behaviors for Global Warming Alleviation (BEH) with 96.00 percent.

Moreover, Environmental Education (EE) had a direct effect to Environmental Behaviors for Global Warming Alleviation (BEH) with a statistically significant level of 0.01 with effect of 0.42, and had an indirect effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of 0.01 with effect of 0.34. Furthermore, Environmental Education (EE) had direct effect to Inspiration of Public Consciousness (IPC) with statistically significant at level of 0.01 with effect of 0.49.

Therefore, it is clearly seen that Environmental Education (EE) composing of Knowledge and Understanding (X7), Environmental Awareness (X8), Environmental Attitude (X9), Environmental Skill (X10), Environmental Participation (X11), and Environmental Evaluation (X12)

affecting Environmental Behavior for Global Warming Alleviation (BEH) through Inspiration of Public Consciousness (IPC) composing of Person as Role Model (Y7), Impressive Event (Y8), Impressive Environment (Y9), and Media Receiving (Y10). Therefore the results of this study are harmonious to various studies of Thiengkamol and her colleagues[22,23,25,26,27,4,6,10,12,31]

The model of EQ, MQ and EE affecting BEH through IPC was verified. The proposed model was fitted with all observed variables according to criteria of Chi-Square value differs from zero with no statistical significant at 0.05 level or Chi-Square/df value with lesser or equal to 5, P-value with no statistical significant at 0.05 level and RMSEA (Root Mean Square Error Approximation) value with lesser than 0.05 including index level of model congruent value, GFI (Goodness of Fit Index) and index level of model congruent value, AGFI (Adjust Goodness of Fit Index) between 0.90-1.00.

Therefore, it might be concluded that EQ, MQ and EE play a very important role to create the environmental behavior of consumption, energy conservation, waste management, travelling behavior, recycling behavior, and knowledge transferring and supporting for environmental conservation. Therefore the Four Nobel Truths should be reintroduced again in school. However, EQ and MQ are significant factors for undergraduate students to adopting environmental conservation behavior for global warming alleviation through public consciousness to meet sustainable development. These results were congruent to concepts proposed by Thiengkamol[15,16,18,19]

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