Analyzing the Relationships Between Factors Affecting Adolescents' Happiness in OECD Countries[*]

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The aim of this study is to investigate the causal relationships between key factors relating to education that affect the happiness of adolescents, and to put forward policy suggestions wherewith 20 OECD countries may raise their levels of adolescent happiness. The HBSC score of adolescents from 20 OECD countries was selected as an indicator for happiness, and a number of independent variables such as per capita GDP and per capita educational expenditure were included in the analysis. A structural equation model was employed for the analysis. The research results show that the variables that directly affected happiness were per capita educational expenditure, educational decentralization level, number of students per teacher, and others. Of these, per capita educational expenditure had the greatest influence. Of the paths to adolescent happiness, those that contained a significant indirect effect were "per capita GDP → per capita educational expenditure → happiness" and "educational decentralization → number of students per teacher → happiness", which were significant at the level of $\rho < 0.05$. Compiling the paths toward adolescent happiness focusing on the significance of these direct and indirect effects shows that the "per capita GDP → per capita educational expenditure → happiness" path has the greatest effect.

Keywords: adolescents, happiness, educational factors, structural equation model

Introduction

Recently, a number of studies in the social sciences have been conducted on happiness; in particular, studies of the happiness of children/adolescents are attracting a widespread interest. These latter studies were initiated on a worldwide scale by international organizations such as the United Nations International Children's Emergency Fund (UNICEF), and accelerated following the enactment of the UN Convention on the Rights of the Child in 1989. The child-adolescent happiness index was recognized as an important basis for endorsing policy objectives and reviewing accomplishments, and accordingly, many researchers and organizations around the globe are currently engaged in studies of this nature (Ben-Arieh, 2006). The increase in such studies reflects the rising international interest in happiness. In particular, according to recent studies, happiness during the early stages of life also influences overall happiness (Yang, 2008), and so its importance is further emphasized.

In this context, a UNICEF study conducted in 2006 organized the child-adolescent happiness index into six categories: "material well-being", "health and safety", "education", "peer and family relationships", "subjective well-being", and "behavior and risk". This study then reorganized these categories into 18 components and 40 indicators in order to measure happiness. The main categories were broken down as follows:

(1) The material well-being section was made up of relative poverty, unemployed households, and deficiency;

(2) The health and safety section was made up of infant health, vaccination, and accidental deaths;

(3) The education section was made up of scholastic achievement, educational participation, and switch to employment;

(4) The peer and family relationships section was made up of family structures, parent relationships, and peer relationships;

(5) The subjective well-being section was made up of health, school life, and individual happiness;

(6) The behavior and risk section was made up of health behavior, risk behavior, and experiences of violence.

Thus, the child-adolescent happiness index is based on a multifaceted set of criteria that reflect its complex relationship with life (UNICEF, 2006; Lippman, 2007).

The authors of the 2006 UNICEF study thought it appropriate to take a multifaceted approach toward the happiness of adolescents and endeavored to measure this. Of these six indexes, "education" is crucial in that the main developmental task of an adolescent is school learning, and the educational environment that an adolescent is exposed to can determine his or her happiness, well-being, and even future (UNICEF, 2006). Given this, a more specific and integrated approach is required to enable us to understand the adolescents' happiness. The education index provided by UNICEF is made up only of scholastic achievement, educational participation, and switch to employment. This covers only a narrow range, and thus can only reflect a limited amount of the environmental characteristics of the education of adolescents.

The present study will reorganize the educational factors that influence the happiness of adolescents into six alternate categories as follows:

(1) Percentage of educational expenses (= the percentage of educational expenditure contained in per capita GDP);

(2) Per capita educational expenditure;

(3) Ratio of students to teaching staff;

(4) Educational decentralization level;

(5) School life satisfaction level;

(6) Academic maintenance percentage.

The aim of this study is to clarify the structural relationship between these variables and happiness. Also, although it is not a direct educational factor, per capita GDP will be regarded as the basis for enforcing national education policy and so will be set as an exogenous variable. A structural relationship was set in which educational factors mediate the "per capita GDP → happiness" path.

Although educational factors can be subdivided into environmental aspects, aspects relating to teachers, students, and parents, and so on, this study restricted the OECD's educational factors to those that can be objectively measured. National data presented by the Institute for Management Development (IMD) were

employed in order to obtain per capita GDP, the percentage of educational expenses (the percentage of educational expenditure contained in per capita GDP), and per capita educational expenditure. The ratio of students to teaching staff and the level of educational decentralization (i.e., the proportion of issues decided within the school) were obtained by utilizing national data reported by the OECD's "Education at a Glance" (OECD, 2012; 2013). Meanwhile, results reported in the "Health Behavior in School-Aged Children Survey" by HBSC (2010; 2012) were employed in order to obtain data on school life satisfaction levels, academic maintenance percentages, and happiness.

The results of this study will help scholars studying the happiness of adolescents and education policy decision-makers understand the factors relating to increased adolescent happiness, and will also provide important policy standards for deciding and enforcing education policies at both national and local levels.

Theoretical Background

The Happiness of Adolescents

Discussion of a child-adolescent happiness index stems from the Social Indicators Movement in the 1960s (Aborn, 1985). A plethora of academic studies were carried out on social indicators during the late 1960s and the early 1970s, and these stimulated various conceptual approaches toward the development of the child-adolescent happiness index (Lippman, 2007). The State of the World's Children Report, which has been published annually since 1979 by UNICEF, and the UN Convention on the Rights of the Child, adopted in 1989, led to a further increase in international interest and research in this field.

The term "happiness" is used by scholars, along with the terms such as "well-being", "satisfaction in life", "subjective well-being", "quality of life", and so on, and different researchers define these terms slightly differently. Kim and Baek (2008, p. 28) conceptualized the relationship among these terms, stating that:

> Happiness is the narrowest term, in that it describes a person's positive emotion regarding his or her life. Subjective well-being is a medium-sized term, in that it is an accumulation of subjective evaluations of one's quality of life; and subjective quality of life is the most comprehensive term, in that factors other than psychological ones, such as subjective well-being, can be included.

In the present study, happiness will be understood in the narrowest terms and will be defined as "the feeling in which sufficient satisfaction and happiness is experienced in life" (National Institute of the Korean Language, 2014).

Given such measurements of abstract happiness, many researchers have expended effort on achieving an objective measurement. For instance, single questions have been employed, such as:

(1) "How happy are you?";

(2) "How satisfied are you with your life overall?" (Campbell, Converse, & Rodgers, 1976);

(3) A facial measurement method which measures one's emotional state through facial expressions (Andrews & Withey, 1976);

(4) A happiness scale comprising two questions, "In general, how many times do you feel happy or unhappy emotions?" and "On average, how much in percentage terms did you feel happy?" (Fordyce, 1988);

(5) A subjective happiness scale consisting of four questions and four options, including: "Am I a happy person?", "Am I happy compared to my peers?", "Do I resemble one who does or does not pursue happiness and enjoy life?", and "Is my life just right?" (Lyubomirsky & Ross, 1997).

Scales have also frequently been employed, such as a subjective well-being scale which measures both positive and negative emotions regarding life satisfaction (Diener, 1984), a psychological well-being scale comprising 46 questions (Ryff & Singer, 1998), and the Oxford happiness scale (Argyle, Martin, & Crossland, 1989). There also exists a well-being scale which adds social well-being to its criteria (Keyes, 2005).

In this study, happiness is defined as a feeling in which sufficient personal satisfaction and joy are felt, and this supports Diener's (1984) view that happiness should be evaluated according to a person's subjective experience. Therefore, of all the instruments used to investigate the happiness of adolescents in the 20 OECD countries, the questions about life satisfaction used by the "Health Behavior in School-Aged Children Survey" (HBSC, 2012) were thought to be the closest to fulfilling the requirements for measuring happiness, and so these were employed.

Educational Factors Affecting the Happiness of Adolescents

Factors influencing the happiness of adolescents can be broadly divided into individual psychological characteristics and environmental characteristics. However, since data on individual psychological characteristics which objectively measure the happiness of adolescents in OECD countries are very limited, this study will restrict its focus to environmental characteristics and, in particular, educational factors. The relationship between the factors employed in this study is explicated below.

As regards the influence of per capita GDP, in July 2006, the UK's New Economics Foundation (NEF) accumulated environmental conditions such as life satisfaction, average lifespan, and energy consumption, and presented a happiness index for 178 countries. The economic superpowers of USA and Japan were 150th and 95th, while Western European countries possessing a decent social welfare system also had a low ranking: The UK and France, for instance, were 108th and 129th respectively. The happiest country, according to the scale, was the Republic of Vanuatu. Average lifespan for this country was 68.6 and its per capita GDP was only $2,944, but its life satisfaction score was 7.4 out of 10.

These findings suggest that per capita GDP does not directly affect happiness. However, in this study, it is assumed that although per capita GDP does not directly influence the happiness of adolescents, this will be affected indirectly by various education-environment factors. Per capita GDP, educational expenditure percentage, per capita educational expenditure, school decentralization level, number of students per teacher, academic maintenance percentage, and school life satisfaction level were assumed to work as parameters. However, research directly relating to the relationship between these factors is very limited. On the basis of the theory regarding the characteristic environmental factors of happiness, the following assumptions can be made about the influence of these factors.

First, as regards the relationship between per capita GDP and educational expenses, in OECD member states, the percentage of educational expenses relative to per capita GDP is high (5.6% in 2006). Expenditure on primary and secondary education accounted for 3.7% of GDP, and expenditure on higher education was 1.4% (OECD, 2010). Between 2000 and 2006, educational expenditure by OECD countries increased to 28%, an average annual increase of 4%. This relationship shows that per capita GDP can increase the overall percentage of educational expenses as well as per capita educational expenditure. These increases will lead to increased benefits for students, who can be viewed as consumers of education, and thus they are assumed to have a positive effect on happiness.

Meanwhile, the educational characteristics of the school itself, such as class sizes, ratio of students to teaching staff, physical resources, and teacher supply, are thought to considerably affect its teaching and learning activities. In particular, the numbers of students per teacher and per class are employed as an important indicator reflecting the condition of a country's education system. In view of this, although schools in the Republic of Korea were initially in poor condition following liberation owing to a growth in the education sector brought about in order to meet popular demands for education, since then great efforts have been made to expand teacher numbers. Observation of Korea's situation based on 2011 data shows that the number of students per teacher in Korean schools was higher than the OECD average: 24.2 more than the OECD average of 15.4 in primary schools, 25.5 more than the average of 13.3 in middle schools, and 19 more than the average of 13.9 in high schools. This phenomenon shows that not only Korea but also all OECD member states are making efforts to reduce student/teacher ratios, and they are predicted to decline steadily. This study will assume that the smaller the number of students per teacher, the greater will be the number of educational benefits provided to students, and that this will have a positive effect on academic maintenance percentage, satisfaction in school life, and happiness.

The relationship between educational decentralization and other variables is as follows. In this study, educational decentralization was understood in terms of the degree of decision-making, and the degree of autonomous decisions made by the school was set as a factor influencing educational competitiveness. In general, it was assumed that, when decisions about education policies are made in places close to the school's catchment area, they will reflect prevailing educational conditions well and thus should lead to an increase in students' happiness. The view that carrying out decentralization, instead of centralizing authorities further, increases policy efficiency and the accomplishment of goals is gaining support. The OECD divides educational decision-making authorities according to the size of the organization (central government, metropolitan authorities, local authorities, and schools), and then presents data on how authorities responsible for education as a whole are distributed among these different organizations (OECD, 2010). This study assumes that the greater the number of educational decisions made by schools (which are on the front line of education), the higher will be a country's level of decentralization of educational authority. It was further assumed that this educational decentralization could not only affect per capita GDP and the number of students per teacher, but also could increase satisfaction with school life, and thus a path leading to happiness via these factors was set.

Finally, the relationship among academic maintenance percentage, school life satisfaction, and other variables was considered. This study employed data provided by the OECD (2012) on the school enrollment percentage of adolescents aged between 15 and 19 in order to obtain academic maintenance percentage, while school life satisfaction was based on the percentage of those who answered that they "like school life very much" on the HBSC (2012). According to OECD data, in 2012, the average academic maintenance percentage was 86.0%. Ireland scored the highest with 96.0%, Poland and Belgium scored 93.0%, and Hungary 92.0%, while England, with 77%, scored the lowest of all. The OECD average for school life satisfaction was 27.6%, with Iceland having the highest average (42.5%), followed by the Netherlands, the Republic of Korea, and Austria, with 38.7%, 35.6%, and 34.2% respectively. Italy had the lowest level of satisfaction, with 15%. As can be seen from these results, the relationships between academic maintenance percentage and school life satisfaction are not shown in a consistent manner. However, in this study, it will be assumed that, given the characteristics of this concept, academic maintenance percentage will be high if adolescents are satisfied with their school life, and on the basis that the path to happiness is influenced by variables such as per capita GDP, educational expenditure percentage, and educational decentralization level, this will be empirically verified.

Research Questions

In this study, two research questions were selected on the basis of the characteristics of the variables mentioned above and theoretical discussion:

(1) Which variable has the greatest influence on the happiness of adolescents?

(2) What are the direct and indirect causal relationship structures between the factors that affect the happiness of adolescents?

Research Method

Research Target

The research target for this study consisted of 20 of the 33 OECD member state countries (The other 13 countries were excluded because of insufficient data). These countries are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Korea, the Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, the UK, and USA.

Selection of Variables

On the basis of the findings of previous research, in this study, the happiness of adolescents will be set as the dependent variable, and seven variables that affect this happiness will be selected. These variables are per capita GDP, educational expenditure percentage (percentage of educational expenses contained in per capita GDP), per capita educational expenditure, ratio of students to teaching staff, educational decentralization level, school life satisfaction level, and academic maintenance percentage. Per capita GDP is the most salient indicator for measuring the economic power of a nation. Educational expenditure percentage (the percentage of educational expenses contained in per capita GDP), meanwhile, can serve as evidence for the level of national interest shown in education. Per capita educational expenditure, also, is a variable that helps us understand the policy importance placed by a government on education. Ratio of students to teaching staff not only reflects the government's interest in education policies, but also can affect the quality of education; and level of decentralization of education policies (which is related to educational autonomy and localization) can help us understand whether educational decision-making is carried out in a centralizing or decentralizing manner.

Table 1

Variables and Their Sources

Variable name	Measurement method	Data source	Target
Happiness (hap)	Subjective recognition of whether one is satisfied with one's life	HBSC (2010; 2012)	11-, 13-, and 15-year-olds
Per capita GDP (gdp)	Per capita GDP	IMD (2012; 2013)	National data
Educational expenditure percentage (tee)	Percentage of education expenses contained in per capita GDP (%)	IMD (2012; 2013)	National data
Per capita education expenditure (tepc)	Education expenditure per person	IMD (2012; 2013)	National data
Ratio of students to teaching staff (puptec)	Number of students divided by number of teachers	OECD (2012; 2013)	National data
Educational decentralization (sch)	Percentage of decisions made by school relative to number of decisions on educational issues	OECD (2012; 2013)	National data
School life satisfaction (sat)	Percentage of students who answered that they "enjoy school life very much"	HBSC (2010; 2012)	11-, 13-, and 15-year-olds
Academic maintenance percentage (stu)	Percentage of academic maintenance of children	OECD (2010; 2012)	15- to 19-year-olds

Note. Italic terms in parenthesis indicate acronyms of the variables as shown in the figures below.

Satisfaction with school life is a variable that has a huge influence on various educational effects that can be perceived by students, while academic maintenance percentage (the percentage of adolescents attending school), also, is a variable which is greatly affected by governmental and parental interest in education. The measurement methods and sources for these variables are shown in Table 1 above. In this study, it was observed that data on a limited number of countries could affect the result values, so each data item was included twice in the analysis.

Analysis Method

The data analysis method used in this study was as follows. First, by using SPSS 18.0, the descriptive statistics of each variable and the Pearson coefficient were obtained. Second, a structural equation model analysis using AMOS 20.0 was conducted. The maximum likelihood method was used in the structural equation model as a coefficient estimation method. There are two methods for evaluating the model, one that uses χ^2 verification and another that uses a goodness-of-fit index (GFI). However, the χ^2 verification is sensitive to the size of the sample and has a very strict null hypothesis, which makes it unlikely to conduct evaluations solely relying on the χ^2 verification. In this study, the simplicity of the model was considered, and to evaluate the appropriateness of the verification model which had its standards of goodness-of-fit evaluation index established, the χ^2 verification, as well as the GFI, was considered. Of the numerous existing indexes, the GFI, the Turker-Lewis Index (TLI), the normed fit index (NFI), the comparative fit index (CFI), and the Root Mean Square Error of Approximation (RMSEA) were employed in this research. Third, when the hypothetical model was unsuited to the given data, a model modification process was carried out by checking the modification index and adding paths with an index value higher than 4. Thus, the best fit model could be found without damaging the simplicity of the model, and the significance of the paths that exist between variables, as well as the explanation power (direct effect, indirect effect, and total effect), could also be explained. Fourth, by employing the bootstrap method which focused on the significance of indirect effects, the mediating effects of educational expenditure percentage, per capita educational expenditure, ratio of students to teaching staff, educational decentralization level, school life satisfaction, and academic maintenance percentage were verified. The bootstrap method is used to create an empirical distribution of parameters when the original parameters are unknown, and by estimating the sample distribution of all parameter estimated values, it determines an approximation standard error and confidence interval, as well as the significance probability.

Hypothetical Model

In this study, by drawing on the theoretical backgrounds discussed above and the research problem nomination process, a hypothetical model was presented, which is shown in Figure 1. The exogenous variable is per capita GDP, and the other variables are understood as endogenous variables. That is, it was assumed that although per capita GDP does not directly affect happiness, it does have a direct effect on educational expenditure percentage, per capita educational expenditure, ratio of students to teaching staff, educational decentralization level, school life satisfaction, and academic maintenance percentage. Specifically, because a study carried out in 2006 by the UK's NEF revealed that a country with a high level of GDP does not always exhibit a high level of happiness, in this study, it was determined that per capita GDP did not have a direct influence on the happiness of adolescents. Meanwhile, it was assumed that per capita GDP did have an effect on educational expenditure percentage, per capita educational expenditure, ratio of students to teaching staff, educational decentralization level, school life satisfaction, and academic maintenance percentage, and that it indirectly led to happiness.
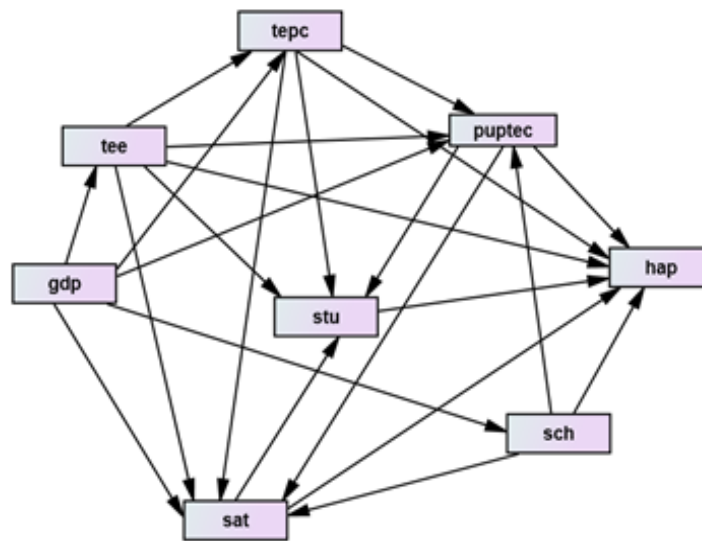
Figure 1. A hypothetical research model.

Research Results

Descriptive Statistics

As Table 2 shows, average per capita GDP for the 20 OECD countries is 41,262.40, average educational expenditure percentage is 5.85%, average per capita educational expenditure is 2,354.20, average ratio of students to teaching staff is 11.95, average level of educational decentralization is 40.85, average level of satisfaction in school life is 27.51, average percentage of academic maintenance is 86.40%, and average level of happiness is 85.76.

Table 2

Mean and Standard Deviations

Variable	Min.	Max.	Mean	SD	Korea
Per capita GDP	13,540.00	81,161.00	41,262.40	16,156.01	22,778.00
Education expenditure percentage	4.10	8.30	5.85	1.14	4.60
Per capita education expenditure	717.00	4,682.00	2,354.20	1,086.51	785.00
Ratio of students to teaching staff	7.50	17.60	11.95	2.51	17.60
Educational decentralization	0.00	86.00	40.85	23.24	39.00
School life satisfaction	15.00	42.50	27.51	7.33	35.60
Academic maintenance percentage	77.00	96.00	86.40	4.85	86.00
Happiness	66.60	94.20	85.76	5.40	66.60

The Correlation Between Variables

By observing the mutual correlation between variables, it can be seen, as Table 3 shows, that per capita GDP had a significant correlation with per capita educational expenses and happiness, and that percentage of educational expenditure had a correlation with per capita educational expenses and educational decentralization, while per capita educational expenditure was correlated with ratio of students to teaching staff and happiness. Also, it was seen that ratio of students to teaching staff had a correlation with happiness, while educational decentralization was correlated with school life satisfaction.

Table 3

Correlation Between Variables

Variable	1	2	3	4	5	6	7	8
1. Per capita GDP	1							
2. Education expenditure percentage	0.294	1						
3. Per capita education expenditure	0.885**	0.667**	1					
4. Ratio of students to teaching staff	-0.019	-0.074	0.012*	1				
5. Educational decentralization	-0.065	0.337*	0.093	0.245	1			
6. School life satisfaction	-0.001	0.309	0.122	0.228	0.464**	1		
7. Academic maintenance percentage	-0.148	-0.059	-0.149	0.029	0.294	0.013	1	
8. Happiness	0.446**	0.260	0.476**	-0.462**	0.098	-0.122	0.025	1

Note. *: $\rho < 0.05$, **: $\rho < 0.01$.

Verification Results of Research Model

The verifications results of the model for per capita GDP, educational expenditure percentage, per capita educational expenditure, ratio of students to teaching staff, educational decentralization level, school life satisfaction level, and academic maintenance percentage are shown in Table 4.

Table 4

The GFI of the Model

Goodness-of-fit	χ^2	RMSEA	GFI	TLI	NFI	CFI
Standard	Percentage higher than 0.05	0.05-0.08: satisfactory		Higher than 0.9		
Hypothetical model	11.716 (df = 5, ρ = 0.039)	0.106	0.937	0.771	0.939	0.959
Final model	5.858 (df = 4, ρ = 0.210)	0.076	0.965	0.921	0.970	0.989

The goodness-of-fit indexes, based on the initial research model itself based on the hypotheses, were χ^2 = 11.716 (df = 5, ρ = 0.039), GFI = 0.937, TLI = 0.771, NFI = 0.939, CFI = 0.959, and RMSEA = 0.106, which contained insufficient TLI and RMSEA values according to standards. Therefore, following confirmation of the educational expenditure percentage and educational decentralization values with modification indexes larger than 4, these were understood to have a certain degree of covariance (Kim, 2007) and were connected by bi-directional arrows. Following another round of verification, the goodness-of-fit indexes were χ^2 = 5.858 (df = 4, ρ = 0.210), GFI = 0.965, TLI = 0.921, NFI = 0.970, CFI = 0.989, and RMSEA = 0.076. This time, all values were appropriate according to standards. The final path model and the path coefficient are as shown in Figure 2.

As Table 5 below indicates, per capita GDP had a significant influence on per capita educational expenditure (β = 0.754, ρ = 0.000), educational expenditure percentage had a significant influence on per capita educational expenditure (β = 0.445, ρ = 0.000), and per capita educational expenditure had a significant influence on happiness (β = 0.639, ρ = 0.000). Also, educational decentralization level had a significant influence on ratio of students to teaching staff (β = 0.324, ρ = 0.044), school life satisfaction (β = 0.341, ρ = 0.028), and happiness (β = 0.314, ρ = 0.019). In addition, ratio of students to teaching staff had a significant influence on happiness (β = -0.520, ρ = 0.000). These results show that the factors which have a directly significant influence on happiness are per capita educational expenditure, ratio of students to teaching staff, and educational decentralization level. Of these, per capita educational expenditure has the greatest influence (0.639).

Also, the results of checking the significance of indirect effects by using the bootstrap method showed that the paths from per capita GDP, educational expenditure percentage, and educational decentralization level to happiness were significant at the level of $\rho < 0.05$. A compilation of these paths leading to happiness focusing on the significance of direct and indirect effects shows that per capita educational expenditure works as a parameter for the path from per capita GDP to happiness. Also, it is seen that the parameter educational decentralization level, though not an exogenous variable, exerts a significant influence on happiness via ratio of students to teaching staff.

The results of a specific disassembly of the indirect effects of the two paths are as follows. An indirect effect means the value of multiplied direct effects. As Table 6 below shows, the "per capita GDP → per capita educational expenditure → happiness" path had the highest indirect effect with a value of 0.482, and the "educational decentralization → ratio of students to teaching staff → happiness" path had an indirect effect of -0.168. Therefore, the measure for improving the happiness of adolescents that should be primarily considered is to increase per capita GDP, thereby increasing per capita educational expenditure.
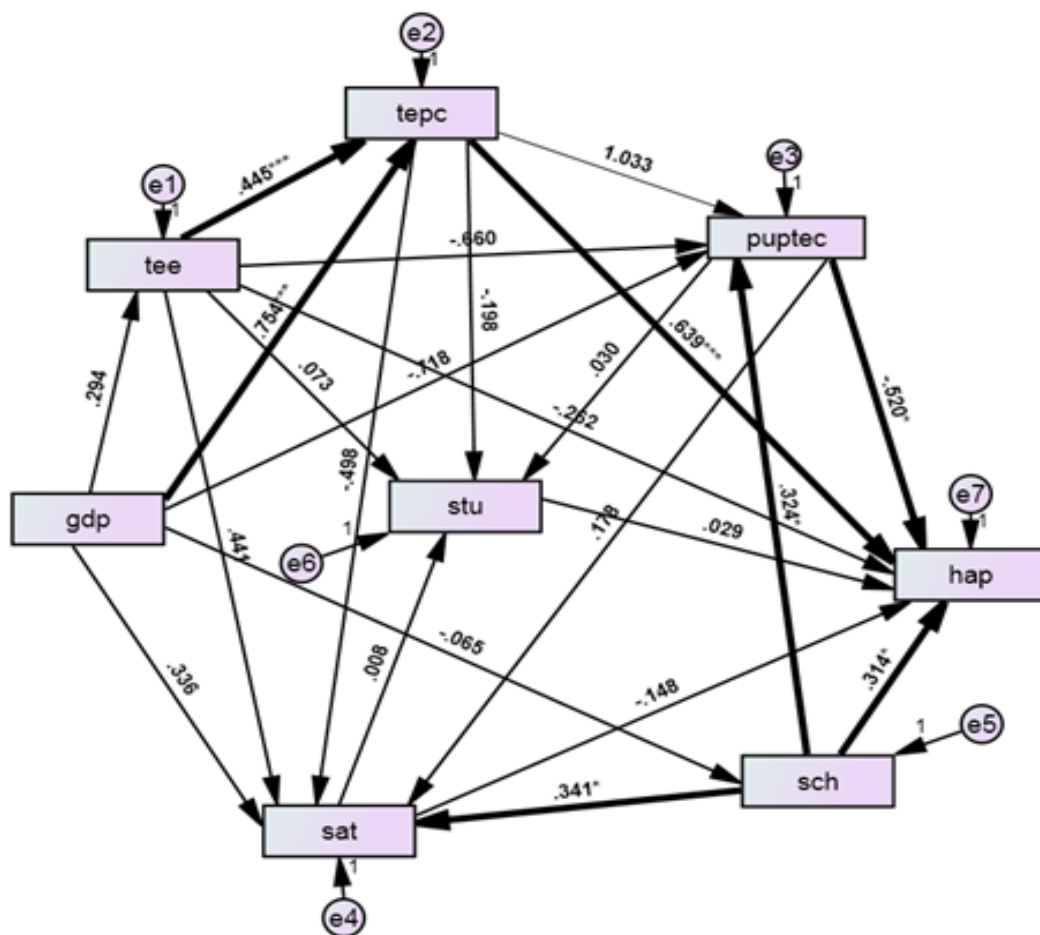

Figure 2[1]. The final model.

Table 5

Total Effect of the Educational Factors That Affect the Happiness of Adolescents

Path	Direct effect	Indirect effect	Total effect
Per capita GDP → education expenditure percentage	0.294	-	0.294
Per capita GDP → per capita education expenditure	0.754***	0.131	0.885***
Per capita GDP → ratio of students to teaching staff	-0.718	0.698	-0.019
Per capita GDP → educational decentralization	-0.065	-	-0.065
Per capita GDP → school life satisfaction	0.336	-0.337	-0.001
Per capita GDP → academic maintenance percentage	-	-0.154	-0.154
Per capita GDP → happiness	-	0.473*	0.473
Education expenditure percentage → per capita education expenditure	0.445***	-	0.445***
Education expenditure percentage → ratio of students to teaching staff	-0.660	0.460	-0.201
Education expenditure percentage → school life satisfaction	0.441	-0.258	0.183
Education expenditure percentage → academic maintenance percentage	0.073	-0.093	-0.020
Education expenditure percentage → happiness	-0.262	0.361*	0.099*
Per capita education expenditure → ratio of students to teaching staff	1.033	-	1.033
Per capita education expenditure → school life satisfaction	-0.498	0.184	-0.315
Per capita education expenditure → academic maintenance percentage	-0.198	0.028	-0.170
Per capita education expenditure → happiness	0.639***	-0.496	0.144***
Ratio of students to teaching staff → school life satisfaction	0.178	-	0.178
Ratio of students to teaching staff → academic maintenance percentage	0.030	0.001	0.031
Ratio of students to teaching staff → happiness	-0.520*	-0.025	-0.545*
Educational decentralization → ratio of students to teaching staff	0.324*	-	0.324*
Educational decentralization → school life satisfaction	0.341*	0.058	0.399*
Educational decentralization → academic maintenance percentage	-	0.013	0.013
Educational decentralization → happiness	0.314*	-0.227*	0.087*
School life satisfaction → academic maintenance percentage	0.008	-	0.008
School life satisfaction → happiness	-0.148	0.001	-0.147
Academic maintenance percentage → happiness	0.029	-	0.029

Note. *: $\rho < 0.05$, **: $\rho < 0.01$, ***: $\rho < 0.001$.

Table 6

Size of Indirect Effects of Paths to Happiness

Path	Size of indirect effect
Per capita GDP → per capita education expenditure → happiness	0.482
Educational decentralization → ratio of students to teaching staff → happiness	-0.168

Conclusions

The main aim of this study was to discover the causal relationship structure of the various educational factors that influence the happiness of adolescents, and present the implications of this for education policy. The conclusions of this study, based on the research results, are as follows.

First, of the factors that influence the happiness of adolescents, per capita GDP was set as an exogenous variable, and educational expenditure percentage, per capita educational expenditure, ratio of students to teaching staff, educational decentralization level, school life satisfaction level, and academic maintenance percentage were set as parameters. The goodness-of-fit indexes in this hypothetical relationship were $\chi^2 = 5.858$, df = 4, $\rho = 0.210$, GFI = 0.965, TLI = 0.921, NFI = 0.970, CFI = 0.989, and RMSEA = 0.076, all appropriate

according to standards. Therefore, it can be seen that there is validity regarding the relationships of direct and indirect influences between the factors that influence the happiness of adolescents, that is, per capita GDP, educational expenditure percentage, per capita educational expenditure, ratio of students to teaching staff, educational decentralization level, school life satisfaction level, and academic maintenance percentage. In the light of these results, when giving thought to the environmental characteristics of education with a view to enhancing the happiness of adolescents, one should not only focus on single variables such as education policies, educational opportunities for students, and satisfaction with school life, but should also consider various educational viewpoints in a spirit of policy cooperation.

Second, observation of the structural relationship between the directly and indirectly influential factors that affect the happiness of adolescents shows that the variable that had the greatest direct influence on the happiness of adolescents was per capita education expenditure, and this had the largest indirect influence on the path from the exogenous variable "per capita GDP" to the happiness of adolescents when passing through per capita education expenditure. These results show that per capita educational expenditure is the variable that affects the happiness of adolescents the most. Therefore, in order to enhance the happiness of students, increasing per capita educational expenditure should be considered first by educational policymakers. However, since doing this alone does not enhance the efficiency of education services (OECD, 2012), setting a direction based on choice and focus is required so as to ensure the greatest value effect.

Finally, though it is not an exogenous variable, number of students per teacher had the greatest influence on happiness following per capita education expenditure, and educational decentralization was also seen to have a direct influence on happiness, as well as a significant indirect effect by passing through number of students per teacher. Such results mean that the smaller the number of students per teacher, the greater the educational interest and benefits that can be focused on them. However, not all countries make the same efforts to reduce the number of students per teacher. For example, the average wage of teachers in Korea and Luxembourg relative to per capita GDP is higher than the OECD average (OECD average: 10.9%, Korea: 15.5%, and Luxembourg: 15.2%). Korea has a rather large classroom scale and invests resources to ensure relatively high teacher payments, while Luxembourg manages a very small classroom scale, with an average teacher payment per number of students. Such different options can be observed, because different countries have different environmental characteristics regarding education and different views as to what should be emphasized. However, the results of this research suggest that the smaller the number of students per teacher, the higher the happiness of adolescents becomes, and thus, it is appropriate in the long term to increase the number of teachers and provide a more focused education service to students.

Proposals for follow-up studies are as follows. Only 20 out of the 33 OECD countries were all included in the data reported from the IMD, the OECD, and the HBSC, and therefore, in follow-up studies, data including more countries should be considered. Also, in order to place the educational implications of enhancing the happiness of adolescents in OECD countries from an integrated perspective, there is a need to exclude variables that were insignificant in this research and conduct research including other educational factors.

References

Aborn, M. (1985). Statistical legacies of the social indicators movement. Paper presented at *the Annual Meeting of the American Statistical Association*, Las Vegas, Nevada.

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of well-being: Americans' perceptions of life quality.* New York and London: Plenum Press.

Argyle, M., Martin, M., & Crossland, J. (1989). Happiness as a function of personality and social encounters. In J. P. Forgas & J. M. Innes (Eds.), *Recent advances in social psychology: An international perspective* (pp. 189-203). North Holland: Elsevier.

Ben-Arieh, A. (2006). *Measuring and monitoring the well-being of young children around the world*. Paper commissioned for EFA Global Monitoring Report 2007. Storing Foundations: Early Childhood Care and Education.

Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions*. New York, NY: Russell Sage Foundation.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 193*, 542-575.

Fordyce, M. W. (1988). A review of research on the happiness measures: A sixty second index of happiness and mental health. *Social Indicators Research, 20*(4), 355-381.

HBSC. (2010). *Health behavior in school-aged children survey*. Geneva: IMD.

HBSC. (2012). *Health behavior in school-aged children survey*. Geneva: IMD.

IMD. (2012). *World competitiveness yearbook*. Geneva: IMD.

IMD. (2013). *World competitiveness yearbook*. Geneva: IMD.

Keyes, C. L. M. (2005). The subjective well-being of America's youth: Toward a comprehensive assessment. *Adolescent and Family Health, 4*(1), 3-11.

Kim, G. S. (2007). *Structural equation modeling: Theories and practices*. Seoul: Bumunsa.

Kim, S. Y., & Baek, H. J. (2008). Developing a happiness index for Korean adolescents. *Korean Journal of Sociology, 42*(6), 140-173.

Lippman, L. H. (2007). Indicators and indices of child well-being: A brief American history. *Social Indicators Research, 83*(1), 39-53.

Lyubomirsky, S., & Ross, L. (1997). Hedonic consequences of social comparison: A contrast of happy and unhappy people. *Journal of Personality and Social Psychology, 73*(6), 1141-1157.

National Institute of the Korean Language. (2014). *Standard Korean Encyclopedia.* Retrieved from http://stdweb2.korean.go.kr/search/List_dic.jsp

OECD. (2010). *Education at a glance*. Paris: OECD.

OECD. (2012). *Education at a glance*. Paris: OECD.

OECD. (2013). *Education at a glance*. Paris: OECD.

Ryff, C. D., & Singer, B. (1998). The contours of positive human health. *Psychological Inquiry, 9*(1), 1-28.

United Nations International Children's Emergency Fund [UNICEF]. (2006). Comparing child well-being in OECD countries: Concepts and methods. Innocent Working Paper.

Yang, Y. (2008). Social inequalities in happiness in the United States, 1972-2004: An age-period-cohort analysis. *American Sociological Review, 73*(2), 204-226.