The Implications of SCAP Students’ Personal Values and New Ecological Paradigm View on Green Behaviour: A Perspective of Ecological Man in Simplified Norm Activation Model

Tiantong Yuan1* and Xue Bo1

1 BBA International College, Krirk University, Thanon Ram Intra, Khwaeng Anusawari, Khet Bang. Khen, Krung Thep Maha Nakhon10220, Bangkok, Thailand.

* E-mail: Yuan.Tiantong@staff.krirk.ac.th

Abstract. The Economic Man in industrialization process regards the relationship between human-being and nature as economic relations of takes and gives, invest and produce. Thus, the economic man’s behaviours could cause the crisis of ecology. In 1950s, environment pollution broke out, environment hazard overflowed, resources exhausted, those phenomenon aroused widespread concern on environmental problems[1,2]. The conception of sustainable development was proposed in the report of the World Commission on environment and development in 1987[3]. Its definition consists of three parts: environment factor, social factor and economic factor. In the 1970s, environmentalists proposed that the industrialization process seriously damaged the environment, however, there are still no effective means to solve this problem from then to now. Owing to the increasing environment concern extend of public, the research on green behaviour in academia is expanding and deepening. With an enhancing awareness of environment protection, meanwhile, in order to detach with the ecological crisis stimulated by “economic man” awareness. In this study, hierarchical multiple regression method was used to analysis cross-sectional data collected with judgment sampling method from Chinese international students study in Study Abroad through Chinese Program (SACP), to verify that to cultivate “NEP world view” had postive mediation effect on relationship between different personal values and students’ behaviours of “sustainable development of low-carbon and energy-saving”. Students’ self-efficacy could accelerate the formation of NEP world view, while social influence able to promote students to behave green behaviours had been found in this research. These conclusions give policy makers a lot of useful enlightenment, and provide useful guidance for schools to improve students’ public environmental awareness, and for Chinese international students to carry out green behaviour in their daily life.

Keywords: Altruism, Egoism, Ecologicalism, Green Behaviour, Self-Efficacy, Social Influence, New Ecological Paradigm (NEP), Study Abroad through Chinese Program (SACP)
1. Introduction
With the transformation of human civilization form from agricultural civilization to industrial civilization, human existence form has also completed the transformation from “moral man” to “economic man” [4]. The rapid development of industrial civilization has brought about the rapid growth of productivity, but also led to many problems, of which the more prominent is that human beings began to lose the awe of nature in the period of agricultural civilization, regard nature as the property of human beings, and start the struggle with nature by virtue of the scientific and technological achievements brought by modern industry, resulting in many environmental problems: Ecosystem degradation is serious, biodiversity is sharply reduced, and various natural disasters occur frequently. The emergence of these environmental problems has aroused people’s attention to the ecological environment protection. While promoting the rise and development of modern environmental protection movement, Ingebrigtsen and Jakobsen [5] mentioned the theory of “ecological man”, which is in line with the objective law of ecological concept and social development has been produced and continuously developed, since “ecological man” are the person who conforms to the laws of ecological development, cooperates with others, harmoniously coexists with the natural environment and social environment and co evolves. Cobb and Daly [6] pointed out that the challenge for ecological man is to find out exactly how to solve the corresponding economic problems while maintaining the ecological environment, which requires people forming and improving public pro-environmental awareness, and furthermore to enhance people’s pro-environmental behaviour. Many researches have been done on the theory and practice of environmental behaviour, mainly involving environmental concern, environmental behaviour and its influencing factors [7,8], as well as relevant behaviour models such as normative activation model [9].

According to Nyborg[10], for pro-environment behaviour, incentive mechanism is a very important factor. But many times, when the new groups enter the new environment, for example, when the overseas students enter other countries to study, there is a lack of mutual understanding between the school and the students, and the range of the incentive mechanism does not match the students, which will reduce the intrinsic motivation of students’ pro-environment behaviour [11]. In this study, self-efficacy and social influence are introduced to replace incentive mechanism. Base on the theory normative activation, the research is aimed to explore the moderating role of NEP on relationship between various personal values and students’ green behaviour, while the moderating effects of social influence and students’ self-efficacy. For international students, if they are able to be formed pro-environment behaviour in the new environment, and the established awareness and behaviour would be carry on through self-efficacy and affect their surroundings through social influence, the two new variables will be testified in this research. This research is able to provide new ideas for policy makers and decision makers in influencing students’ green thinking and green behaviour, clarify the importance status of NEP, social influence and self-efficacy in the whole process, and make theoretical contributions on sustainable development. Eliminate the incentive mechanism, simplify the model, and improve the generation and sustainability of environmental behaviour in a more direct way.
2. Literature review
The green behaviour of students is a concept developed by applying the concept of individual green behaviour in the field of a school place. It is also known as pro-environment behaviour. Based on the different understanding of the connotation of green behaviour, many scholars have different definitions of green behaviour. According to Steg and Vlek[12], it mainly refers to the behaviour that individuals take to minimize the negative impact on the environment or have a positive impact on environmental protection.

2.1 Personal values
So far, the generally accepted definition of personal values are defined by Schwartz[13], which comes from the basic human value theory. According to Schwartz [14], altruism, egoism and Ecologicalism are the three personal values being measured in this research. Based on the view that altruism is a subset of personal values, Schwartz’s[14] altruism theory shows that when a person is aware of the harmful consequences to others and takes the responsibility for change, environmentally friendly behaviour becomes more likely, vice versa. Borden and Francis [15] pointed out the harmful effects of egoism in common environmental conditions. In addition, people who are Ecologicalism will perform behaviours that friendly to the environment automatically during daily life [16]. Therefore,

H1a: Altruism in personal values has a significant positive effect on students’ green behaviour.
H1b: Egoism in personal values has a significant negative effect on students’ green behaviour.
H1c: Ecologicalism in personal values has a significant positive effect on students’ green behaviour.

2.2 New Ecological Paradigm (NEP)
Based on Stern, Dietz [17], an environmental friendly world view had been proposed and formed as an paradigm to explain pro-environmental attitude, where originally came from normative activation theory [9]. According to Dunlap and Van Liere [7], NEP became a scale that measures a general orientation toward nature and the relationship between people and the environment. Since this kind of world view is closely related to environmental problems, the construction of the NEP world view is conducive to the emergence of green behaviour of students. Therefore,

H2: NEP has a significant positive effect on students’ green behaviour.

Figure 1. Conceptual Framework
According to Stern [18], all different personal values could perform better pro-environmental behaviour when they adopted and internalized the NEP world view [19]. Based on Stern [20], the VBN theory proved that the mediating effect of NEP between value orientations and pro-environmental personal value. So that, NEP was adopted to play the mediator role between different personal value and their pro-environmental behaviours. Therefore,

H3a: NEP had a positive mediation effect on the relationship Altruism and Student Green Behaviours.
H3b: NEP had a negative mediation effect on the relationship Egoism and Student Green Behaviours
H3c: NEP had a positive mediation effect on the relationship Ecologicalism and Student Green Behaviours

2.3 Social influence
Bamberg and Möser [21] provide evidence to indicate that social norm conceptualized within the TPB framework had important influence on intentions’ formation, which eventually affect one’s behaviour. Social influence was select to promote international students form pro-environmental behaviours on campus. Therefore,

H4a-1: Social influence had a positive moderation effect on the relationship Altruism and NEP
H4a-2: Social influence had a positive moderation effect on the relationship Egoism and NEP
H4a-3: Social influence had a positive moderation effect on the relationship Ecologicalism and NEP
H4b-1: Social influence had a positive moderation effect on the relationship Altruism and Student Green Behaviour.
H4b-2: Social influence had a negative moderation effect on the relationship Egoism and Student Green Behaviour.
H4b-3: Social influence had a positive moderation effect on the relationship Ecologicalism and Student Green Behaviour.

2.4 Self-efficacy
Self-efficacy is an important influencing factor of intention, and further affects performance [22], which can be explain the tasks’ difficulty level that people think they are able to complete, and to what extent that people think they are excellent in their daily life, meanwhile, it also explains the extent of confidence that people had in completing specific tasks. According to the findings of NEP, like Lee, Kim[23], people who have a high level of sense of self-efficacy is easier to form NEP. The higher a person’s sense of self-efficacy is, the stronger his ability and confidence to achieve specific goals, and he can do things he can’t normally do[22], so that self-efficacy is adopted to promote international students behave environment friendly behaviours on campus[23]. Therefore,

H5a-1: Self-efficacy had a positive moderation effect on the relationship Altruism and NEP
H5a-2: Self-efficacy had a positive moderation effect on the relationship Egoism and NEP
H5a-3: Self-efficacy had a positive moderation effect on the relationship Ecologicalism and NEP
H5b-1: Self-efficacy had a positive moderation effect on the relationship Altruism and Student Green Behaviour.
H5b-2: Self-efficacy had a negative moderation effect on the relationship Egoism and Student Green Behaviour.
H5b-3: Self-efficacy had a positive moderation effect on the relationship Ecologicalism and Student Green Behaviour.

3. Method

3.1 Samples and data collection
Participants for this research are students who studied in K University in Bangkok, Thailand. Judgment sampling methods was used for sample selection, since the participants are registered students in international college. Authors were personally contact students form international college and distribute printed questionnaire during the class, and gave attending students around 20 minutes to fill questionnaire of this research the study. There are 320 sets of questionnaires in total were distributed to students in and after class with notification of voluntary participation, and 283 sets of questionnaires were collected. Of this amount, there are 264 surveys were completely filled which the response rate is 82.5%. Demographic of the 264 respondents are as followed. There were 179 (67.8%) males and 85 (32.2%) females whose are age of 21.33 (std dev.=2.93) years old, and the respondents are stay in Thailand for 3 to 36 months 91.3% of them are getting their bachelor degree with about 33.0% of the respondents have had sustainable education. According to statistical analysis, the respondents’ proportion of male students is higher than female students, while the proportion of students had sustainable education is significantly lower than students who haven’t had education of sustainable development. Almost all students were bachelor students.

3.2 Measurement Instruments

The questionnaire consists of a Student Green Behaviours scale, a New Ecological Paradigm scale, a social influence scale, a self-efficacy scale and three scales that represent personal values concepts. 

Altruism were measured by the Self-Report Altruism Scale developed by Rushton, Chrisjohn [24],which include 20 items. Egoism were measured by Supernumery Personality Inventory -Egotism Scale (SPI) developed by Paulhus and Williams [25], which included 15 items. Ecologicalism were measured by Environmental Values Scale developed by Fuhrer [26].which included 7 items. New Ecological Paradigm (NEP) that developed by Dunlap and Van Liere [7] were used to measure international students, which included 15 items. Student Green Behaviours were measured by ECCB scales that developed by Roberts [27], which originally used to measure ecologically conscious consumer behaviours with 10 items. Social influence of international students was measured by Subjective Norm scale that developed by Thompson, Higgins [28], which included 6 items. Self-Efficacy of international students was measured by Self-Efficacy Scale which mixed Jarvenpaa and Staples [29] and Bock and Kim [30] contains 5 items. The items under each variable are measured by six-point Likert scale with a purpose to encourage participants to express their opinions. According to the extent of self-feeling about the items, respondents select from 1 to 6 (strongly disagree, slightly disagree, disagree, agree, slightly agree, strongly agree) respectively, with four control variables that are gender, age, education level, and sustainable education.

3.3 Data analysis

The analysis methods applied on the collected data in this research are start with using IBM SPSS 23 to test the validity and reliability of scales, in order to determine the measurement instrument for this study is reliable. Then, move on to ran a correlation test to testify the relations among variables are exist. Furthermore, regression will be used to test how different personal value (Altruism, Ecologicalism and Egoism) had different Pro-Environmental behaviour on campus, mediated by forming New Environmental Paradigm.

4. Results

According to the validity and reliability results are all shows above acceptance level (see Table 1 for details), therefore, the measurement instruments adopted in the research are acceptable and reliable.

| Variables    | Cumulative | KMO | Cronbach’s α |
|--------------|------------|-----|--------------|
| Altruism     | 55.504%    | 0.812 | 0.791        |
| Ecologicalism| 58.225%    | 0.825 | 0.815        |
As the results of the correlation matrix analysis, most variables have a significant linear relationship in pairs, which is a simple way to judge the linear relationship between the two variables, so further analysis can be found in the regression analysis. In order to seek the cause-effect relationships among variables with proper explanations and prediction, Ordinary Least Square (OLS) Regression analysis was conducted in last section to carry out the significant relations among variables. The regression analysis of this study is divided into three parts, the main effect analysis (H1a-c and H2), the mediation test of NEP (H3a-c), and moderation test of social influence and self-efficacy (H4a-c and H5a-c). Besides, the VIF in the model is less than 10, which is the recommended as the maximum level of VIF suggested by Hair, Anderson [31]. The regression result indicates that different personal values had significant positively affect students’ pro-environment behaviour, altruism had highest prediction (R2=26.6%) of the green behaviour, while egoism had lowest prediction (R2=3.5%) of the green behaviour (see Table 3 for more details). NEP had positive partial mediating effects on the relationships from Altruism (R2=30.7%) and Ecologicalism (R2=24.6%) to students’ green behaviour, while fully mediating the relationship between Egoism and students’ green behaviour (see Table 4 and Table 5 for details). Both social influence and self-efficacy had positive moderating effects on relationship of altruism to NEP and altruism to pro-environment behaviour, however, social influence and self-efficacy positively moderate Ecologicalism and pro-environment behaviour relationship only, other than relationship from Ecologicalism to NEP, meanwhile, social influence positively moderate Egoism value towards NEP other than behaviour, when self-efficacy negatively moderate Egoism value towards pro-environment behaviour (see Table 6). Based on the hierarchical multiple regression, all hypotheses are supported but four moderating effects are not statistically supported.

5. Conclusion

5.1 Research Limitation
This paper analyzes the relationship between NEP mediation effect personal values, ecological world outlook and students’ green behaviour, and verifies the effect of ecological world outlook as an intermediary variable on personal values and students’ green behaviour. First, due to funding constraints, the scope of sample selection in this study is relatively single. In addition, the judgement sampling method may cause the sample bias such as social desirability bias, acquiescence bias. Next, the nonrandom selected sample, the group had a homologous heterogeneous culture specialty living and learning environment, since the samples are selected from newly born Study Aboard through Chinese Program (SACP) in Thailand (i.e. Teaching and learning college subjects with mother language, where located in host universities under the host education system. Mother language is Chinese in this case specifically), which made the group cannot fully represent the population of Chinese international students in Thailand.

5.2 Research Findings
Most of the results of our research support the hypothesis we set. This research supports the model activation theory. Considering the impact of self-efficacy and social impact, it clarifies the relationship between personal values (altruism, egoism, environmental protection) and green behaviour, and tries to find out whether helping students shape their own environmental protection world outlook can help students’ green behaviour for the promotion of. In the process of research, for students with altruism,
we can find that whether it helps to establish ecological values to meet their self-efficacy or to improve the social impact of green behaviours on people around them, they can positively promote their practice in daily life. Be green. This is in line with Schwartz’s altruism theory. But what’s interesting is that for egoists and environmentalists, they don’t care about the social impact of others. Because egoists will only make decisions that are best for them, environmentalists will stick to green behaviour without receiving influence from those around them. Only by stimulating their self-efficacy can they better practice green behaviour. These conclusions are consistent with the research of Borden and Francis [15].

5.3 Research Suggestion
This paper analyzes the relationship between individual values, ecological world outlook and students’ green behaviour of Chinese students studying in Thailand, and verifies the effect of ecological world outlook as an intermediary variable on individual values and students’ green behaviour. Through regression analysis, we found the influence of social influence and self-efficacy on the research variables. These conclusions give policy makers a lot of useful enlightenment, and provide useful guidance for schools to improve students’ public environmental awareness, and for Chinese students studying in Thailand to carry out green behaviour in their daily life. The research mainly discusses the relationship between personal values, ecological world view and students’ green behaviour, but the influencing factors of students’ green behaviour are not only these two variables, but also the reward and punishment mechanism, teacher guidance and other variables. Since this study was limited to time and funding, the follow-up research can be further tested and analyzed from the perspective of social psychology in the future. Due to the limitation of cross-sectional analysis, the future researchers can use simulation experiments, or longitudinal studies, to make up for this deficiency. Meanwhile, random sampling method is suggested for future studies, since the sample in this research are majorly from SACP that are not able to explain the pro-environment behavior of the Chinese international students’ population. By letting more students to adopted NEP world view, students’ environment friendly behaviour will be established and internalized by effects of self-efficacy, and then affect their surroundings through social influence. The students’ pro-environment behaviour need to be enhanced by more methods, in order to make more contributions to sustainable development.

References
[1]. Eckersley R, editor. A machine at the heart of the world: youth and the future. paper for the forum Shaping Schools’ Futures; 1994.
[2]. Eckersley R. Dreams and expectations: young people's expected and preferred futures and their significance for education. Futures. 1999;31(1):73-90.
[3]. Brundtland GH. Report of the World Commission on environment and development: “our common future.”. United Nations; 1987.
[4]. Camerer CF, Fehr E. When does” economic man” dominate social behavior? science. 2006;311(5757):47-52.
[5]. Ingebrigtsen S, Jakobsen O. Moral development of the economic actor. Ecological Economics. 2009;68(11):2777-2784.
[6]. Cobb J, Daly H. For the common good, redirecting the economy toward community, the environment and a sustainable future. Boston, Beacon Press; 1989.
[7]. Dunlap RE, Van Liere KD. The “new environmental paradigm”. The journal of environmental education. 1978;9(4):10-19.
[8]. Malone MP, Ward MP. Ecology: Let's hear from the people: An objective scale for the measurement of ecological attitudes and knowledge. American psychologist. 1973;28(7):583.
[9]. Schwartz SH. Normative influences on altruism. Advances in experimental social psychology. Vol. 10: Elsevier; 1977. p. 221-279.
[10]. Nyborg K, Howarth RB, Brekke KA. Green consumers and public policy: On socially contingent moral motivation. Resource and energy economics. 2006;28(4):351-366.
[11]. Deci EL, Koestner R, Ryan RM. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. Psychological bulletin. 1999;125(6):627.
[12]. Steg L, Vlek C. Encouraging pro-environmental behaviour: An integrative review and research agenda. Journal of environmental psychology. 2009;29(3):309-317.

[13]. Schwartz S. Universals in the structure and content of values: Theoretical advances and empirical tests in 20 countries/Ed. MP Zanna. Advances in experimental social psychology. 1992.

[14]. Schwartz SH. Are there universal aspects in the structure and contents of human values? Journal of social issues. 1994;50(4):19-45.

[15]. Borden RJ, Francis JL. Who cares about ecology? Personality and sex differences in environmental concern 1. Journal of Personality. 1978;46(1):190-203.

[16]. Sahin E. Predictors of Turkish Elementary Teacher Candidates’ Energy Conservation Behaviors: An Approach on Value-Belief-Norm Theory. International Journal of Environmental and Science Education. 2013;8(2):269-283.

[17]. Stern PC, Dietz T, Kalof L. Value orientations, gender, and environmental concern. Environment and behavior. 1993;25(5):322-348.

[18]. Stern PC, Dietz T, Abel T, et al. A value-belief-norm theory of support for social movements: The case of environmentalism. Human ecology review. 1999:81-97.

[19]. Baron RM, Kenny DA. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of personality and social psychology. 1986;51(6):1173.

[20]. Stern PC. New environmental theories: toward a coherent theory of environmentally significant behavior. Journal of social issues. 2000;56(3):407-424.

[21]. Bamberg S, Möser G. Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psychosocial determinants of pro-environmental behaviour. Journal of environmental psychology. 2007;27(1):14-25.

[22]. Bandura A. Perceived self-efficacy in the exercise of control over AIDS infection. Evaluation and program planning. 1990;13(5):329-347.

[23]. Lee Y-k, Kim S, Kim M-s, et al. Antecedents and interrelationships of three types of pro-environmental behavior. Journal of Business Research. 2014;67(10):2097-2105.

[24]. Rushton JP, Chrisjohn RD, Fekken GC. The altruistic personality and the self-report altruism scale. Personality and individual differences. 1981;2(4):293-302.

[25]. Paulhus DL, Williams KM. The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. Journal of research in personality. 2002;36(6):556-563.

[26]. Fuhrer U. Sozialpsychologisch fundierter Theorierahmen für eine Umweltbewußtseinsforschung. Psychologische Rundschau. 1995.

[27]. Roberts JA. Green consumers in the 1990s: profile and implications for advertising. Journal of business research. 1996;36(3):217-231.

[28]. Thompson RL, Higgins CA, Howell JM. Personal computing: toward a conceptual model of utilization. MIS quarterly. 1991:125-143.

[29]. Jarvenpaa SL, Staples DS. Exploring perceptions of organizational ownership of information and expertise. Journal of management information systems. 2001;18(1):151-183.

[30]. Bock GW, Kim Y-G. Breaking the myths of rewards: An exploratory study of attitudes about knowledge sharing. Information Resources Management Journal (IRMJ). 2002;15(2):14-21.

[31]. Hair JF, Black WC, Babin BJ, et al. Multivariate data analysis. Vol. 5. Prentice hall Upper Saddle River, NJ; 1998. (3).
### Appendix 1

**Table 2. Hierarchical Multiple Regression Model Predicting NEP**

| Control Variables | Model 1 (Altruism) | Model 2 (Egoism) | Model 3 (Ecologicalism) |
|-------------------|--------------------|------------------|------------------------|
|                   | Beta 1             | Beta 2           | Beta 3                 | Beta 4 | Beta 5 | Beta 6 |
| Gender            | .022               | .044             | .091                   | .109   | .017   | .042   |
| Age               | -.030              | -.004            | -.032                  | .005   | -.010  | .012   |
| Edu Level         | .067               | .067             | .064                   | .065   | .020   | .028   |
| Sustainable Edu   | .009               | -.007            | .001                   | -.010  | .037   | .017   |
| Independent PV    | .506***            | .443***          | .148*                  | -.005  | .448*** | .371*** |
| Mediator NEP      |                    | .215***          | 349***                 |        |        |        |

| R^2               | 26.6%              | 30.7%            | 3.5%                   | 13.1%  | 20.6%  | 24.6%  |
| Adjust R^2        | 25.1%              | 29.1%            | 1.6%                   | 11.1%  | 19.1%  | 22.9%  |
| Sobel test statistic | 3.054**        | 1.398**          |                       |        | 3.157** |        |
| Mediating Effect  |                    | Partial          | Full                   |        |        |        |

Note: n=264; PV by Altruism, Egoism, Ecologicalism; *p < .05  **p < .01  ***p < .001
Beta 1 refer to the coefficient of Altruism on Green Behaviour;
Beta 2 refer to the coefficient of Altruism and NEP on Green Behaviour;
Beta 3 refer to the coefficient of Egoism on Green Behaviour;
Beta 4 refer to the coefficient of Egoism and NEP Green Behaviour;
Beta 5 refer to the coefficient of Ecologicalism on Green Behaviour;
Beta 6 refer to the coefficient of Ecologicalism and NEP Green Behaviour;

**Table 3. Hierarchical Multiple Regression Model Predicting Social Influence on NEP**

| Control Variables | Model 1 (Altruism) | Model 2 (Egoism) | Model 3 (Ecologicalism) |
|-------------------|--------------------|------------------|------------------------|
|                   | Beta 1             | Beta 2           | Beta 3                 | Beta 4 | Beta 5 | Beta 6 |
| Gender            | -.101              | -.099            | -.053                  | -.063  | -.119* | -.117* |
| Age               | -.122*             | -.140            | -.107                  | -.117* | -.104  | -.093  |
| Edu Level         | .000               | -.022            | -.002                  | -.005  | -.037  | -.040  |
| Sustainable Edu   | .074               | .076             | .031                   | .026   | .095   | .098   |
| Independent PV    | .295***            | .353***          | .438***                | .384*** | .356*** | .386*** |
| Interaction PV x SIF | .196**           | .122*            |                        |        |        | .085   |

| R^2               | 11.1%              | 14.6%            | 21.5%                  | 22.6%  | 14.7%  | 15.3%  |
| Adjust R^2        | 9.4%               | 12.6%            | 19.9%                  | 20.8%  | 13.1%  | 13.4%  |

Note: same as above
### Table 4. Hierarchical Multiple Regression Model Predicting Social Influence on Green Beh

| Control Variables | Model 1 (Altruism) | Model 2 (Egoism) | Model 3 (Ecologicalism) |
|-------------------|--------------------|------------------|------------------------|
|                   | Beta 1  | Beta 2  | Beta 3  | Beta 4  | Beta 5  | Beta 6  |
| Gender            | .022   | .024   | .091   | .093   | .017   | .020   |
| Age               | -.030  | -.050  | -.032  | -.029  | -.010  | -.013  |
| Edu Level         | .067   | .043   | .064   | .065   | .020   | .015   |
| Sustainable Edu   | .009   | .011   | .001   | .002   | .037   | .043   |
| Independent PV    | .506***| .571***| .148*  | .163*  | .448***| .512***|
| Interaction PV x SIF | -220***| -.036  |        |        |        |        |
| \( R^2 \)         | 26.6%  | 30.8%  | 3.5%   | 3.6%   | 20.6%  | 11.1%  |
| Adjust \( R^2 \)  | 25.1%  | 29.2%  | 1.6%   | 1.4%   | 19.1%  | 9.4%   |
| Moderating Effect | Positive| Not Exist| Positive| Not Exist| Not Exist|

Note: same as above

### Table 5. Hierarchical Multiple Regression Model Predicting Self-Efficacy on NEP

| Control Variables | Model 1 (Altruism) | Model 2 (Egoism) | Model 3 (Ecologicalism) |
|-------------------|--------------------|------------------|------------------------|
|                   | Beta 1  | Beta 2  | Beta 3  | Beta 4  | Beta 5  | Beta 6  |
| Gender            | -.101  | -.101  | -.053  | -.055  | -.119* | -.118  |
| Age               | -.122* | -.144  | -.107  | -.108  | -.104  | -.102  |
| Edu Level         | .000   | -.026  | -.002  | .000   | -.037  | -.037  |
| Sustainable Edu   | .074   | .074   | .031   | .030   | .095   | .096   |
| Independent PV    | .295***| .340***| .438***| .425***| .356***| .364***|
| Interaction PV x SIF | -.150* | .026   |        |        |        |        |
| \( R^2 \)         | 11.1%  | 13.0%  | 21.5%  | 21.5%  | 14.7%  | 11.1%  |
| Adjust \( R^2 \)  | 9.4%   | 11.0%  | 19.9%  | 19.7%  | 13.1%  | 9.4%   |
| Moderating Effect | Positive| Not Exist| Not Exist| Not Exist| Not Exist|

Note: same as above

### Table 6. Hierarchical Multiple Regression Model Predicting Self-Efficacy on Green Beh

| Control Variables | Model 1 (Altruism) | Model 2 (Egoism) | Model 3 (Ecologicalism) |
|-------------------|--------------------|------------------|------------------------|
|                   | Beta 1  | Beta 2  | Beta 3  | Beta 4  | Beta 5  | Beta 6  |
| Gender            | .022   | 1.392  | .091   | .102   | .017   | .018   |
| Age               | -.030  | 1.086  | -.032  | -.021  | -.010  | -.004  |
| Edu Level         | .067   | 2.998  | .064   | .055   | .020   | .019   |
| Sustainable Edu   | .009   | 1.727  | .001   | .006   | .037   | .044   |
| Independent PV    | .506***| .148*  | .148*  | .228** | .448***| .497***|
| Interaction PV x SIF | -.165* |        |        |        |        |        |
| \( R^2 \)         | 26.6%  | 29.1%  | 3.5%   | 5.6%   | 20.6%  | 22.6%  |
| Adjust \( R^2 \)  | 25.1%  | 27.5%  | 1.6%   | 3.4%   | 19.1%  | 20.8%  |
| Moderating Effect | Positive| Negative| Positive| Not Exist| Not Exist|

Note: same as above