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What are the determinants of youth happiness?

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1. Hereby I declare that I have compiled this master thesis independently, using only the listed literature and sources.
2. I declare that the thesis has not been used for obtaining another title.
3. I agree on making this thesis accessible for study and research purposes.

Prague, May 10, 2018

Signature

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Abstract

Despite the rapid economic growth after the Korean War, and the state's considerable investment in education, Korea's suicide rate has steadily risen as their economic conditions change. South Korean students are ranked at the bottom of international happiness survey. Adolescence is an important period for the development of personality and formation of the self-identity. The objective of this thesis is to investigate cross sectional data in the relationship between ecological development and adolescent life satisfaction. Data from the 2015 National Youth Policy Institute ($N = 1533$ across 78 high schools in Korea) in high school students were analysed applying OLS and ordered probit model for measuring level of life satisfaction. The findings reveal that the most important variables associated with the happiness of students are level of health, recognition of community, school adaptation, and good peer relationships in high school. More researchers are starting to investigate adolescents' life satisfaction, but few studies have conducted life satisfaction in accordance with their gender using KCYPS data. Gender effect is significant for parental attention, school adaptation, and household income. These interesting examinations contributed to the determinants of happiness research can be used by policy makers for high school students. It found that boys and girls react differently, therefore, developing different environment in relation to gender is needed.

Keywords	Determinants of happiness, life satisfaction, korean youth, ecological developments, gender differences, happiness index

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Acronyms

ALSPAC	Avon Longitudinal Study of Parent and Children
ESS	European Social Survey
GDP	Gross Domestic Product
GNH	Gross National Happiness
HPI	Happy Planet Index
KCWI	Korean Child Well-being Index
KCYPS	Korean Children and Youth Panel Study
NEF	New Economic Foundation
NSO	The Korea National Statistical Office
NYPI	The National Youth Policy Institute
OECD	Organisation for Economic Co-Operation and Development
PISA	Program for International Student Assessment
VIF	Variance Inflation Factors
WHO	World Health Organization
WVS	World Values Survey

1 Introduction

Korea has been one of the fastest growing OECD countries over the past decade. In just 25 years, the previously war-torn nation has risen to become the world's 12th largest economy. South Korea has also been noted for its substantial investment in education, which is considered an important catalyst for its rapid economic growth since 1960s. The percentage of 25-34 year-olds that have obtained tertiary education is about 69% ,which is the highest percentage of all OECD countries(OECD average is 42%) in 2015(OECD, 2018). However, despite the rapid economic growth and the state's considerable investment in education, Korea's suicide rate has steadily risen as their economic conditions change. In 2009, the suicide rate reached 28.7 per 100,000 persons in comparison to the average suicide rate in OECD countries of 19 per 100,000 persons. In the overview of Korea, further details on the issues will be discussed.

Koreans have for a long time put a strong emphasis on the importance of economic growth, which has enabled Koreans to enjoy a degree of material affluence. Despite this affluence, individuals have steadily become more isolated. Economists consider GDP as a measure of the size of a country's economy and a standard of living. It represents the value of all final goods, services produced in an economy during a given period of time and has often been used to calculate a nation's happiness. However, it is not possible to evaluate all aspects of a nation's quality of life using only its GDP. This is because material value is not directly linked to happiness. According to Richard Easterlin (1974), the degree of satisfaction of living is unrelated to monetary income, and there is no correlation between them. He pointed out that, despite the rise of gross domestic products, the sense of average happiness of Americans had hardly changed. According to his theory, over the past 50 years, happiness of Americans did not rise despite the growth of real wages. According to Lane (2001), when the income of an individual exceeds the "poverty line" and the "survival level", the main factor of the increase in happiness is a good relationship with friends and families, not income. British economist Richard Layard (2011) argues that all social scientists need to understand the determinants of happiness and also the governments must actively intervene to promote happiness. In 2015, the Korean government published the "Basic Primary Plan for Children's Policy (2015 - 2019)" which included the basic direction of child policy with the vision "Happy children, respected children". The happiness index of Korean children is the lowest among the OECD member countries. The goal of the basic plan is to increase current satisfaction level from 60.3% to 77% and increase the happiness index from 74 to 85 by 2019, as shown in Table 1.

Table 1: Summary of the Ministry of Health and Welfare 'Child Policy Plan'

	Current rate	Goal rate	Source
Life Satisfaction	60.3%	77%	Comprehensive Survey of Children
Happiness	74	85	Happiness Index of Korean youth
Recommendation of UN child policy implementation rate		90.0%	UN convention on the Rights of Children

Source: The Ministry of Health and Welfare 'Child Policy Plan' in Korea

If the youth experience deep periods of happiness in adolescence, it will certainly influence them to live a positive and active life in adulthood. Yang (2008) study said that the happiness in adolescence can impact their happiness in their adulthood.

However, since Korean adolescents are often exposed to extreme academic competition and excessive tutoring, the level of life satisfaction among adolescents is lower than that of other age groups (Suh, 2016; Han et al., 2012). The Korea Jung-Hwan Foundation, and the Yonsei University Social Development Institute have been conducting an 'International Comparison of Korean Childhood Happiness Index' since 2009. Their findings conclude that subjective happiness of Korean children and adolescents in Korea is the lowest level among in OECD countries(Park et al., 2010). The brief explanation about International Comparison of Korean Childhood Happiness Index will be introduced later on.

The purpose of this research is to identify what kinds of conditions are needed, to obtain a higher life satisfaction among Korean adolescents, who show relatively low levels in comparison to other OECD countries. Most of the studies that have been conducted about the satisfaction of the youth, mainly focus on an explanation of specific characteristics of the individual such as smoking, delinquent behavior, their health, or socioeconomic background such as parent's income and educational level (Diener, 1994; Gilman, 2001). However, when we consider an ecological standpoint, that an individual is growing and developing continuously as he or she interacts with the external environment (Bronfenbrenner, 1979), so that the happiness during adolescence could be increased by environmental changes. Therefore, when analyzing factors that have a correlation with youth's well-being, it is necessary to include various environmental factors such as family background, peer relation, school environments, and community environments, not just individual characteristics.

This thesis explores the correlation between various ecological standpoints and levels of happiness using Korean data from the sixth round of KCYPS

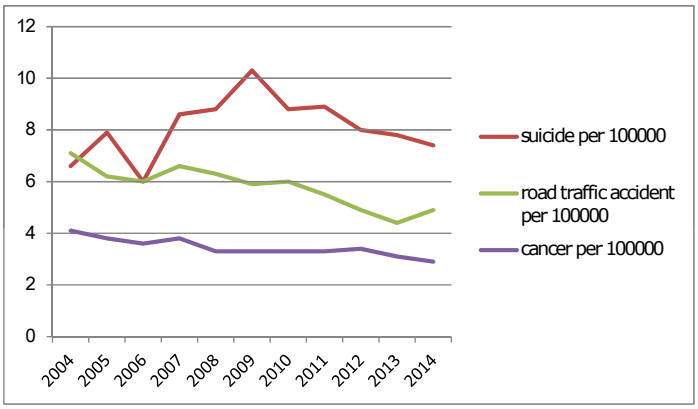
conducted in 2015 using OLS and ordered probit regressions. The ordered probit model is used to examine the contribution of several factors to happiness. This study aims to contribute to a better understanding of the factors that affect happiness faced by economics, demographic, social, and educational factors with additional variables which have not considered in previous studies using recent data. The purpose of this research is to comprehensively consider how personal traits and environmental characteristics affect young people's happiness. It can be used either as a guide to help increase Korean adolescent happiness or as a retrospective study of the different factors that contribute towards the happiness and unhappiness of the Korean youth. Thesis research questions will be answered by discussing developing theoretical frameworks and by explaining the empirical analysis.

2 Overview of Korea

2.1 Suicide rates in South Korea

As mentioned in the introduction, despite Korea's remarkable economic growth, Korea has troublingly high suicide rate compared to most OECD countries. According to Korean Statistics, for Koreans aged 9 to 24 years, suicide was the leading cause of death followed by traffic accident then cancer as shown in Figure 1 (NSO,2014). In 2004, the number one cause of death among Koren youth was road traffic accident, but since 2007, suicide has remained the number one cause of death in Korea. Combining results of all the studies, that researched Korean youth, the major risk factors for suicide in young people are peer pressure, school violence, depression, and burden with intense academic stress.

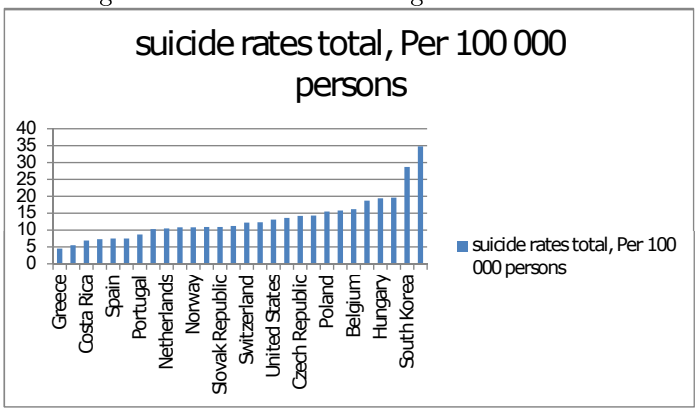
Figure 1: Main cause of death among Korean youth



Source: The Korea National Statistical Office

Figure 2 shows suicide rate per 100,000 persons ranking from OECD countries. The result is calculated in units of suicides per 100,000 individuals in 2014 across the OECD. The highest suicide rates were observed in Lithuania, South Korea and Slovenia with 34.8, 28.7 and 19.6 each per 100,000 persons. The countries with the lowest suicide rates were Greece, Israel and Costa Rica with less than 7 suicides per 100,000 persons

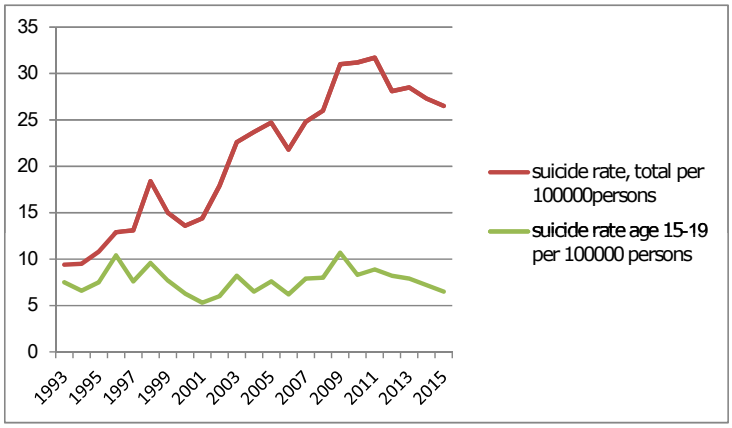
Figure 2: Suicide rates among OECD countries



Source: OECD(2018), suicide rates in 2014

The comparison of the suicide rate between total population and young people in south Korea is described in Figure 3. South Korea has seen large changes in suicide rates since the early 1990s, although the suicide rates have decreased again slightly since the 2012. From 1993 to 2015, the average was 7.7 suicides per 100,000 teenagers aged 15-19, by 2015 this rate had declined to 6.5. The highest teenage suicide rate was 10.7 per 100,000 teenagers.

Figure 3: Suicide rate total versus Suicide rate age 15 to 19



Source: The Korea National Statistical Office

2.2 Happiness Index

The King of Bhutan, a small kingdom in the Himalayas, announced two years into his reign that he would rule the country based on Gross National Happiness rather than Gross Domestic Product. "If the government cannot create happiness for its people, then there is no purpose for government to exist (National Council,2008)[1]." The government suggested Bhutan's policy implication, such as good governance, stable and equitable socio-economic development, environmental protection, and preservation of culture. GNH is calculated and reflected in policy based on indicators of health, time utilization, living standard, supportive community, psychological happiness, cultural diversity, education, environment, and resilience. GNH assumes that income growth does not significantly affect an individual's happiness once the requirements for survival, such as food, housing, and medical care are met. There are 72 indicators that have been developed to measure the achievement. Many countries consider GDP as a primary indicator in quality of life improvement, but in the GNH of the Bhutanese government, spiritual and religious parts are important indicators for happiness. With Happy Planet Index founded by New economic Foundation, life satisfaction and ecological footprints are highly evaluated. This means that even though the index was conducted in one country during the same period, the level of happiness can be evaluated differently depending on the selection of indicators and what is weighted. Despite these difficulties, it is important for welfare state to measure happiness index and reflect it to improve social welfare. The HPI is composed of three dimensions including subjective life satisfaction, life expectancy, and ecological footprint. Ecological footprints indicate sustainable development which take into account environmental costs for the future generation without considering GDP. According to HPI from 143 countries conducted in 2016, Costa Rica ranked first with 44.7 points, followed by Mexico meanwhile Norway was in 12th place among OECD countries. Czech Republic ranked in 64th place and South Korea was in the 80th place(Jeffrey et al., 2016). Economically developed countries are ranked higher with the human development index which is evaluated by economic factors represented by GDP. However, in other areas that are closely related to ecological and environmental factors, developed countries ranked lower. It shows that the happiness can be measured in a number of different ways.

Extensive research has been conducted since the United Nations's Convention on the Rights of the Child was concluded. Zill and Brim (1975) suggested 'Childhood Social Indicators' as a happiness index which defines the life conditions of American children with time series data in health, behavior and estimating the changes of their well-being.They argue that more research is necessary to measure children's social and emotional well-being, including their expectation, fear and their satisfaction. In the late 1970's, numerous researches were conducted on national and international levels such as UNICEF's the State of the World's Children(1979) and World Bank's World Atlas on the Child(1979). UNICEF emphasizes subject well-being of the children based on the treaties of

[1] Legal code of 1629

non discrimination, the best interest of the child, survival, development, and respect for the view of the child which is among the 54 treaties from the United Nations' Convention on the Rights of the Child (United Nations,1989). UNICEF formed 6 dimensions to measure their subjective well-being. It recognized material well-being as one of the important parts to measure a child's overall positive state. They also includes relative income poverty, children with unemployed adult guardians, and deprivation. In children's Health and Safety, the focus is on infant survival based on the infant mortality rate, national health service for adolescents, and the rate of deaths among young people in age from 0 to 19.

Futhermore, Education is important to look at because education can determine children's future as well as impacting the development of children. The education achievement is measured by PISA which examines students' capabilities in math, science and reading, and also counts the advanced skills students achieved after finishing their mandatory education. Another dimension of children's happiness index is children's relationship with their family and friends. It considers that family structure, parental time, and peer relationship could influence children's happiness. Behavior and Risks are also taken into account as important components to measure children's well-being. It shows how the young people interact with their surroundings and also how they improve or threaten their health. For the overview of child well-being, children were asked questions to evaluate their health state, school life and personal well being in their daily life(UNICEF et al. 2007).

Table 2: Components of Child Well-being by UNICEF innocenti

Dimensions	Components
Material Well being	Income Poverty, Unemployment, Deprivation
Safety and Health	Infant survival, Immunization, Safety
Education	Educational Achievement, Beyond Basic Skills, Transition to Employment
Peer and Family Relationship	Family Structure, Parental Time, Relationship with Friends
Behavior and Risk	Health Behaviors, Risk Behaviours, Alcohol, Cannabis, Sexual Experience.
Subjective well being	Health, School life, Personal Well-being

UNICEF was not the only organization to create a happiness index for children. The UK government also developed policies in cooperation with the Department for Education and Skills (DfES, 2003). During their consultations with children and young people, they set 5 important goals to achieve and measure their well-being including economic well-being, being healthy, and staying safe. Jonathan Bradshaw (2007) also created the Index of child well-being in the European Union, which focused on eight different dimensions.

Three indexes which are discussed here, consider children's material situation, health, safety, education and their relationships as shown in Table 3. As

for the rights under the Convention on the Rights of the Child, a comprehensive evaluation of the situation of children and young people in Korea has been formulated and policies have been suggested.

Table 3: Measuring Child Well-being

Indicator	Components
The UNICEF Child well being index (2007)	Material Well being, Health and Safety, Education, Peer and Family Relationship, Behavior and Risk, Subjective well being
Every Child Matters by Children and Young people's unit(2003)	Economic well-being, Being healthy, Staying safe, Enjoying and achieving, Making a positive contribution,
Index of child well being in the European Union (2007)	Martial situation, Housing, Health, Subjective well-being, Eduacation, Children's relationships, civic participation, risk and safety.

The Happiness Index was also developed to measure not only adults but also children's health. The research called 'Collection of Korean Child Well-being Index and its international comparison with other OECD' was used to determine Korean children's well-being based on the indicators suggested by UNICEF.

KCWI measured the happiness index in six areas such as material happiness, health and safety, family relationships and friendship, behavior and safety, and subjective well-being. About 14.8% of Korean children lived in relative poverty and relative poverty is higher than the OECD average which is about 11.3%. Health and safety of Korean children scored 110.5 where the OECD average is 100, it is the 5th place among the 25 OECD countries.

In terms of education, the OECD's PISA measures three areas which are reading, math and science scores. Korea has the highest ranking in each subject. The Korean Children answered that their relationships with parents were not good. When it comes to health, the number of overweight children and youth smoking is low. There are only 55.5% of children who answered that they are satisfied with their lives and considering the fact that OECD average rate is 84.8%, the Korean students are unhappy with their daily lives. Also, Korean students feel less like a member of society and tend to feel more loneliness. While the average score is 100, Korea scored 64.3 which is the very bottom of the ranking(Park et al., 2010).

This research has been conducted over the last 10 years to measure happiness of Korean children as shown in Figure 4. With the average across the OECD at 100, Korean's happiness score was 64.3 in 2009, 65.1 in 2010, and 70 in 2012. The highest scored country's index was above 110. Figure 4 shows that the Happiness Index of Korean youth has steadily increased but it is still below the average of OECD countries. In this research, 1 out of 5 Korean students responded that they have felt suicidal. On average, 14.3% of elementary school

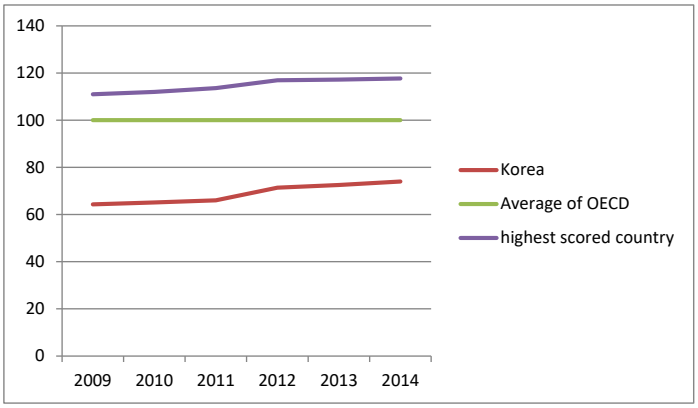
Table 4: GDP versus Subjective Well-being

Country	GDP	Country	Subjective well-being
Ireland	72485.0	Spain	111.0
Switzerland	63888.7	Greece	109.0
Norway	58791.7	Switzerland	108.2
Netherlands	50551.4	Finland	106.5
Austria	50503.3	Italy	106.4
Denmark	49020.5	Ireland	106.4
Germany	48942.9	Sweden	105.5
Sweden	48904.5	Czech Republic	104.6
Belgium	46607.4	Netherland	103.9
Finland	43378.1	Belgium	101.1
United Kingdom	42622.1	Denmark	100.0
France	41364.4	Canada	99.6
OECD Europe	39247.1	Germany	99.5
Italy	38380.1	Austria	99.2
Korea	36532.2	Hungary	98.0
Spain	36317.6	Poland	97.3
Czech Republic	34752.6	Norway	95.6
Portugal	30658.4	Portugal	92.8
Poland	27057.6	England	91.2
Greece	26764.9	South Korea	64.3
Hungary	26700.7		

Source: Collection of Korean Child Well-being Index by Park et al. (2010)

students, 19.5% of middle school students, and 24% of high school students answered that they have felt suicidal. The suicidal impulse rate is steadily risen as the Korean student advances in grades.

Figure 4: Happiness Index of Korean children



Source: The Korea Jung-Hwan Foundation and the Yonsei University Social Development Institute

2.3 Previous studies using KCYPS data

Since KCYPS provides reliable data, there have been many studies conducted utilizing the aforementioned KCYPS data. Jun and Choi (2017) study also analyzes the data of KCYPS with the latent growth curve model to figure out how the children's school GPA influenced the happiness of parents and children themselves. The result showed that the level of Korean students' school GPA and their school progress has significant impact on the level of students' life satisfaction and also their parents' satisfaction. But the study has other obvious limitations in that it does not consider other determinants of happiness which could influence the parents' and children's happiness such as their income.

Jin(2017) study analyzes the longitudinal causal relationships between peer attachment and happiness among Korean youth using KCYPS data. A total of three years of longitudinal data was used from students in primary school and middle school students. The results show a significant effect between previous life satisfaction and the subsequent life satisfaction but there is no significant effect between the peer attachment and the subsequent life satisfaction. Futhermore, the limitation of this study is its usage of relationships between peer attachment and life satisfaction. The various determinants should be discussed to determine influencial factors for life satisfaction of youth.

Woo (2017) also revealed the relationship between neglect, abuse and life satisfaction by applying KCYPS data. It has found that neglect or abuse from their parents has negative correlation with life satisfaction of children. In reviewing the studies using KCYPS studies, there are various studies about correlation between academic records of Korean student and life satisfaction, peer relationship and life satisfaction, parental attitude and happiness were done but there should be more studies to examine what the other determinants of Korean youth's happiness are.

3 The Survey Data

3.1 Format of Survey

It has been proved that life satisfaction in adolescence has an impact on life later as an adult(Bender, 1997). Therefore, the research on the perceived life satisfaction of adolescents is valuable in terms of prevention and condition for their future happiness.

Goldbeck(2007)suggests that not enough research has been performed regarding the youth, even though adolescence is the time for experiencing important physical and psychological changes. Depending on the researcher, the period defining youth varies but is mostly defined from ages 10 to 19. According to WHO, an 'adolescent ' is defined as an individual aged 10 to 19, a 'young person' aged 10 to 24, and 'youth' from ages 15 to 24. Under the Korean law, an adolescent is below age 19.

The National Youth Policy Institute(NYPI) surveyed 2351 adolescents for 7 years from 2010 through 2016, with the focus on observing Korean youth's life such as overall satisfaction, education goals, and health. The longitudinal study over a period of seven years was designed because it is considered the most appropriate period for observing the transitional process from middle school to high school, then on to college. For the data analysis, we will use the cross sectional data of NYPI at age 17 and 18. At age 17 to 18, Korean students are in the final year of their obligatory studies, and it is considered as the most important life period during their education because they are required to decide their life career by the third grade, and experience a major life transition. This study will be the first one which investigates high school students' satisfaction with 2015 data.

The number of samples surveyed was assigned in proportion to population of 16 cities. It surveyed one class from one school, examining whole students from one class. The expected rate of survey that would be successfully conducted was 80%.

Table 5: Number of Observations

	First Survey	Second Survey	Third Survey	Fourth Survey	Fifth Survey	Sixth Survey
Response rates of students	2351 (100%)	2280 (97%)	2259 (96%)	2108 (89%)	2091 (88%)	2056 (87%)
Response rates of students and their parents	2351 (100%)	2198 (93%)	2198 (93%)	2056 (87%)	2008 (85%)	1938 (82%)

A total of 2,351 surveys were completed in 2010 and it is extracted from a total of 78 classes across the nation. The regions of survey conducted are from eight classes in Seoul, five classes in Busan, four classes in Daegu, and 26 classes from metropolitan cities, across the nation. Additionally, forty-four classrooms

were surveyed in the remaining municipal cities. Sample of NYPI represents first grade students in high school as population in 2010. 2,351 surveys are collected in 2015, but only 1,938 were conducted successfully. Only 1,897 students are still attending school in 2015. For this research paper 1,533 surveys were utilized, excluding some data with missing values.

The participation rate of the survey is shown in Table 5 from 2013. The success rate of students' questionnaire is at 89.6% in 2013, 88.9% in 2014, and 87.4% in 2015. The success rate of the students' parent questionnaire also remained at 83.4% in 2015 which maintains the high ratio.

The research goal of KCYPS includes studying the various aspects of youth growth and development that are changing over time to provide comprehensive examination. While previous researches focus only on the educational issues and economic factors of adolescents, KCYPS covers various topics such as physical development, psychological, emotional and behavioral characteristics.

In terms of the ecological view, Bronfenbrenner (1979), argued that children develop their personalities through a dynamic process affected by environmental factors. In this thesis, we will conceptualize Korean youths' development in reference to their environment and their individual characteristics. Individual development consists of four dimensions, including physical development, intellectual development, delinquent behavior and free time spent. Environmental development is comprised of family background, social environment, educational environment, community environment and demographic variables. For personal characteristics, independent variables were explanatory factors on demographic information such as gender, living area, educational level of parents and household income. The means, standard deviations of the criterion and the predictor variables and the scale of the variables are reported in Table 6.

Table 6: Data Descriptive

Variable	Mean	Std.Dev	Min	Max
health	3.24	0.58	1	4
school GPA	2.04	0.67	1	4
deliquent behavior	0.30	0.45	0	1
victim of violence	0.01	0.13	0	1
time on computers	1.32	1.46	0	10.5
living with parents	0.91	0.28	0	1
parental attention	3.09	0.49	1	4
parental abuse	1.58	0.59	1	4
siblings	0.92	0.26	0	1
pocket money	7.71	5.03	1	40
peer relations	2.93	0.29	1.4	3.8
school adaption	2.73	0.52	1	4
community recognition	2.77	0.48	1.16	4
gender	0.50	0.50	0	1
living area	0.43	0.49	0	1
parents' education	3.05	1.05	1	5
income	4968.3	2493.5	500	20000

4 Dataset Characterization

4.1 Definition of Happiness

Happiness is defined in many different terms by many researchers such as subjective well being, life satisfaction, and quality of life. Most happiness researchers agree in using happiness as a consistent measuremnet of life satisfaction(Kumar and Dileep, 2006). In this regard, Kim and Baek (2008) defined 'happiness' as the positive emotional state of the individual and 'subjective well-being ' as the subjective evaluation of the individual's quality of life. Subjective quality of life' in reference to life satisfaction includes various components not limited to psychological domains as subject well-being. Therefore, in addition to assessing happiness, this thesis also covers subjective well-being. The term happiness and life satisfaction will be used simultaneously.

Happiness or unhappiness can be described depending on what an individual feels and thinks about their happiness, rather than judging by their property or status (Park and Bae, 2012). Since happiness depends on whether an individual adjusts their standard of happiness or how one interprets and feels it, it is important to consider subjective well-being.

Subjective well-being refers to happiness that individuals feel and it is cognitive and emotional evaluation that judges whether their life is worth it or not (Diener, 2000). He argued that emotional response includes positive and negative emotions as well as cognitive factors which are discussed as life satisfaction. Therefore, subjective well being is not a single constitutional concept, but a composite with various aspects (Diener et al., 2009). Schalock (1996)defines life satisfaction as subjective judgment of the overall life satisfaction or the capability to fulfill the expectations of oneself. WHO (1997) defined life satisfaction as a personal satisfaction of their position, such as their life goal, expectation level, and interest which humans have in their culture and values system. The common facts about life satisfaction from previous studies are that happiness is supposed to be perceived subjectively by individuals and also as an evaluation of their own lives. In the case of adolescence, it can be defined as "a positive feeling or emotional state that the adolescents perceive overall of their life" (Kim, 2001). Happiness of youth is the general response of adolescents in their everyday life relating to physical, mental and social factors. It is a subjective assessment where, their happiness, environmental factors and personal traits are all included(Park and Lee, 2013).

Individual well-being and life satisfaction can be measured in several ways.There have been many discussions of the possibility that happiness can be measured with one or few questions, recent happiness research proved that these simple or direct questions examined the happiness level of people more precisely than complicated questions(Veenhoven et al., 1993).

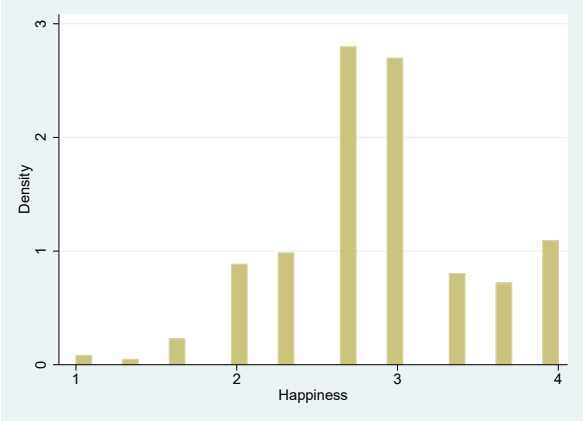
World Value Survey is a representative method to investigate subjective well-being using 10 point scale to report their life satisfaction. If the survey is done by self-reported subjective well-being, their personalities or happiness measured numerically may be an obstacle to estimate it. However, it is proven that the

problems with cardinality and comparison of individual characteristics may not be crucial (Kahneman et al., 1999).

The youth's happiness inspection tool used 3 questions developed by the research of Kim Shin Young question asking the subjective satisfaction level of their life, "I am happy to live.", "I do not have to worry." It also consists of questions such as "Am I happy in my life?" It is measured by a 4 point scale (1 = 'very unlikely' to 4 = 'very likely'). Therefore, it indicates that the higher the score, the more likely you are to be happy and the lower the score means that your happiness will also be low.

More than one questions are averaged, there are 3 questions asking about students life satisfaction, ranged from 'very unsatisfied' to 'very satisfied' on a scale of 1 to 4. The average happiness point is 2.89. Considering 2.5 is mean value, 21.5% rated they are unsatisfied, 78.5% rated they are satisfied.

Figure 5: Histogram of the answers to the question about happiness



According to Frey and Stutzer (2000), it is possible to obtain similar results with happiness functions in microeconomics regardless of interpreting data cardinally or ordinally. Considering current research, self-reported measures of subjective well-being have sufficient quality, helping to carry out various studies in economic effects on happiness. In particular, KCYPS is a successful panel study that is made specifically for the questionnaire.

4.2 Determinants of Happiness

The reason that the measurement of happiness levels is still controversial since happiness is a comprehensive and complex concept. Therefore, to measure happiness, we should take into account various dimensions, excluding measurements that are only focused on some specific factors such as economic factors.

Inglehart (1990)argues that, unlike poor countries, people's interests in wealthy countries are shifting from materialism and personal security to putting emphasis more on improving their quality of life. However, the happiness of people in poor countries and the happiness of people in wealthy countries is not possible to be paralleled. In fact, sociocultural differences may affect the measurement of subjective happiness. Many surveys show that Westerners are happier than Asian people because Westerners have a strong belief that individuals should try to be happy, the Asian people consider happiness as an external fate(Hofstede, 2003). In Korea, adolescents tend to feel that they are not happy because of the excessive competition in the education system and extreme stress that comes with pressure for academic achievement to enter the university (Yoo et al., 2010).

Thus, this thesis will describe social norms, cultural pressures, economic situation and educational environments to examine which factors have correlation with happiness among Korean youth. The personal development area is composed of four areas such as physical development, intellectual development, delinquent behavior, and life time. These for factors provide general information on adolescent development with the point of view that individuals grow and develop under the influence of the surrounding environment. The developmental environment domain consists of four domains: family background, friendship, educational environment, and community environment. In addition, demographic variables are considered such as gender, region, level of parental education, and household income. In terms of the ecological view of Bronfenbrenner (1979), in this thesis, we will analyze what determinants from the individual and environmental developments of the adolescent are related to their happiness. This is shown in the following Table 7.

Table 7: Ecological Models of Youth Development

Individual Development	Physical Development	Physical health
	Intellectual Development	Education Attainment
	Delinquent Behavior	Delinquent Behavior
	Free Time	Time Spent on Computer Games
Environmental Development	Family Background	Living with Parents, Parental Support, Parental Rejecting Attitude, Existence of Sibling, Pocket Money
	Social Environment	Peer Relationships
	Educational Environment	School Adaptation
	Community Environment	Recognition of Community
Demographic Variables	Gender, Area, Education Level of Parents, Household Income	

Health

Physical health is one of the important determinants related to happiness. There have been many studies about correlations with happiness and health. More of the studies are conducted using data from subjective reported health conditions than objective health conditions. According to Lyubomirsky et al. (2006), the research surveyed 621 people from a large utility company based on subjective happiness scale developed by Lyubomirsky and lepper(1997) asking their happiness and perception of one's healthy behavior. They found out that it is highly correlated (r=0.44).

For evaluation of health status, it is measured on the 4 point scale with following question "how good is your physical health?" (1='Bad', 2='Fair', 3='Good', 4='Very good'). For evaluation of health status, the students respond that their healthy status poor, good are at 7.4%, 92.6% respectively. Other studies also have found that in general, there is correlation between poor health behavior and unhappiness(Pressman and Cohen, 2005). But the relationship between health and happiness, the causality problem could occur. Gana et al. (2013)has demonstrated that happiness does not affect health, but health has a significant effect on happiness, defining that "a unidirectional simultaneous relationship"(p.902) Therefore, more research is suggested to be conducted with relationship between health and happiness.

Evaluation of grade

Since Korean students experience extreme academic competition from early adolescence, the predictor variable of academic achievement may be related to satisfaction of life. Particularly in modern society, the level of educational attainment is recognized as a determinant of the lifetime socioeconomic status, well-being, and social mobility of the parties and their families(Luster and McAdoo, 1994). Due to data being on the basis of the third year of high school, the school record is considered to be one of the important factors.

Korean students' happiness is relatively low due to suffering from intense academic competition and excessive private tutoring(Han et al., 2012). A continued drop in pupils' academic performance could cause decreased subjective well-being of students. Many researchers argue that students with higher grades have a higher subjective well-being than those with lower grades(Hyunmi Park and Park, 2007), which shows the relationship between academic achievement and subjective well-being. As a factor of education, subjective evaluation and learning activity were determined on a 5 point scale (1 = 'not very much' to 5 = 'very well done') using average grades of the subjective evaluation of Korean, English and Mathematics.

For the evaluation of school records, Mathematics, Korean and English test scores are calculated. It is also based on the subjective evaluation of their grades, ranged from 1 to 4. The average value is 2.04 and it shows that students are not satisfied with their school attainment. 79% rated that they did poorly in school exams, only 34% rated they consider themselves have good marks.

Delinquent Behavior

School violence, a serious social problem in recent years, is also a major threat to the well-being of young people. One survey found that 20% of students have experienced school violence in general and 30% of students who have experienced school violence considered committing suicide(Foundation for Preventing Youth Violence,2011), defining that school violence has been associated with adolescents' happiness and also their security for life.

Chen and Avi Astor (2010)have found that school violence has a negative correlation with student's happiness. Whether it is smoking, drinking, being absent, bullying others, fighting, hitting others, stealing money, sexual assault and gambling that they have experienced once counted as a delinquent behavior. The rate of students who ever have involved in committed some act such as smoking, drinking alcohol, bullying other students, unexcused absences from school are about 30%.

Victims of school violence

The people on the receiving end of bullying, abused at least once by their peers counted as victims of school related violence. The number of student who consider themselves as victims of school violence such as being bullied, rate of being ostracized and ridicule is only at 1.9%.

Time spent on computer games

Game addiction is a social issue, but the research on the good functions of games is also increasing. Because games as interactive media can exert a high cognitive and emotional influence(Lee and Jeong,2013), usage of games can be associated with life satisfaction of the gamers. In the study of Wang(2008), it is reported that usage of games can improve physiological and psychological satisfaction for users. The students' daily time spent on computer games are calculated with both weekdays and weekends averaged.

In terms of time spent on computer per day, the students reported that they spend from no hours to 10.5 hours. The average amount of the time spent using computer is 1.3 hours. 31% rated themselves as being not experience with spending on the computer.

Living with parents

In the family structure, there is a study that the experience of parents' divorce, separation, or remarriage decreases the quality of life of adolescents (David et al., 1996). The studies are steadily increasing about structure or function of family(Heaven et al., 1996). If the students live with both parents, it is coded as 1, and if they do not live with both parents, it is coded as 0. The rate of students who live with both parents are around 92.2% , the rate of children who do not live with both parents such as living with single parents or living with their grandparents are about 8.8%.

Parental support

Parental monitoring means parental attention to the child's daily life and their external activities (Park and Doh, 2001). It refers that parents care about their children's behavior, activities and have sufficient communication with their children to possess enough information. Studies found that parents' affectionate attention and guidance to their children increased their children's psychological well-being and their happiness(Jung and Cho, 2009).

More than one question used to evaluate parents behavior towards children, four question scales have been averaged. Do parents think I am more important than their personal interests?", "Are parents interested in how I'm doing in my education?", "Are my parents constantly checking my personal hygiene using my body, clothes, futon etc as an example?", "Am I supposed to take appropriate treatments to prevent many diseases from infecting my body?" on a 4 point scale (1 = 'not at all' to 4 = 'very much').

Assuming that parental attitude correlates with children's happiness. These questions reported by children how they consider involve their degree of parental supportive attitude and acceptance. The examination tool of the parent environment consisted of 4 questions based on their interests in children's daily life. "Do parents think I am more important than their personal interests?" More than one question used for asking children about their parents' attitude towards upbringing, the four questions point have been averaged to measure. 14% rated that they had some degree of being deprived of access to a parent's care in schooling or health. Each question in the survey is scored from 1 to 4. The average score is 3.09.

Parental rejective attitude

If we consider permissive attitude of parents which is one of the depriving acts of parents where the parents neglect to care for and protect their child, impact on children is very influential(Kim and Cicchetti, 2010). Abuse refers to physical, emotional, sexual violence or harsh behavior, and usually results in physical threats or negative reactions to adolescents(Brown et al., 1999). Researchers have found in studies that parenting is related to the subjective well-being of their children, harsh-negative parenting and children's happiness were negatively related, suggesting higher levels of harsh-negative parenting were related to lower levels of children' happiness(Cheng and Furnham, 2003).

Questions to measure parents' abuse are: "When I do something wrong, do they scold me worse than I do?" "Do my parents hit me no matter of the outcome whether it is good or bad?" "Do my parents often abuse me badly to the extent that my body is in pain or left with a scar?" "Do my parents often use bad words towards me? (For example, idiots, you're not worth shit, you should die) on a 4-point scale (1 = 'very unlikely' to 4 = 'very likely').

The parental rejective attitude refers to the experience by which children faced negative attitude of their parents with their behavior such as child abuse, coldness and rejection. 4.6% rated that they have often experienced parents'

rejecting attitude. Comprising 4 questions, scores ranged from 1 to 4. The average score of rejecting attitude is 1.58.

Existence of siblings

Studies of relationship with siblings have mostly focused on whether youth are only children or not. In general, only children were considered more likely to be lonely and less happy due to lack of social skills. However, Veenhoven and Verkuyten (1989)showed that no such difference was found. In this study, If the students have siblings it is coded as 1, but if the students are only children, it is coded as 0. The rate of students who are only child is about 7.9%. The number of siblings is not considered here, only the existence of siblings are observed.

Pocket Money

The pocket money that the students receive monthly from parents is calculated. According to Save the Children's research(2014) about composite of well being index of korean children, it estimated various family context including socio-economic status of parents such as income and level of education, and pocket money. It was considered in the index to investigate how much of the resources in the household is distributed to the children and how satisfied the children are about it. The pocket money that the students receive monthly are vary from 1 to 40 (per 10,000won, about 9.3 USD to 370.7 USD) The average of pocket money from all students is 7.7 won (per 10,000 won, about 71.3 USD)

Peer relationships

Social support from parents and friends plays an important role in the life satisfaction of the youth (Gallagher and Vella-Brodrick, 2008; Vecchio et al., 2007)). Such social support can be a psychological and social asset in the socialization process of adolescents(Piko and Hamvai, 2010). Jeong and bong(2018) also analyzed the factors affecting life satisfaction with latent growth modeling using KCYPS data and peer relationships have a significant effect on the yearly total of 5 years.

The examination tool of the peer environment is how well the kids interact with other kids in the same environment. Statements such as "If the children can socialize well with children in the same class", "I apologize first when I fight with my friends", "We display acts of kindness by sharing and lending things to one another when friends do not have textbooks and possessions" , "Friends follow along with my story well when playing or participating in assorting activities" and “I interrupted other friend's work” The inspection tool is measured on a 4 point scale (1 = 'not at all' to 4 = 'very likely').

The data results showed that the average score of peer relations surveyed is 2.93 which scored from 1 to 4, total 5 questions used. It means students have a tendency to get along well with other classmates.

Adaptation in school

Youth are most likely to spend their time in school and continue homework and school-related activities after school, so it is demonstrated that adapting successfully to school life is highly related to life satisfaction(Elmore and Huebner, 2010). Although there are many studies on the correlations between academic achievement and life satisfaction, there have been few studies about the correlations between school adaptive ability and life satisfaction.

Evaluation of the learning activity is conducted by asking other people "Was class time interesting?", "Did I meet the deadline of my school's homework?", "My comprehension of what is said in class is good." "Do I understand everything that I learned in class?" are on a 4 points scale (1 = 'not at all' to 4 = 'very likely'). For this study I did reverse coding on "Am I not paying attention in my class?"(4= 'unlikely' to 1= 'very likely').

The total score average is 2.73, which means students are quite satisfied with their adaptation in schooling. Considering 2.5 is mean value from score 1 to 4, about 70% rated they are scored above average and they are satisfied with their school adaption and activities.

Community Recognition

Davidson et al. (1991) defines sense of community as "personal emotions that represent strong attachment between people and their community". Studies on sense of community have recently increased because it is regarded as an important value in competitive Korean society where community solidarity disappears due to industrialization and urbanization. It is proven that community recognition is related to the satisfaction of life (Chung, 2008). Since school aims for students' complete development of personality, it is suggested that they should consider sense of community as an important value in adolescence development.

The environment of the community has been modified, secured and utilized according to the circumstances of our country by adapting the survey which was conducted in the United States. The questions are about the community's environment is recognized in the area where the youth themselves live such as "I feel that my neighborhood is safe" "I am spending time with my neighbors" and "I would like to continue living in my neighborhood." It consisted of 6 questions. The higher the score on the 4 point scale (4 = 'very likely' to 1 = 'not so much'), the more positive the recognition in the community. 6 questions from the surveys are averaged. The average score is 2.77 which means that children consider their environment positive.

Gender

Differences in life satisfaction associated with gender in adolescence are known to be due to psychological, social and biological hormonal changes(Piko, 2001). While some studies have found that males have a higher level of life satisfaction than females (Levin et al., 2012), other studies argue that there is no difference between gender(Huebner et al., 2000). According to the Gender Gaps in

Subjective wellbeing research report , datasets from WVS and ESS. They conclude that females are generally happier and more satisfied with their lives when males and females are in similar situations. The researcher shows that the coefficient on the female dummy variable is positive and statistically significant which means women are happier in their daily life than men. But over the life cycle, the happiness of women is changing. Senik (2015) found that women experience less satisfaction than men below age 18. They also have researched using ALSPAC and they reported that females below age 18 are less happy than males and tend to be more depressed.

There are 770 male students and 763 female students in terms of gender, and the ratio of gender is almost the same. As shown in the Table 8, 80% of male students have rated that they are happy with their life and this rate is about 3% higher than female students who consider themselves happy.

Table 8: Gender difference

Gender	Life Satisfaction		Total
	Unsatisfied	Satisfied	
Male	154(20%)	616(80%)	770
Female	176(23%)	587(77%)	763
Total	330(21.5%)	1203(78.5%)	1533

Living area

Berry and Okulicz-Kozaryn (2011) found that people who live in small cities are happier in empirical analysis using US social survey data. Luttmer (2005)also found that there is negative correlation between happiness and people who live in large cities. The living area was measured separately for students living in metropolitan cities or living in smaller cities. People who live in metropolitan city coded as 1, and people who do not live in metropolitan cities coded as 0.

There is no specific requirement for cities to be promoted to metropolitan city, but it is defined as a metropolitan city if it is considered a central city of a region with population more than 1 million. There were 57% of students who live in metropolitan cities, and students who live in the municipal cities are about 43%.

Level of Parents' education

Socioeconomic status such as level of parental education and household income are also considered in this study to examine if society's hierarchy is related to children's happiness. Some studies have found that there is no relationship between children and parents' socioeconomic status(Konu et al., 2002), but other studies found that there is positive correlation between life satisfaction and socioeconomic status(Ash and Huebner, 2001).

Parent education is selected by who has obtained the higher education level between father and mother. Parents' educational levels were also measured on a 5 point scale (1 = 'secondary school graduation and below', 2 = 'high school graduation', 3 = 'vocational school graduation', 4 = 'university graduation', 5 = 'graduate school graduation'). The rate of parents who graduated from middle school, high school, vocational college ,bachelor, master are 2.6%, 40.4%, 10.8%,41.2%, 5% each.

Household Income

In the United States and Japan, per capita income has increased greatly over the decades, however the average level of happiness is found to remain static or even decreased. Japan's average level of life satisfaction was 2.7 points in 1958, scored on a 4 point scale. Although material well-being steadily has risen for the last three decades and there was per capita income growth about six times from 1958 to 1991, the average life satisfaction surveyed in 1991 still showed 2.7(Frey and Stutzer, 2000). Blanchflower and Oswald (2004)argued that there is negative correlation between income and happiness even after controlling individual characteristics. This suggests that other factors may be more important to explain the determinants of happiness.

Income is calculated by annual income of the household, which is about 3800 Euro. About 80.5% rated that they are satisfied with their life who have an annual household income less than 2000 won. The proportion of students who are satisfied with their life with income between 2000 to 4000 won is about 79%. The percentage of students with high level of life satisfaction between 4,000 to 6000 won is 83.5%. The percentage of students with high life satisfaction among those between 6,000 to 8000 won is 86.5%. The proportion of students with high level of life satisfaction between 8000 to 10000 won is 81%. The happiness rate increases as the income increases, but once it reaches certain level of income, the happiness rate decreases slightly.

5 Methodology

In recent years, there is a growing interest in various aspects of happiness determinants and happiness index. We have reviewed the current studies using KCYPS data. There have been many studies on the life satisfaction of Korean youth. However, there is no recent study which considers ecological effect for their happiness. Therefore, this will be the first study which use the most recent data conducted by KCYPS to understand the various factors associated with happiness. In this study, we will use OLS model and ordered probit model to measure the correlations between happiness and independent variables accurately. we analyze ecological development impact on life satisfaction, we use OLS regression:

$$LS = \beta_0 ED + \beta_1 X + \varepsilon \tag{1}$$

ED indicates ecological development of youth including individual development and environmental development. X represents demographic variables and ε is error term. To investigate the impact ecological variables and gender interaction has on the level of life satisfaction, dummy variables and their interactions in analysis is added. The regression model is as follows:

$$LS = \beta_0 X + \beta_1 D + \beta_2 XD + \varepsilon \tag{2}$$

X indicates ecological development, demographic variables and dummy regressor D is gender, XD for interaction regressor (Stock and Watson, 2003). OLS model is applied in regression analysis.

In general, happiness function is estimated by ordered probit model because variables are discontinuous and restricted depend on the scale from 1 to 4 or from 1 to 5 in the KCYPS. The probit model provides a method to calculate the probability of belonging between two scales with each explanatory variable if it belongs to a specific category. The ordered probit model is an extension of this, and it is used estimated when the results belongs to binary or multigroup cases.

In many studies, OLS model is also widely employed in happiness studies, because the interpretation of the estimated coefficients is relatively simple and also provides precise values(Ferrer-i Carbonell and Frijters, 2004). The OECD guidelines of subjective well-being(2013)also demonstrated that the results between OLS and ordered probit model, showed little discrepancy. The problem of happiness functions is that the correlation between measurement errors and happiness is due to students' personality. The personality could affect how people respond and answer to questions about life satisfaction. Furthermore, many economist have discussed the possibility of cardinality to compare individuals' life satisfaction. However, Ng (1996) argues that the happiness could

be comparable among individuals and also between nations. Many researches proved that the verbal meaning of the questions could be interpreted by numerical scales(Van Praag, 1991). The measurement of life satisfaction is an ordinal specification, but applying OLS with categorical dependent variable could not be satisfied with assumptions of the OLS regressions. In this measurement, the dependent variable is ordered and ranked from 1 to 4, with the ordered probit model is also used. The model is suggested by Wooldridge (2010).

To compare OLS regression and ordered probit model, ordered probit model equation is

$$LS = \beta X + \varepsilon \tag{3}$$

$$\varepsilon \mid X \sim N(0,1)$$

Where LS indicates latent life satisfaction for Korean youth, X is the vector of explanatory variables measuring individual development ,environment development and demographic variables. ε is the error term. The ordered probit model follows standard normal distribution.

The ordered probit model is defined by:

$$LS = 1, if\ LS^* \leq \alpha_1$$

$$LS = k, if\ \alpha_{k-1} \prec LS^* \leq \alpha_k$$

$$LS = K, if\ LS^* \succ \alpha_{K-1}$$

Where $\alpha_1 < ... < \alpha_k < ...\alpha_{K-1}$are the threshold levels. The probability that life satisfaction, given the variables X, belongs to each level is:

$$P(LS = k) = P(\alpha_{k-1} \prec LS^* \leq \alpha_k)$$

$$= P(\alpha_{k-1} - \beta X \prec \varepsilon \leq \alpha_k - \beta X)$$

$$= \Phi(\alpha_k - \beta X) - \Phi(\alpha_{k-1} - \beta X)$$

where Φ is the cumulative normal distribution function,

$$l_i(\alpha, \beta) = (LS_i = 1)ln[\Phi(\alpha_1 - \beta X_i)] + (LS_i = k)ln[\Phi(\alpha_k - \beta X_i) - \Phi(\alpha_{k-1} - \beta X_i)] +$$

$$... + (LS_i = K)ln[1 - \Phi(\alpha_{K-1} - \beta X_i)] \tag{4}$$

l denotes Log likelihood, a positive(negative) value of β indicates a higher(lower) probability of the ordered life satisfaction levels.

6 Results

6.1 Ecological models of youth development

The Table 9 presents korean youth's life satisfaction model estimates applying OLS and ordered probit model with the dependent variable defined as a four point scale. Refer to significance levels of the coefficients of the independent variables, the two methods come up with analogous results.

In this dataset, to observe the presence of multicollinearity in this model, variance inflation factor is used, presented in Appendix A. All values are less than 10, also mean value is only 1.19. The OLS model explained 21.7% of variance of Korean students' life satisfaction scale.The log likelihood ratio index is 0.064, it explains how well the model fits. Comparing with other similar studies about happiness, Hulme and Toye (2013) also research about subjective well-being, the log likelihood ratio index is from 0.077 to 0.081.

The set of variables associated to positive parameters are : *health, assessment of GPA, time spent on computers, living with parent, parental abuse, siblings, pocket money, peer relations, school adaption and community recognition.* From individual development variables, subjective evaluation of health, assessment of the grade is significant at 1% level. Evaluation of health and assessment of school grade increase life satisfaction by 0.24 and 0.065 respectively. Time spent on computer games is significant at 5% level. The delinquency behavior including perpetrators and victims is insignificant.

From environment development variables, the fact of whether the students are currently living with their both parents or not has no systematic effect. However, parenting style, amount of pocket money student received from their parents, peer relationships, learning activities and recognition of community have significant effect. From parenting style, parent attention has a significant effect at 1% significant level, which increases children's life satisfaction by 0.11 but the estimate of abuse or neglect parenting style is -0.046 a negative significant effect at 10% level for students' life satisfaction. The amount of money student received from their parents has a significant effect that allowance student received per 10,000won (about 9.3 USD) increases the life satisfaction by 0.009.

Peer relationships which consider how well they get along with other friends in school, increases life satisfaction by 0.12. The positive attitude toward learning activity in school, is significant at 0.1% level, which increase life satisfaction by 0.16. Also, recognition of community is significant at 0.1% level. It shows for adolescents, the surroundings and environment around them are crucial factors for their development. It supports that model written by Bronfenbrenner (1979). From demographic variables such as gender, the area of student living, level of parent education and household income, only gender variable has significant impact, which means that male students have 0.07 higher life satisfaction than female students with statistical significance at 5% level. Household income is insignificant, Easterlin (1974)also found that more money does not always relate to higher level of happiness.

Ordered probit model results are also presented in Table 9. The explanatory variables with the positive value of parameter β indicate that it will rise the probability of the ordered life satisfaction level. The following variables have positive values : *health, assessment of GPA, time spent on computers, living with parents, parental abuse, siblings, pocket money, peer relations, school adaption and community recognition.* It shows that students who think they are healthy, have good grades in school and play computer games are more likely to be happier. In addition, from environment development variables, students who have more attention from their parents, gain sufficient amount of pocket money, have good peer relations, have passion in school work and have good recognition of community are likely to have higher life satisfaction level. The largest positive parameter described in Table 9 is the variable health, which indicates subjective evaluation of health. (β=0.457) It shows that Korean student consider their physical healthiness as an important factor related to happiness. The pocket money received from parents have the smallest impact. (β=0.017) From the individual development, the perceived health, assessment of student's GPA and time spent on computer games are significant. About magnitude, happiness faced by the perceived evaluation of health is about 3.7 times higher than happiness related to assessment of student's GPA. The rejective attitude of parents has negative parameter indicates that the relationship between happiness and parents' abusive attitude is negative. Moreover, from demographic variables, if students are male, they are more likely to be happier. Gender differences in life satisfaction will be discussed later on.

Considering both models, OLS and ordered probit model, it was found that health is both significant at 1% which is consistent with previous research that they are positively related(Diener and Seligman, 2004). Perception of school grades is also significant at 1% in both models which is consistent with Han et al. (2012) study and due to a competitive atmosphere, many students tried to commit suicide. Note that the delinquency behavior variable is not significant in both model analyses. The time spent on computer games is significant at 5% level, computer is becoming part of student's daily life, especially in Korean society that is technology driven compared to other countries. According to Kohn and Schooler (1983), using computers is related to intellectual ability, which can influence higher levels of well-being outcomes.

In these analyses, whether students are living with both parents or are an only child is not significant in these analyses. But the parenting style such as attention, abuse and neglect toward children is significant. This has also proven in Cheng and Furnham (2004)study. Specifically, the more the adolescents perceive their parenting style as loving and accepting, the higher their life satisfaction is. On the other hand, adults who experienced parental abuse and neglect during their childhood, reported that it could damage the overall life satisfaction of their life. After childhood, when students enter adolescence, they spend more time with their peers than parents, it is revealed that good relationships formed increase satisfaction level. School also provides environments where they can learn social skills and educational texts. Therefore, adaptation to school life is an important developmental variable that might impact future adaptability

of adulthood(Bagwell et al., 1998). The sense of community is significant at the 1% level which means the recognition of community is an important factor in ecological development aspects. Only gender is positively significant at the 5% level from demographic variables, living area, level of parents education and household income are not significant which is consistent with Easterlin (1974)that higher income does not always make people happy.

Link test is used in OLS regression and ordered probit model to investigate model specification error to observe omitted or irrelevant variables involved. The null hypothesis is not rejected in both model which means that there is no misspecification, presented in Appendix B (Pregibon, 1980).

Table 9: Ecological variables in life satisfaction of korean youth

Life Satisfaction	OLS	Oprobit
Ecological		
Development		
health	0.242***(0.024)	0.457***(0.046)
school GPA	0.065***(0.023)	0.127***(0.045)
deliquent behavior	-0.002(0.032)	0.004(0.061)
victim of violence	-0.146(0.103)	-0.299(0.194)
time on computers	0.022**(0.010)	0.042**(0.019)
living with parents	-0.033(0.052)	-0.053(0.100)
parental attention	0.113***(0.032)	0.208***(0.061)
parental abuse	-0.046*(0.025)	-0.079*(0.047)
siblings	-0.063(0.052)	-0.134(0.009)
pocket money	0.009***(0.002)	0.017***(0.005)
peer relations	0.124**(0.052)	0.228**(0.100)
school adaption	0.160***(0.033)	0.309***(0.063)
community recognition	0.184***(0.031)	0.375***(0.060)
Demographics		
gender	0.073**(0.030)	0.148**(0.057)
living area	-0.009(0.028)	-0.004(0.054)
parents' education	0.018(0.014)	0.031(0.028)
income	0.000(0.000)	0.000(0,000)
_cons	0.247(0.199)	
Number of observations	1533	1533
R^2	0.217	
Pseudo-R^2		0.063

Note: *, ** and *** indicates it is significant at the 10%, 5% and 1%, respectively

6.2 Gender Differences

There might be gender difference regarding psychological traits, the correlation between gender and happiness was described in Data Characterization. The significant variables affecting the life satisfaction were different according to gender(Choi, 2012). Therefore, to examine gender differences, results of gender difference regression analysis are presented in Table 10. Method of OLS is applied because interpretation of the estimated coefficients is simple and it also provides approximate values(Ferrer-i Carbonell and Frijters, 2004). All females and males were included separately in the estimating equation, it is presented first and the variables-gender interaction follows.

Female and male model present results that health is found to be positively significant at the 1% level regardless of gender in both model, students who perceived they are health, it increases life satisfaction by 0.201, 0.275 respectively. School GPA is found to be statistically significant at the 5% level with females but it is only significant at the 10% level with males in each model. This has shown in previous study that females' school GPA are more related to happiness than males(Lee and Kwak, 2011). The delinquent behavior is not significant in any gender but the victims of violence is negatively and statistically significant at the 5% level with females. It is found to be the largest negative parameter in each model for females indicates being bullied decreases life satisfaction by 0.391. This finding is consistent with previous study of Australian youth(Bond et al., 2001). Being victim of school violence is statistically significant associated with the future emotional happiness among females while for males, it is not applicable. The parent attention is significant at the 1% level associated with females but it is not hold true for males. On the other hand, parental abuse is not significant in any model.

School adaption is statistically significant at the 1% level with females, for males, it is significant at the 10% level. Similarly, Bagwell et al. (1998) examined that school adaptation is one of the important significant predictor associated with happiness, It is also the largest positive parameter for females, which means school life adaptation increases students' life satisfaction by 0.261. To examine these gender effects, interaction terms are estimated.

Health-gender, assessment of GPA-gender, school violence-gender, time spent on computers-gender, living with parent-gender, parental attention and abuse-gender, siblings-gender, pocket money-gender, peer relations-gender, school adaption-gender, community recognition-gender interaction are used from ecological development variables. From demographic variables, the area of student living-gender, level of parent education-gender and household income-gender interaction are included. Variables-gender interaction is to examine the effect of the gender on the variable of ecological developments. The reported coefficient of determination is 0.23. Parental attention-gender interaction is statistically significant at the 5% level, gender effect as measured by level of life satisfaction is dependent on parental attention. Gender effect is significant for the higher parental attention groups. The interaction effect between males and parental attention is negative($\beta = -0.149$). These effects indicates that students who

are females and perceived positive parental attention are more likely to report higher level of life satisfaction. It is consistent with the study that the gender influence forming relationship with parents and the impact by parental style to children may differ according to gender(Warner and Steel, 1999).

The level of life satisfaction is dependent on school adaptation-gender interaction, which is significant at 5%. The interaction effect between males and school adaptation is negative($\beta = -0.171$). Focusing on academics is an important part of school life for Korean students, and this was shown in previous studies that girls' school performance is strongly related to happiness than boys(Lee and Kwak, 2011). Lee et al. (2018)proved that the positive learning activity experience students had is significant to life satisfaction later, with females but it does not hold true for males.

Granzin and Haggard (2000)showed that life satisfaction of youth is related to the level of household income. More researchers are starting to investigate adolescents' life satisfaction associated with household income but few studies have conducted life satisfaction in accordance with their gender. The gender may affect the level of happiness depending on household income. Males seem more affected by household income while income-gender interaction is found to be significant at 5%. The effect of interaction term is 0.00002 which is numerically small, it is considered to be unimportant. This reflects that males and females react differently, therefore, developing different environment in relation to gender is needed.

Table 10: Gender differences in life satisfaction

Life Satisfaction	Female	Male	Gender Interaction
health	0.201***(0.034)	0.275***(0.034)	0.201(0.035)***
school GPA	0.070**(0.032)	0.061*(0.034)	0.070(0.033)**
deliquent behavior	0.000(0.052)	0.000(0.042)	0.000(0.054)
victim of violence	-0.319**(0.147)	-0.027(0.144)	-0.319(0.155)**
time on computers	0.025(0.015)	0.019(0.013)	0.025(0.016)
living with parents	0.004(0.074)	-0.056(0.074)	0.004(0.078)
parental attention	0.195***(0.044)	0.046(0.045)	0.195(0.046)***
parental abuse	-0.051(0.035)	-0.012(0.035)	-0.051(0.037)
siblings	-0.060(0.073)	-0.057(0.073)	-0.060(0.077)
pocket money	0.008**(0.004)	0.010***(0.004)	0.008(0.004)**
peer relations	0.045(0.078)	0.205***(0.072)	0.045(0.082)
school adaption	0.261***(0.047)	0.089*(0.047)	0.261(0.049)***
community recognition	0.188***(0.043)	0.180***(0.044)	0.188(0.045)***
gender			0.313(0.411)
living area	0.036(0.038)	-0.056(0.041)	0.036(0.040)
parents' education	0.032(0.020)	-0.001(0.021)	0.032(0.021)
income	0.000(0.000)	0.000*(0.000)	0.000(0.000)
_cons	0.036(0.304)	0.350(0.271)	
Interaction effects			
health*male			0.074(0.048)
school GPA*male			-0.009(0.047)
deliquent behavior*male			0.000(0.067)
victim of violence*male			0.292(0.207)
time on computers*male			-0.005(0.020)
living with parents*male			-0.061(0.106)
parental attention*male			-0.149(0.064)**
parental abuse*male			0.038(0.050)
siblings*male			0.003(0.104)
pocket money*male			0.002(0.005)
peer relations*male			0.159(0.107)
school adaption*male			-0.171(0.067)**
community recognition *male			-0.008(0.062)
living area*male			-0.092(0.056)
parents' education*male			-0.033(0.029)
income*male			0.000(0.000)**
Number of observations	763	770	1533
R^2	0.261	0.200	0.234

Note: *, ** and *** indicates it is significant at the 10%, 5% and 1%, respectively

7 Limitation

This thesis results have limitations in several ways. It is based on a cross-sectional study; therefore, this empirical research is not sufficient to see how life satisfaction changes over time. Since adolescence experience rapid change both physically and psychologically at this period, the factors related to the life satisfaction of adolescents can change depending on the range of time(soyoung Kim and Yun, 2016). Especially with high school students, life satisfaction is likely to change due to an increase in levels of academic difficulty. Therefore, conducting longitudinal studies, including all ecosystem related factors of life satisfaction, will help to understand the developmental process of youth and enhance their life satisfaction. In addition, happiness cannot be explained by any specific theory or some minor factors, because the variables such as personalities and behavioral characteristics, attitudes and beliefs are intricately intertwined(Andrew and Withey, 1976). Therefore, it is suggested to consider personalities such as ego - resilience and self - esteem. In addition, the number of multicultural families has increased recently, and multicultural families were supposed to be included as predictor variables but due to the sample being too small, it is not considered. Future research is needed to analyze it. In addition, this study only examined students who attended school, and if the survey also considered students who do not attend school, the result would be more diverse and represent of all Korean youth.

8 Conclusion

This thesis has investigated what the determinants are of the happiness experienced by high school students, OLS and ordered probit model are applied based on ecological models of human developments developed by Bronfenbrenner (1979). This study coverges with theoretical frameworks and by investigating the empirical analysis of ecological variables, among adolescents, while feeling happiness during childhood and adolescence can have impact on their happiness as an adult(Yang, 2008).

The most important variables on the level of happiness of students are level of health, recognition of community, school adaptation and good peer relationships in high school. This suggests that to increase satisfaction of students, it is important to examine relationships formed in school and community, rather than socioeconomic status so that policy makers can consider it to promote and develop better ecological environment.

While this thesis present interesting results, the limitation of this study is that the data is only restricted to attended students, further studies are suggested for all adolescents not attending schools, including panel data analysis to fully examine the personal differences. Furthermore, it would be interesting to extend the study to other countries considering cultural difference to level of happiness among high school students.

This thesis contributes to the studies by examining interactions based on

gender effect. In the regression analyses, there is a gap of the level of happiness between males and females, therefore, gender is also added with new model. A different approach may be required according to gender to analyze and make them happier in daily lives. This thesis examines the effect of ecological development variables-gender interaction on the level of life satisfaction of Korean students. Parental attention-gender and school adaptation-gender are found to be significant as measured by the level of life satisfaction for Korean youth. This suggests that gender influence on happiness is parental attention, school adaptation dependent.

The contribution of this thesis is that presents new investigation with additional determinants of developmental issues concerning high school life including students' health, school attainment, time spent on computer, allowance, relationship with parents and friend and socioeconomic variables related to life satisfaction using recent data. These findings can be used to enhance the happiness of Korean youth, where South Korean students are ranked at the bottom of international happiness survey.

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Appendix

A VIF

Variables	VIF
health	**1.05**
school GPA	**1.31**
deliquent behavior	**1.14**
victim of violence	**1.02**
time on computers	**1.13**
living with parents	**1.17**
parental attention	**1.29**
parental abuse	**1.16**
siblings	**1.03**
pocket money	**1.07**
peer relations	**1.24**
school adaption	**1.58**
community recognition	**1.20**
gender	**1.20**
living area	**1.03**
parents' education	**1.27**
income	**1.40**
MeanVIF	**1.19**

B Link Test

Link Test	OLS	OProbit	OLS Gender
Results	Pass	Pass	Pass