



# Does Korean Secondary School Education Translate into Environmental Awareness and Protection Effort to Address Global Food Crisis?

Justin Chung/ Seoul Foreign School, Ji Won Kim/ Korea International School

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<sup>1</sup>Seoul Foreign School, Seoul, South Korea; <sup>2</sup>(Korea International School) Seoul, South Korea  
Email: 00justinchung00@gmail.com

## ABSTRACT

Because of global climate change and exponential population growth, the global food crisis is no longer a distant reality. Therefore, this research investigates the effects of Korean secondary school education: How encourages adolescents to put their learning into action to protect their environment and to be aware of the global food crisis. The data from 2018 Survey of the Korean Society collected by Statistics Korea was used. After eliminating adults and those who were not in secondary schools, the responses of the remaining 2,292 people were analyzed via Pearson's Correlation and multiple linear regression analyses. The result revealed that the secondary school education explains the change of the adolescents' protection effort. The environmental awareness seemed to translate to actions. Lastly, Korean secondary education seemed to raise environmental awareness and to encourage their students to put their learning into action; however, the education fell short of helping them see the looming food crisis.

**Keywords :** *Global Food Crisis, Environmental Awareness, Adolescent, Climate Change*

## INTRODUCTION

THE 21st-century global economy saw a series of food crises (Lee et al., 2012). Because the industrial revolution has made hunger an anachronistic concern in many countries around the world, the food crisis in the 21st century was enough to force people to despair. The Food and Agricultural Organization of the United Nations (FAO) in 2010 found that nearly 1 billion people—16% of the population developing countries—were estimated to be undernourished (Napoli, De Muro, & Mazziotta, 2011). This statistic indicates how food crisis, interchangeably called food insecurity, is one of the most serious challenges faced by the global community, calling for more active measures and aids by the developed countries.

If one were to take global climate change and exponential growth of the world population into account, the global food crisis is not a distant reality. Currently, food scientists and other supranational organizations like the United Nations are toiling to devise solutions for an imminent food crisis. One should note that adolescents must be properly educated about the dire need to fight the food crisis because they can be the most powerful drivers of change. Also, being the beneficiary of foreign aides when the entire country was devastated by the Korean War, South Korea is now one of the leading countries that fight global issues.

Unfortunately, no study has identified how school education influences Korean adolescents to act on their learning about environmental issues, particularly those that are associated with the global food crisis. Therefore, this research investigates the effects of Korean secondary school education: how it encourages adolescents to put their learning into action to protect their environment and to be better aware of the global food crisis.

## 3 LITERATURE REVIEW

As demonstrated in this document, the numbering for sections upper case Arabic numerals, then upper case Arabic numerals, separated by periods. Initial paragraphs after the section title are not indented. Only the initial, introductory paragraph has a drop cap.

## 2.1. Definition of Food Crisis (Insecurity)

Defining the food crisis can trace back to the Hot Springs Conference of Food and Agriculture in 1943, which evolved the concept of a “secure, adequate and suitable supply of food for everyone. However, an era of flourishing food supply came to an end, and the food crisis from 1972 to 1974 marked the beginning of fluctuating food supply and prices (Napoli, De Muro, & Mazziotto, 2011). As a result, food security was first defined in the World Food Conference in 1974 as “availability at all times of adequate food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices. (United Nations, 1975)” There had been more than 200 definitions about food security in published writing (Maxwell & Frankenberger, 1995). FAO expanded the definition of food security to incorporate the concept of supply and demand and called it “ensuring that all people at all times have both physical and economic access to the basic food that they need (FAO, 1983). World Bank report “Poverty and Hunger” paid attention to the temporal dynamics of food insecurity and introduced the widely accepted distinction between chronic food insecurity and transitory food security and called it “access of all people at all times to enough food for an active, healthy life. (World Bank, 1986).” And the World Food Summit in 1996 had adopted a rather complex definition:

“Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active healthy life (FAO, 1996)”

The definition is further refined at the State of Food Insecurity in 2001:

“Food security [is] a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2001).”

Amartya Sen defined this food security as unavailability of food and discussed the entitlement of food:

“Starvation is the characteristics of some people not having enough food to eat. It is not the characteristics of there being not enough food to eat (Sen, 1981).”

Lee (2004) had drawn critical elements from the food security as follows: (1) availability of food, (2) accessibility to food, (3) stability of food supply, (4) Food safety/ quality and preference. \

## 2.2. Study on Food Crisis

FAO at the Scientific Symposium on Measurement and Assessment of Food Deprivation and Undernutrition in 2002 pointed out that existing indices fall short of capturing all aspects of food insecurity (FAO, 2002). As a result, this lack of a commonly accepted and comprehensive measure for food security on an international scale was surfaced as an impediment for the eradication of hunger and malnutrition (Heidhues & von Braun, 2004). Because no clear threshold for food crisis is available and food crisis is defined differently by countries, examining the types of food crisis has been limited (Lee et al., 2012).

Schnittker (1973) studied the food crisis that broke out from 1972 to 1973 and argued that supply, demand, and others as contributing factors for the crisis. Trostle (2008) classified the cause of the global food crisis of 2007 and 2008 as problems with supply, demand, financial and other miscellaneous factors. Other previous studies that examined global food crisis include those that done by Headey and Fan (2010)—who delved into the cause of food crisis and compared food crises of 1972-1973 and 2007-2008—and Abbott et al. (2008).

## 2.4 Research Questions

1. Does Korean secondary school education encourage adolescents' environmental protection effort?
2. Does environmental awareness translate to actions (efforts to protect the environment)?
3. How does secondary school education inform adolescents of the importance of the global food crisis?

### 3 METHODS

#### 3.1. Data

This research uses data from 2018 Survey of the Korean Society—Health, Education, Safety, Family, Environment— collected by Statistics Korea (National Statistics Registered No. 101018). This is an annual survey administered to understand public interest and life quality. The survey is being used to establish policies and to analyze our societal change.

#### 3.2. Participants

At first, the survey included a total of 42,550 people from 17 metropolitan cities or provinces across South Korea. Because the focal group of this research is and secondary school students who have yet to enter adulthood, those who are not attending secondary schools had been filtered out. After sorting out students in secondary schools, the remaining 2297 people had been first analyzed. Here, five people who were respectively 36-year-old (ID # 20997), 65-year-old (# 41637), 70-year-old (#18068), 78-year-old (#11555), and 80-year-old (#7405) had been eliminated from this research because they are likely to be in online secondary schools. Below are the descriptive statistics of the remaining 2,292 students who are physically attending secondary schools.

TABLE 1  
 Descriptive Statistics

	<i>N</i>	Mean	SD	Minim.	Maxim.
Age	2292	15.28	1.59	13	20
Gender	2292	.47	.50	0	1
<b>Effort</b>	2292	2.77	.55	1	4
<b>Awareness</b>	2292	3.41	.76	1	5
<b>Environmental Condition</b>	2292	3.26	.78	1	5
<b>School Satisfaction</b>	2292	3.63	.71	1.33	5
Past	2292	3.10	.97	1	5
Future	2150	3.14	1.12	1	5
Pay Price	2292	3.44	.97	1	5
Food Safety	2292	3.10	.94	1	5
Global Food Crisis	2292	3.43	.90	1	5
<b>Self-esteem</b>	2292	3.98	.75	1	5
<b>Stress</b>	2292	2.29	.66	1	4
Valid N (Listwise)	2150				

The respondents' aged ranged from 13 to 20. Approximately 47% of the respondents were female. Most of the participants seldom act to protect their environment. They are mostly aware of the gravity of the environmental issues and its repercussion,  $M = 3.41$ ,  $SD = .76$ . They perceive the environmental condition of their neighborhood to be in the middle range,  $M = 3.26$ ,  $SD = .78$ . Most of them were satisfied with their school life and its contents,  $M = 3.63$ ,  $SD = .71$ .

Most people suppose that their environmental change of the past five years to be in the mid-range,  $M = 3.10$ ,  $SD = .97$ . How they predict the future environmental condition is also in a similar range,  $M = 3.14$ ,  $SD = 1.12$ . Compared to the perception about the past five years, the standard deviation of the question about their future prediction is larger, suggesting a greater degree of variability. Most people are in the middle when it comes to the willingness to pay prices for environmental protection,  $M = 3.44$ ,  $SD = .97$ . People's belief in food safety were also in the middle range,  $M = 3.10$ ,  $SD = .94$ , so did their optimism for global food crisis,  $M = 3.43$ ,  $SD = .90$ . Lastly, people are inclined to have relatively high self-esteem,  $M = 3.98$ ,  $SD = .75$ , and their average stress level was 2.29 in five-point scale,  $SD = .66$ .

### 3.3. Analysis

Originally, the questions were coded in ways conducive for respondents to answer. However, some of them were reverse coded prior to this research analysis. Followings are the results of re-coding to improve the interpretability of analyses.

TABLE 2  
Variables Composed of Single Question Item

Perception about the environmental change of the past five years	Very bad	Bad	Average	Good	Very Good
Compared to five years ago, how did our environmental change?	①	②	③	④	⑤
Perception about the environmental change after five years	Very bad	Bad	Average	Good	Very Good
After five years, how will our environment change?	①	②	③	④	⑤
Price for environmental protection	Strongly disagree	Disagree	Average	Agree	Strongly Agree
Would you be willing to pay prices to protect the environment?	①	②	③	④	⑤
Do you feel safe about the following?	Very Unsafe	Unsafe	Average	Safe	Very Safe
Food Safety (Junk food, Dangerous food substance, etc.)	①	②	③	④	⑤
Global Food Crisis (Food Shortage, Skyrocketing food price)	①	②	③	④	⑤

TABLE 3  
Efforts to Preserve the Environment

How much do you endeavor to prevent environmental pollution?	Never	Seldom	Occasionally	Always
1. Using public transportation	①	②	③	④
2. Recycling	①	②	③	④
3. Minimizing food waste	①	②	③	④
4. Minimizing chemicals (e.g. shampoo, laundry detergent, dish soap)	①	②	③	④
5. Avoiding disposable products	①	②	③	④
6. Using eco-friendly product	①	②	③	④
7. Participating in eco-preserving activity	①	②	③	④
8. Skimping on water usage	①	②	③	④
9. Saving electricity at home	①	②	③	④

Nine questions were asked to see how hard people put efforts to protect the environment. When checked the reliability of the nine items as illustrated in Table 3, the Cronbach's coefficient alpha was .864. As a result, the nine question items were merged into a single variable.

TABLE 4  
 The Environmental Awareness

How much do you fear about the following environmental issues?	Never	Hardly	Average	Sometime	Always
1. Global warming	①	②	③	④	⑤
2. Toxic chemical elements	①	②	③	④	⑤
3. Radioactive materials	①	②	③	④	⑤
4. Air pollution (micro-dust)	①	②	③	④	⑤
5. Chemical fertilizer	①	②	③	④	⑤
6. Tap water	①	②	③	④	⑤

Six questions were asked to measure how seriously people feel about the environmental issues that are heatedly debated in Korea as illustrated in Table 4. When checked the reliability of the six question items, Cronbach's coefficient alpha was .862. As a result, these six questions were merged into single item.

TABLE 5  
 The Environmental Condition of the Neighborhood

What is the environmental condition of your neighborhood?	Very bad	Bad	Average	Good	Very Good
1. Air (Atmospheric)	①	②	③	④	⑤
2. Water (Streams, and river)	①	②	③	④	⑤
3. Soil	①	②	③	④	⑤
4. Noise	①	②	③	④	⑤
5. Forestry	①	②	③	④	⑤
6. General living	①	②	③	④	⑤

Six questions were asked to measure the environmental conditions of people's neighborhoods. When checked the reliability of the six question items, Cronbach's Coefficient Alpha was .917. As a result, the six items were merged into a single variable.

TABLE 6  
Satisfaction with School Life

How satisfied are you with the following aspects of school?	Very bad	Bad	Average	Good	Very Good
1. school curriculum	①	②	③	④	⑤
2. Education methodology	①	②	③	④	⑤
3. Peer relation	①	②	③	④	⑤
4. Teacher-student relationship	①	②	③	④	⑤
5. School facility and resources	①	②	③	④	⑤
6. School surrounding	①	②	③	④	⑤
7. Overall school life	①	②	③	④	⑤

Though one can easily presuppose that school effect is multidimensional, this research uses the students' satisfaction with the school as a primary indicator of the school effect. And seven questions were asked to measure people's satisfaction with their school life. When checked the reliability of the six question items, Cronbach's Coefficient Alpha was .902. As a result, the seven questions were merged into a single item.

TABLE 7  
Self-esteem

	Strongly Disagree	Disagree	Average	Agree	Strongly Agree
1. I am a valuable person.	①	②	③	④	⑤
2. I have a good personal quality.	①	②	③	④	⑤
3. I have positive view about myself.	①	②	③	④	⑤
4. I am happy with who I am.	①	②	③	④	⑤

Four questions were asked to measure people's self-esteem level as illustrated in Table 7. When checked the reliability of the four question items, Cronbach's Coefficient Alpha was .910. As a result, the four question items were merged into a single variable.

TABLE 8  
Stress Level

For the past two weeks, how stressed out were you about the following?	Never	Seldom	Occasionally	Always
1. Family life	①	②	③	④
<del>2. Work</del>	<del>①</del>	<del>②</del>	<del>③</del>	<del>④</del>
3. School life	①	②	③	④
4. Life in general	①	②	③	④

At first, four questions were asked to determine people's stress level of the past two weeks. Because the respondents of this research are comprised of those who are in elementary or secondary schools, the question #2 about work stress had been eliminated. The rest of the three questions' reliability was checked, and Cronbach's Coefficient alpha was .834. As a result, the three questions were merged into a single variable.

3.4. Results

TABLE 9  
 Pearson's Correlation Analysis

	Age	Gender	Effort	Aware	Condit.	School	Past	Future	Pay Price	Food Concern	Food Crisis	Esteem
Gender	-.03											
Effort	-.04	.04										
Aware	.02	.13***	.02									
Condit	-.03	-.05*	.14***	-.30***								
School	-.11***	-.05*	.24***	-.14***	.32***							
Past	.02	.03	-.08**	.21***	-.36***	-.13***						
Future	.03	.04*	-.09***	.21***	-.29***	-.17***	.70***					
Pay Price	-.00	.04	.06**	.01	.12***	.14***	-.09***	-.10***				
Food Safety	-.04	-.06**	.05**	-.29***	.26***	.24***	-.11***	-.11***	.06**			
Global Food Crisis	-.07***	-.04	.07***	-.25**	.28***	.27***	-.11***	-.10***	.09***	.60***		
Esteem	-.07***	-.05*	.28***	-.06**	.18***	.45***	-.08***	-.07***	.11***	.14***	.16***	
Stress	.11***	.11***	-.19***	.13***	-.21***	-.42***	.09***	.09***	-.04	-.20***	-.20***	-.36***

\*  $p < .05$     \*\*  $p < .01$     \*\*\*  $p < .001$

Having conducted a correlation analysis, people's endeavor to protect the environment is positively correlated with their school satisfaction ( $r = .24, p < .001$ ) and their self-esteem ( $r = .28, p < .001$ ).

People's environmental awareness is negatively correlated with their environmental condition of their neighborhood ( $r = -.30, p < .001$ ), their belief in food safety ( $r = -.29, p < .001$ ), and their optimism about global food crisis ( $r = -.25, p < .01$ ). The awareness is positively correlated with how they feel about their environmental change of the past five years ( $r = .21, p < .001$ ) and their prediction about the environmental change of the future ( $r = .21, p < .001$ ).

People's environmental condition of the neighborhood is positively correlated with their school satisfaction ( $r = .32, p < .001$ ), their belief in food safety ( $r = .26, p < .001$ ) and their optimism about global food crisis ( $r = .28, p < .001$ ). On the other hand, the environmental condition is negatively correlated with how they feel about the environmental change of the past five years ( $r = -.36, p < .001$ ), how they predict the environmental change of the future ( $r = -.29, p < .001$ ), and their stress level ( $r = -.21, p < .001$ ).

People's satisfaction about schooling has positively correlated with their belief in food safety ( $r = .24, p < .001$ ), their optimism about the global food crisis ( $r = .27, p < .001$ ), and their self-esteem ( $r = .45, p < .001$ ). The school satisfaction is negatively correlated with people's stress level ( $r = -.42, p < .001$ ).

How people evaluate the environmental change of the past five year is strongly correlated with how they perceive their future environmental change ( $r = .70, p < .001$ ).

People's belief in food safety is also strongly correlated with their optimism about the global food crisis ( $r = .60, p < .001$ ) and is nega-

tively correlated with their stress level ( $r = -.20, p < .001$ ). People’s concern about the food crisis is also negatively correlated with their stress level ( $r = -.20, p < .001$ ). People’s self-esteem is negatively correlated with their stress level ( $r = -.36p < .001$ ). Besides, people’s willingness to pay prices for the environmental protection was ruled out from the analysis because it was not correlated with any of the variables in the Pearson’s correlation analysis.

TABLE 10  
Regression Model Predicting Optimism and Global Food Crisis

	Unstandardized Coefficient		Standardized	<i>t</i>	<i>p</i> -value
	<i>B</i>	Standard Error	Beta		
Constant	1.58	.25		6.31	<b>.00</b>
Age	-.02	.01	-.03	-1.87	.06
Gender	.01	.03	.01	.33	.74
Effort	.00	.03	.00	-.02	.99
<b>Awareness</b>	-.07	.02	-.06	-3.04	<b>.00</b>
<b>Condition</b>	.11	.02	.09	4.72	<b>.00</b>
<b>School</b>	.11	.03	.09	4.27	<b>.00</b>
Past	-.01	.02	-.01	-.59	.56
Future	.02	.02	.03	1.20	.23
<b>Food Safety</b>	.51	.02	.53	29.05	<b>.00</b>
Stress	-.04	.03	-.03	-1.62	.11
Esteem	.02	.02	.02	.99	.32

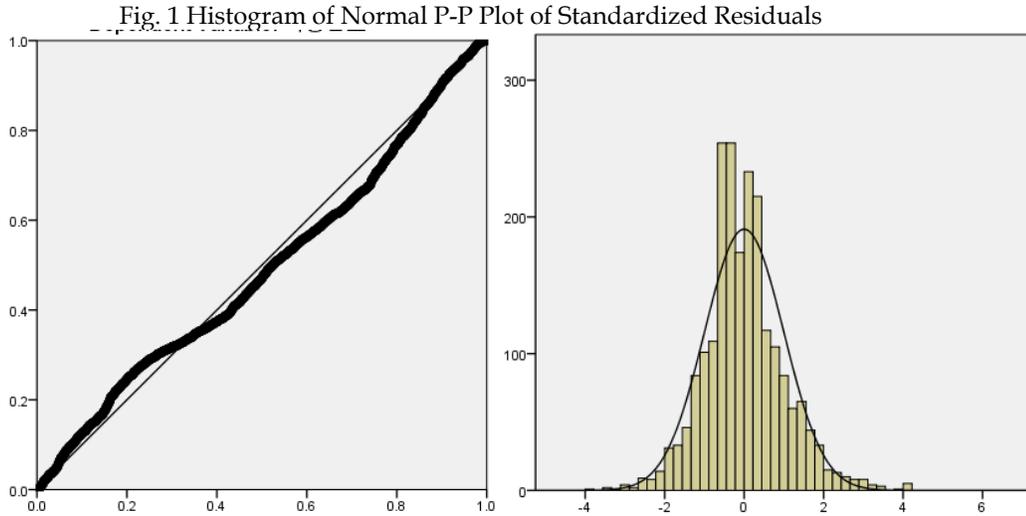
*Dependent Variable: Optimism about Global Food Crisis*

*\*Below is the regression equation*

$$\hat{Y} = 1.58 - .02(\text{Age}) + .01(\text{Gender}) + .00(\text{Effort}) - .07(\text{Awareness}) + .11(\text{Environmental Condition}) + .11(\text{School Satisfaction}) - .01(\text{Perception about the Past}) + .02(\text{Perception about the future}) + .51(\text{Belief in Food Safety}) - .04(\text{Stress}) + .02(\text{Self-esteem})$$

When fitted a regression model predicting people’s optimism about the global food crisis, F-statistics was 126.297 (11, 2138),  $p < .001$ ; therefore, the model’s predictability was higher than a model using mean values of the independent variables to predict people’s optimism about the global food crisis. The  $R^2$  value was .40, meaning that approximately 40% of the variance in people’s optimism about the global food crisis was explained by the independent variables included in this regression model.

The intercept shows that the optimism about the global food crisis is approximately 1.41 when all the other variables are held constant. When it comes to the demographic characteristics, neither age nor gender explained the change of people’s optimism about the global food crisis. However, when the environmental awareness increases by one point, the optimism about the global food crisis decreases by .07 ( $p < .001$ ). When people’s perceived environmental condition of their neighborhood increases by one unit, their optimism about the global food crisis increases by .11 ( $p < .001$ ). When the people’s school satisfaction increases by one unit, their optimism about global food crisis increases by .11 ( $p < .001$ ). Lastly, when the belief in food safety increases by one unit, the optimism about global food crisis increases by .51 ( $p < .001$ ).



The normality assumptions of the above regression model was tested via histogram and the Normal P-P plot as illustrated in Figure 1. The observed values are neatly following the line in the plot; therefore normality assumptions appears to hold without a serious concern (Field, 2009)

When it comes to the homoscedasticity assumption, the scatterplot of x-axis fell in the range of -3 and 3. On the y-axis, however, the residuals slightly went below -3 and over 3. Though this slightly raised concerns, the regression model was accepted based on the normality and independence assumptions that were satisfied.

When examined the possibility of outliers affecting the result of the regression model, the maximum values of the cook's distance was .016; therefore, the concern for outliers was dismissed.

TABLE 11  
 Regression Model Predicting Protection Effort

	Unstandardized Coefficient		Standardized		<i>p</i> -value
	<i>B</i>	Standard Error	Beta	<i>t</i>	
<b>Constant</b>	1.79	.18		9.83	<b>.00</b>
Age	.00	.01	.00	-.01	.99
<b>Gender</b>	.06	.02	.05	2.53	<b>.01</b>
<b>Awareness</b>	.06	.02	.09	3.86	<b>.00</b>
<b>Condition</b>	0.05	.02	.07	2.80	<b>.01</b>
<b>School Satisfaction</b>	0.08	.02	.10	3.97	<b>.00</b>
Past	-.01	.02	-.02	-.61	.54
Future	-.02	.01	-.04	-1.55	.12
Food Safety	.00	.02	.00	.06	.95
Global Food Crisis	.00	.02	.00	-.01	.99
<b>Stress</b>	-.07	.02	-.08	-3.36	<b>.00</b>

Dependent Variable: Endeavor to protect the environment

\*Below is the regression equation

$$\hat{Y} = 1.79 + .00(\text{Age}) + .06(\text{Gender}) + .06(\text{Awareness}) + .05(\text{Environmental Condition}) + .08(\text{School Satisfaction}) - .01(\text{Perception about the Past}) - .02(\text{Perception about the future}) + .00(\text{Food Safety}) + .00(\text{Optimism about Global Food Crisis}) - .07(\text{Stress}) + .14(\text{Self-Esteem}).$$

When fitted another regression model predicting people's endeavor to protect the environment, F-statistics was 24.14 (11, 2138),  $p < .001$ ; therefore, it was concluded that the model's predictability was higher than a model using mean values of the independent variables to predict the endeavor. The  $R^2$  value was .11, meaning that approximately 11% of the variance in people's optimism about the global food crisis was explained by the independent variables included in this regression model.

The intercept shows that how much effort people put to protect the environment is approximately 1.79 when all the other independent variables are held constant. When it comes to people's demographic background, gender explained the change of people's endeavor. So women are approximately .06 more likely to put effort to protect the environment than man,  $p = .01$ . When people's environmental awareness increases by one unit, they put .06 more effort to protect the environment,  $p < .001$ . However, when people's environmental condition of their residence increases by one unit, they put .05 more effort to protect the environment,  $p < .001$ . Interestingly enough, neither people's school satisfaction increases by one unit, nor people endeavor to protect their environment,  $p < .001$ . However, when people's stress level increases by one unit, they put .07 more effort to protect the environment,  $p < .001$ . Lastly, when people's self-esteem increases by one unit, they put .14 more effort to protect the environment,  $p < .001$ . Interestingly enough, neither people's belief in food safety nor their self-esteem increases by one unit, they put .00 more effort to protect the environment,  $p < .001$ .

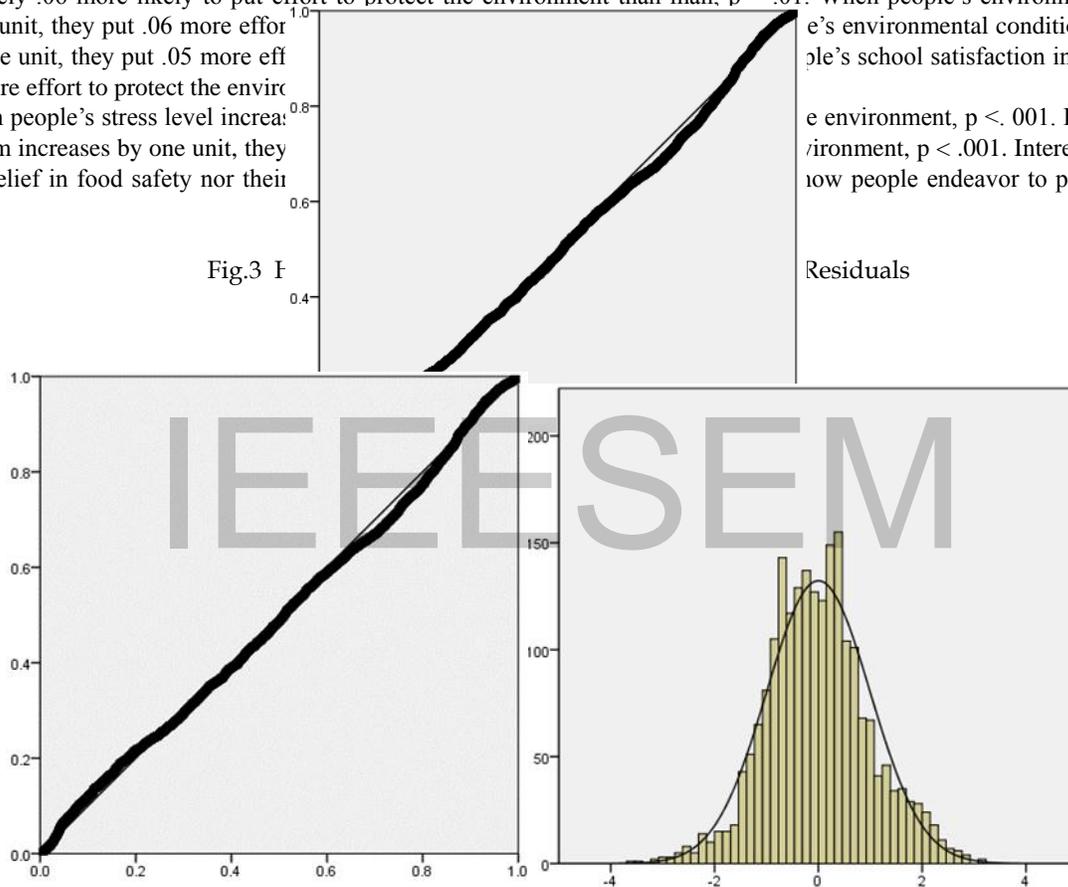
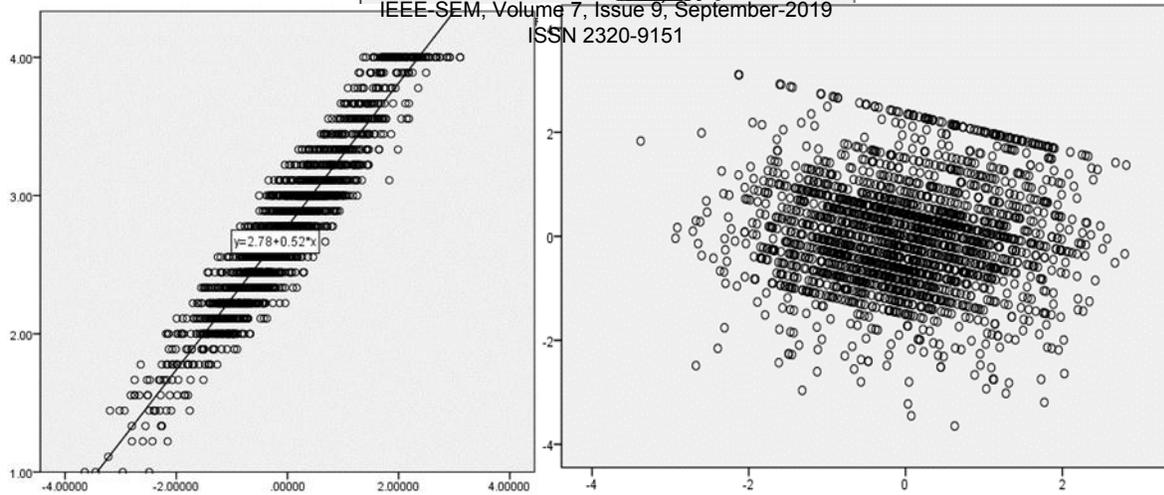


Fig.3 F

Residuals

The normality assumptions of the above regression model was tested via histogram and the Normal P-P plot as illustrated in Figure 1: The histogram shows that the values are drawing a nice bell-shaped curve, and the observed values in the P-P plot are neatly following the line; therefore normality assumptions appears to hold without a serious concern (Field, 2009)

Fig. 4 Residual Plots Testing for Homoscedasticity and Linearity Assumption



When it comes to the homoscedasticity assumption, most of the observed values are falling neatly within in the range of -3 and 3 both on the x-axis and y-axis. Therefore, homoscedasticity assumption was deemed to be satisfied. Besides, as illustrated in the figure, the observed values are drawing a linear relationship; therefore, linearity assumption was satisfied. Also, the cook's distance ranged from .000 to .019; therefore, the concern for potential outliers influencing the regression model was dismissed.

#### 4 CONCLUSION

##### **Does Korean secondary school education encourage adolescents' environmental protection effort?**

School satisfaction is moderately correlated with secondary school students' protection effort. The regression model predicting the protection effort also shows that school satisfaction explains the change of protection effort. One should note that school satisfaction is strongly correlated with adolescents' self-esteem. Therefore, future research must examine the interaction effects of self-esteem to better understand the developing mechanisms of the protection effort.

##### **Does environmental awareness translate to actions (efforts to protect the environment)?**

Though moderate, how adolescents feel about the environmental condition of their neighborhood explain the change of the protection effort. Interestingly enough, the correlation between environmental awareness and protection effort was not statistically significant. In the regression analysis, environmental awareness does explain the protection effort, but its effect was not as strongly as self-esteem or school satisfaction.

##### **How does secondary school education inform adolescents of the importance of the global food crisis?**

Looking at the negative correlation between the environmental awareness and the optimism about the global food crisis, one can see that the more adolescents are environmentally aware of its seriousness, they less optimistic they are about the global food crisis. The more they feel satisfied with the environmental condition of their neighborhood, the more optimistic they are about the global food crisis. Interestingly enough, school satisfaction and optimism are positively correlated. One can presume that school education promotes a positive outlook about their future, so students who are satisfied with their schooling are less pessimistic about the food crisis that is likely to befall humanity. The same interpretation can be drawn from the first regression analysis predicting the optimism about the global food crisis because school satisfaction accounts for the change of optimism.

A thought-provoking implication can be drawn from this research analysis. Korean secondary school education does raise adolescents' environmental awareness, thus encouraging them to put their learning into action. Ironically, however, the positive outlook that adolescents foster through their education blind their judgment about the looming food crisis that they may have to face. Because secondary school students spend a considerable amount of time at school, school administrators, and education policy-makers must inform these students of the bare face of the global food crisis so that they may devise solutions and contribute to the prosperity of humanity as educated citizens.

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