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Three essays on economics of happiness

by

Junhee Lee

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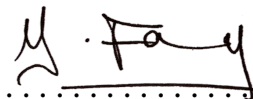
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Author



Department of Applied Economics
September 18th 2019

Certified by



Dr. Yarine Fawaz
Centro de Estudios Monetarios y Financieros (CEMFI)
Thesis Supervisor

Accepted by

Department of Applied Economics

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A note on Korean language conventions

The romanization of Korean words and names in this paper follows the McCune-Reischauer system except for names whose personal orthography is publicly known otherwise.

The transliteration of Korean names in the main text, as well as in parenthetical citations, notes, and references, follows the Korean way of writing surname and given name without a comma between them.

List of Abbreviations

CP	Corporal punishment
CSAT	College Scholastic Aptitude Test
DD	Difference-in-differences
FE	Fixed effect
IV	Instrumental variable
KCYPS	Korea Children and Youth Panel Survey
KFTA	Korean Federation of Teachers' Association
KTU	Korean Teachers and Education Workers Union
KYPS	Korea Youth Panel Survey
KRW	Korean Won
NYPI	National Youth Policy Institute
OECD	Organization for Economic Co-operation and Development
PT	Private tutoring
PISA	Programme for International Student Assessment
SEP	School equalization policy
SWB	Subjective well-being
WB	Well-being

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Chapter 1

Introduction

"Education", (...), goes far beyond formal schooling to embrace the broad range of life experiences and learning processes which enable children, individually and collectively, to develop their personalities, talents and abilities and to live a full and satisfying life within society.

Committee on the Rights of the Child
(2001)

A branch of economic literature widely known as happiness economics has experienced a remarkable growth since 1990s along with the rise of research on subjective well-being (SWB) across the social sciences. Articles on happiness economics have been published in top ranked economic journals, and hundreds of related articles have been published since the beginning of the 21st century. While happiness economics have provided valuable insights on identifying determinants of happiness, explaining behaviors of happy people, assessing public policies, and addressing economic puzzles, there are still a number of promising areas for future research, as suggested by as Clark (2018) and Frey (2019), among others. Two areas are in particular notable. One area is research on happiness of children : past studies have concentrated in studying adulthood SWB, but childhood SWB is strong predictor of well-being throughout adulthood ((Clark et al., 2018; Clark, 2018; Layard et al., 2014)), and intervention at childhood can be more effective or even critical in promoting well-being across the entire life cycle ((Conti and Heckman, 2014)). Second area is geographical limitation : research on economics of happiness tends to be concentrated in few countries in terms of dataset analyzed. Most research are concentrated to mere three

datasets : Australia (HILDA)¹, Germany (SOEP)² and the UK (BHPS)³. This may lead to potential lack of external validity of research (Clark, 2018).

This paper intends to contribute to extension of the strand of happiness economics into above areas. It analyzed data from the Republic of Korea (hereinafter referred to as Korea), of which research has been relatively scarce. It also analyzed childhood SWB as main outcome of the research. This paper is motivated by persistent challenges related to low level of happiness of Korean children. Korea is an academic oriented society. Also, at the same time Korea achieved rapid economic transformation from one of the poorest nation into an advanced economy in less than two generations. Its economic success has been attributed to the large investment in human capital by both public and private sector which led to creation of skilled labor force required for industrialization. As Korea's GDP grew by 1,115 times from 1953 to 2015, population with tertiary education degree also grew by 614 fold (from 1944 to 2013). In terms of academic performance, Korean students are now top performers in international comparison of student assessment (OECD, 2013). However, evidence suggest that rapid expansion of education and high performance may come at a cost in terms of individuals' well-being (WB). There are ample evidence which show that Korean students exhibit extremely low level of SWB and emotional problems. For instance, Korean students reported lowest SWB in among members of OECD PISA (OECD, 2017). Government's survey also revealed that around 1 in every 5 students reported to have felt suicidal ideation, and 5% of students were identified as high risk group for suicide (Ministry of Education, Science and Technology, 2013). This is worrisome because unhappiness in childhood can lead to low SWB throughout life cycle and related social problems. Low level of SWB of students may already be associated with negative adult outcomes in Korea : Korean adults' happiness ranked 118th out of 143 countries in World Happiness Report (Helliwell et al., 2015). Also, Korea recorded highest suicide rate for 13 consecutive years among OECD member countries (OECD, 2017). Also, 79.7% of Korean youths reported "to worry very much or to a great deal about losing their job or not finding one" which is second highest among OECD countries (OECD, 2016). In addition, Korea is characterized by low level of trust among people and in government⁴. Therefore, the Korean society can be characterized by low level of social capital (trust) and happiness and high level of anxiety, in terms of SWB. The reasons behind these low level of SWB of Koreans need

¹The Household, Income and Labour Dynamics in Australia

²The German Socio-Economic Panel

³The British Household Panel Survey

⁴Only 26% of Korean people reported that they trust in others, which is 10%p lower than OECD average. Korean people's trust in the government scored 0.28 (from 0 to 1) which is 29th out of 35 countries surveyed. Korean youth's (i.e. aged 15-25) trust in the government was 0.17, which was second lowest (OECD, 2016).

further investigation, but past studies point out that competition, social comparison and related historical and cultural background are associated to low level of SWB. East Asians tend to show higher tendency for social comparison than Westerners, which is attributed to their interdependent (collectivist) culture, as suggested by Kim and Ohtake (2014), and Suh (2014) as well as to genetic differences as suggested by Kang et al. (2013). While people under individualist culture are more likely to use their emotion to determine their SWB, people under collectivist culture tend to use emotion and social norm to determine their SWB. This aspect of social comparison characterizes individuals under collectivist culture as "context-sensitive self" (Diener et al., 2010; Suh, 2007). Context sensitivity is associated with higher preference for materialism, higher need for social approval and low level of SWB. Kim and Ohtake (2014) also found that among Koreans, those with stronger tendency for social comparison had low level of SWB and perceived social isolation. Those with stronger tendency for social comparison were mainly "tiger moms", who are parents who live in part of Seoul (known as 8th school district) where education fever is highest, and proportion of children who participate in private supplementary education (private tutoring) are highest. Tendency for social comparison and higher need for social approval is closely related with competition. Koreans experience fierce competition from childhood. 72.8% of students in primary and secondary education participate in private tutoring (Statistics Korea, 2019), spending on average 6.2 hours per week. As Layard (2011) noted, excessive emphasis on competition is major cause of low level of happiness of Koreans. Kim and Ohtake (2014) noted that academic competition has been more fierce in Korea compared to even other neighboring countries because Korean society was more egalitarian after liberation from Japanese occupation as social class was abolished before the occupation and most of population had similar level of wealth and income. Therefore, we can conclude that social comparison, competition, and childhood well-being are important determinants of happiness, in particular for Korean people. Identifying relationship between children SWB and academic pressure and competition, peer related factors and public policy can provide useful insights and implications for promoting happiness of Korean society. It could also provide policy implications beyond Korean case because a number of developing countries benchmark Korean education policy experience or are in similar path of development.

In light of this, the central questions of this paper focuses on social comparison, academic competition and peer related factors as determinants of SWB of students in Korea, and causal effect of recent policy reforms on promotion of students' SWB. More specifically, this paper investigates three factors that are closely associated with SWB of Korean students, namely, school violence, private tutoring and corporal punishment. School violence has become more serious

problem in Korea as it becomes prevalent and more severe. Recently, past studies on economics of SWB increasingly studied neighborhood effect such as local crime or conspicuous consumption on SWB. The Korean government has recently enacted law and policy framework to tackle school violence but critics suggest that prevention of violence and protection of victims and peers needs to be strengthened. Characteristics of Korean primary and secondary education system- students stay in same classroom during most of their school life- enable us to identify the effect of prevalence of school violence among classroom mates who are most relevant reference group. Private tutoring has contributed to raise academic outcomes of students in general, but it also led to excessive psychological burden of students and economic burden on parents. Private tutoring market is deeply entrenched in education system, forcing students into arms race-like competition for consumption of private tutoring. Recently, liberalization of society provided an impetus to place a new emphasis on students' human rights, resulting in reforms that prohibits corporal punishment and ensuring rights and freedom of students. Although this shift seems to bring positive effects on students' well-being, society still lacks evidence-based policy dialogue on consequences of the reforms. Instead, it has divided the society and provoked an ideological conflict which is still ongoing. Indeed, there has been attempts to address these questions by scholars in related disciplines. However, most of their finding on relationship on children SWB and above factors are correlational, lacking robust evidence of causality. This paper attempts to identify causal relationship by exploiting longitudinal data, exogenous variation of student related factors from Korea's distinct education policy and regional heterogeneity in policy reforms.

Outline of research design to address these questions are the following. Next chapter investigates the effect of school violence victimization as well as prevalence of school violence among peers on SWB. To overcome potential bias arising from endogeneity of school violence variable in estimating causal effect, I use nationally representative individual-level longitudinal dataset (KYPS, Korea Youth Panel Survey) which contains rich information on various domains of children's SWB, school violence perpetration and victimization, individuals' information on relationship and interaction with peers. I used individual-level fixed effect and instrumental variable (IV) estimation to isolate the effect of violence victimization from unobserved heterogeneity at individual level. I find that being victim to school violence has detrimental effect on life satisfaction, emotional and behavioral WB and peer satisfaction. I further show that relational type of school violence (known as bullying in western literature), which has been perceived as less serious violence than physical violence and relatively neglected in anti-school violence policies, can have significant detrimental effect. This chapter also explores the indirect effect of school violence on

SWB, by analyzing prevalence of violence among classroom peers. To identify exogenous effect of prevalence of violence, I exploit Korean education policy (known as school equalization policy, SEP) that randomly allocates students within school districts. The results suggest that higher proportion of perpetrators is associated with lower SWB and lower interpersonal trust. This effect is robust and lasting : it affects students' SWB in five years of future. The results also show that this negative neighborhood effect is especially significant for female students.

Third chapter studies the impact of private tutoring on students' SWB. Most past studies estimated effect of PT on academic achievements, and few studies studied direct effect of PT in student WB. However, studies that studied relationship between PT and WB have not addressed endogeneity issues, and there is no study that considered PT in a relative sense, in comparison with PT of peers, is non existent. Using individual level longitudinal data, I apply fixed effects estimation to control for potential endogeneity of PT variables. To see PT as positional good, the effect of individual's consumption of PT are analyzed with consumption of PT of peer (school mates) and difference between these 2 variables. The results suggest that increase in PT has negative effect on individual's emotional WB. Results also suggest that increasing PT does not lead to rise in ranking of exam scores among school mates, but difference of consumption of PT between individual and the reference group do affect ranking. Such difference in PT also has negative and significant impact on emotional WB. Estimates further indicate that consuming more PT than reference group has additional impact on satisfaction with peers.

Fourth chapter analyzes impact of school reforms that were enacted in Korea from 2012 on SWB and student WB. These reforms aim to promote human rights of students, and one of the most significant change is prohibiting CP in schools entirely. To identify causal effect of reforms, I exploit the fact that these reforms were only implemented in part of regions. Using DD estimation method with school-level administrative data and individual level longitudinal data, this paper estimates causal effect of banning CP on students' outcomes such as academic performance, mental health, school violence, SWB with regard to school, peer and teachers, and time usage. I also stratify the data into different age cohorts, private and public schools, single sex and coeducational schools, gender and intensity of reforms. I show that reforms in general has brought positive effects on Stratification of estimation by age cohorts indicate that while the effect of the reforms have stronger effect on younger cohorts, while its effect is negative on some variables such as health and violence for older cohorts. The paper also finds that some positive effect takes several years to take effect. With regard to difference in effect by subgroups, reforms has little

positive effect on girls, and has positive but smaller effect on private schools than public schools.

This paper aims to contribute in the following areas. First, this paper extends literature on economics of happiness into childhood happiness and Korean data. Second, it adds empirical evidence to disciplines other than economics regarding effect of school violence and peers, focusing on more robust identification of causal effect. Third, it contributes to studies on peers, reference group and neighborhood effects. Fourth, it aims to contribute to promoting evidence-based policy dialogue on impacts of recent student human rights reforms in Korea.

Chapter 2

School violence and subjective well-being : empirical evidence from Korean panel data

2.1 Introduction

Violence at schools is a serious and widespread social problem across countries. According to the data analyzed in this chapter, 23% of elementary school (equivalent to primary education) students in South Korea (hereinafter referred to as "Korea") in 2004 were victimized to school violence¹. Likewise, proportion of children bullied in other countries remain significant : victimization rate in Denmark, Britain and the United States was around 27% (Eriksen et al., 2014). Tackling school violence deserves more attention and resources because school violence exhibit following aspects which can distinguish it from other form of violence, and intensify negative consequences of school violence on children's well-being (WB) (Cheon, 2013). First aspect is relatedness : unlike other type of violence, school violence is perpetrated by those in close relationship with the victims, and it is difficult for other people to distinguish violence from harmless interaction because the relationship between perpetrators and victims can be changeable and subtle. School violence can thus be especially detrimental on WB as it can destroy existing amicable relationships. Second aspect is persistence : school violence is usually perpetrated repeatedly and for a long period

¹Some literature on school violence distinguish bullying from school violence. According to those literature, bullying forms subset of school violence, and bullying is defined as exposure to negative actions on the part of one or more other students repeatedly and over time(Olweus, 2009). Although many studies focus their analysis on bullying, I use the term school violence in this chapter because bullying in the Korean law is defined differently from the above working definition of bullying in literature. See next section for difference in definitions of the two terms.

without being caught by adults. Unlike other types of violence, it is difficult for victims to escape from violence or seek help. Third aspect is openness : school violence is usually perpetrated in the presence of victims' peers. Because of this, it can be more humiliating than other types of violence, and it can lead to additional violence by other bullies by stigmatizing victims and perpetrators. In addition to these aspects, school violence can take place at an early stages of childhood that can have lasting effect on many aspects of adult outcomes. In light of this, the detrimental effect of school violence have received extensive attention in the academia, mostly psychology, during the past three decades (for comprehensive survey of research, see (Mcdougall, 2015)). Yet, there are still many areas of research related to school violence that need to be done. One of them is to produce more robust evidence of causal relationship between school violence and subjective well-being (SWB), because many past findings on those relationship are not causal but correlational. Another theme that needs more investigation is the negative externalities (neighborhood effect) of school violence. Most studies have focused on perpetrators or victims, but we need to know more about how school violence can affect other peers' WB because it will help to identify the cost and benefit of anti-school violence policies. Recent advances in the field of economics of education as well as in peer effect research (Lavy et al., 2011) can be a reference in addressing these areas. In addition, recent studies in economics of happiness have investigated the link between childhood variables and SWB, and life-course model which explores the effect of interventions in early stages of life on adult SWB (Clark et al., 2018; Conti and Heckman, 2014). Findings in this branch of research indicates that early-life interventions which can shape the life conditions are effective instruments to promote the people's WB over the life cycle.

This chapter attempts to address aforementioned issues that needs more investigation, namely, more rigorous identification of causal effect of school violence on SWB and negative externalities of school violence. The Korean case is appropriate for addressing these questions for following reasons.

First, effect of peers on SWB is relatively more conspicuous in Korea because Korean education system is highly collectivist, and high degree of academic competition makes students care more about their peers. Korea is well known for high school enrollment rate at all levels and for good performance in international tests such as the OECD PISA (OECD, 2013). Korean education is characterized by high level of educational competition, excessive amount of time and resources spent on private tutoring parents' zeal towards academic success in national tests to enter prestigious universities. Students' relative status in academic performance is highlighted

throughout education. There exist exams in nationwide scale, of which exam scores are used to compute rankings of students. Nationwide rankings in CSAT (College Scholastic Aptitude Test) is the most important determinant in university admissions. Students were required to take nationwide exams frequently (e.g. National Assessment of Education Achievement, NAEA or mock CSAT) from middle school. Students' ranking in exam scores are constantly notified to students, and students are often aware of their peers' rankings. Therefore students are more sensitive and conscious about their peers' performance. In addition, Korea's collectivist culture is embedded in its education system, which makes it easier to observe peers. For instance, Korean schools in primary and secondary education have adopted the "fixed classroom structure", which requires students to spend most of their time in school with their classmates.

Second, distinct characteristics of Korean education system, which is quasi-random allocation mechanism, enable us to overcome major challenge (i.e. selection bias) in identifying peer effect. In peer effect literature, it is usually challenging to isolate the effect from peers from one's own socioeconomic characteristics. In the case of Korea, the government adopted School Equalization Policy (SEP), which makes it mandatory for schools to keep quality of schools equal, and uses random allocation mechanism to assign new students to elementary and middle schools within given administrative district of students' residence. These characteristics enable us to exploit exogenous variations to isolate effect from peers.

Third, evidence suggest that level of SWB among Korean students is relatively low, and it is strongly associated with various effect from peers. In a study that surveyed SWB of youths in OECD member countries, Korean students marked the lowest level of SWB among students in 20 countries ². This result deserves particular attention as lower SWB is linked to higher prevalence of mental illness and suicide, and have lasting effects on adult outcomes. In addition, mental health of Korean youth seem to have deteriorated over recent years. For instance, proportion of Korean youths seeking treatment for depression from increased by 8.2%p from 2005 to 2009 (Korea National Youth Policy Institute, 2011). Also, a nationwide survey conducted by the Korean Ministry of Education in 2012 revealed that 16.3% of students (age 6-18) needed psychiatric counseling and as many as 4.5% of students were diagnosed as in need of intensive psychiatric treatment, and 1.5% were at high risk of committing suicide (Ministry of Education, Science and Technology, 2013). Evidence imply that poor mental health is associated with academic pressure. In a nationwide survey of 9,500 youths, 68.7% of middle and high school students reported to be under stress due to study (Korea National Youth Policy Institute, 2009). 38% of them thought of committing suicide, of which 44.1% responded that their suicidal ideation was due to poor academic grades

²55.4% of Korean students responded positively to the question "Are you satisfied with your life?", while 84.8% students from other OECD member countries answered affirmatively to the same question (Kim and Byun, 2014)

at school. In addition, 60.8% reported that they were unhappy, and 58.1% of them attributed the reason of being unhappy to stress of studying (32.6%) and anxiety about their future (25.5%). This shows that psychological burden is closely linked to excessive competition in education.

Fourth, we can benefit from rich data on Korean students. In particular, a number of public institutions in Korea have recently produced longitudinal surveys on children. Such longitudinal data help address methodological challenges arising from endogeneity issues. Moreover, those data include information on peer groups and their socioeconomic characteristics.

This paper uses Korea Youth Panel Survey (KYPS) dataset that contains rich information on SWB, academic outcomes and socioeconomic characteristics of students and households. I use multiple regression and fixed effects estimation to estimate direct effect of school violence on children's SWB. The estimation method is also complemented by instrument variable (IV) estimation that instruments victim status with misbehaviors of peers and peers who are exposed to domestic violence, following approach used in Carrell and Hoekstra (2010). In addition, this chapter estimates indirect effect of school violence by utilizing exogenous variation of violent peers created by Korean education law (SEP) that assigns children to elementary and middle schools based on random allocation mechanism within school districts. Empirical results suggest that direct and indirect school violence has negative and significant impact on children's SWB, while evidence on academic outcome is unclear for indirect effect.

This chapter contributes to the following strands of research. First, it contributes to the literature on identification of causal effect of school violence. There has been several studies in economic literature which focused on the causal effect of school violence on variables such as academic performance (Eriksen et al., 2014), labor market outcomes (Drydakis, 2014), and test scores and misbehavior (Carrell and Hoekstra, 2010). Studies from disciplines other than economics have analyzed relationship between school violence and children's WB, but such relationship is correlational and most studies are based on cross sectional data. This chapter attempts to provide causal impact of school violence on SWB by exploiting longitudinal data and instrumental variables. Second, it contributes to the literature on neighborhood effects and SWB. Neighborhood effect on SWB has drawn attention in the recent economic literature, such as effect of local crime on mental distress of individuals living in vicinity (Dustmann and Fasani, 2016), long-term effect of moving into less distressed neighborhood on SWB of low income adults (Ludwig et al., 2012), and effect of income ranking among neighborhood on satisfaction with economic conditions (Clark et al., 2009). This chapter exploits new data on rare and large-scale natural experiment (SEP) that help isolate the effect of having more/less classmates who perpetrate school violence from other confounding factors such as income segregation or socioeconomic characteristics of households

in the same districts.

The remainder of the chapter is organized as follows. Section 2 reviews the literature related to school violence, SWB and neighborhood effects. Section 3 explains background and context focusing on Korean education system and the state of school violence in Korean schools. Section 4 provides the information on data and construction of variables. Section 5 and Section 6 explains empirical strategy used and estimation results respectively. Section 7 concludes. Annex provides additional estimation results mentioned in Section 5.

2.2 Review of related literature

Various studies across disciplines of psychology, sociology, economics as well as medical science have found negative impact of peer victimization on mental WB, child development and academic outcomes. Specifically, peer victimization found to be linked with poor academic outcomes (Erikson et al., 2014), lower education attainment (Ammermueller, 2012), suicidal ideation, suicidal attempts or completed suicide during childhood or adulthood (Hinduja and Patchin, 2010; Klomek et al., 2009, 2007), substance abuse and functional impairment (Klomek et al., 2013), reduced social connectedness and school absenteeism (Smith et al., 2004), and negative labour market outcomes such as labor force participation, employment probability and wage level (Drydakis, 2014). From the theoretical perspective, negative effect of peer victimization can be interpreted by the general strain theory suggested by Agnew (1992). According to Agnew (1992), children develop strains to prevent, deter, circumvent or counteract to the source of perpetration when they are exposed to or anticipate victimization. Such strains increases negative emotions such as anxiety, depressiveness or anger, and may lead to corrective actions such as aggression, misbehaviors (smoking, drinking, substance abuse, etc) or self harm and suicide.

A number of past studies have analyzed heterogenous effect of school violence by subtypes. In a number of studies, school violence is conceptualized into three subtypes : verbal, physical, and relational violence (Arango et al., 2016; Espelage and Holt, 2013; Nylund et al., 2007). Studies have found that these subtypes may be differently associated with adverse outcomes. In particular, many studies note that relational violence is associated with greater loss of mental WB than other subtypes. Espelage and Holt (2013) found that physical violence is correlated with higher risk of suicide and self harm compared to verbal school violence. Mcdougall (2015) provide empirical research which found that relational violence affects children more negatively than physical or verbal violence, and suggest that children are more likely to relive and re-experience pain from relational violence more easily than pain from physical violence, and emotions tied to relational

violence are more intense and painful than other forms of violence.

With regard to heterogeneous impact of school violence, gender is another aspect on which school violence literature has focused. Carbone-Lopez et al. (2010) suggest that females are more negatively affected by "indirect" form of bullying as they are more socialized to protect and preserve relationship. Kim et al. (2019) find that impact of school bullying victimization on depression is greater for females than for males, and impact of bullying victimization on alcohol use is significant for females but insignificant for boys. They explain this gender differences with the coping theory : females are more likely to cope with victimization by internalizing behaviors such as alcohol use, which is then associated with depression. Arango et al. (2016) find that although females reported to be more severely verbally victimized, males were more negatively impacted. This is related with which subtypes of victimization were more socially accepted by males or females. In the case of Korea, Yang et al. (2006) reports that school violence victimization increases anxiety of girls, and seem to cause behaviors which are defensive, aggressive, and delinquent.

Literature related to happiness has explored neighborhood effect on happiness, in areas such as crime (Brenig and Proeger, 2018; Cohen, 2008; Dustmann and Fasani, 2016; Michalos and Zumbo, 2000; Moore, 2006), socioeconomic situation of neighbors (Dittmann and Goebel, 2010), relative income (Charness and Grosskopf, 2001; Clark and Oswald, 1996; Clark et al., 2009, 2008; D'Ambrosio and Frick, 2007; Distant, 2013; Ferrer-i Carbonell, 2005; Firebaugh and Schroeder, 2009; Luttmer, 2005; Shifa and Leibbrandt, 2018; Wildman and Jones, 2002), school outcomes (Luppino, 2015), and neighbors' educational attainment (Nikolaev, 2016). In this chapter, neighborhood effect of peer victimization refers to an indirect effect that is not directed to oneself but to peers. Identifying the indirect effect is important for prevention and mitigation of school violence, as it helps to improve our understanding of the extent of detrimental effect of school violence and estimate the resources needed to tackle it. This chapter is inspired by prior studies on school violence in social context and neighborhood effect on SWB. Carrell and Hoekstra (2010) estimates negative externalities from classroom peers who are exposed to domestic violence, and suggests that those negative externalities have negative effect on peers' academic performance (reading and maths test scores) and increases misbehaviors in classrooms. Dustmann and Fasani (2016) which analysed the effect of local crime on neighborhood's mental WB from the British Household Survey Panel and the English Longitudinal Study of Aging, suggest that the rise in local crime rates have negative and substantial effect on mental WB of citizens. Brenig and Proeger (2018) analyzed the European Social Survey (ESS) and found that change in the average individual's perception of safety of neighborhood (from "unsafe" to "safe") yields can be translated into average monetary benefit of 12,700 euros. Medina and Tamayo (2012) also found the rate of urban

crime is associated with life satisfaction. Drawing from past studies, prevalence of perpetrators or victims of violence may affect WB and school outcomes through at least four following channels:

Firstly, proportion of perpetrators among peers may affect SWB through creating strains (or negative emotions) by increasing actual or perceived likelihood of being victimized. Fear of becoming victims and perception of insecurity diverts resources to invest in planning and implementing strategies in deterring violence (e.g. keeping low profile in school, refraining from social interaction with peers, taking safer routes from and to home, etc) as suggested by general strain theory (Agnew, 1992). This is in line with Moore (2006) who suggests that the negative effect of crime on WB may not transit through being an actual victim, but rather through fear of becoming victim in future.

Secondly, it may also affect likelihood of having perpetrators as friends, which in turn increases chances of being involved in school violence, being subject to disciplinary measures or being involved in harmful behaviors such as smoking or drinking alcohol.

Thirdly, students may experience sense of sadness and powerlessness, depressive feelings if they sympathize with close peers who are victims.

Lastly, having more perpetrators in classroom can lead schools to resort to more oppressive education measures.³ Diversion of educational resources also implies that there could be additional cost to education, including loss of human capital accumulation. Also, parents may invest more resources in raising academic performance of their children if they recognize loss of resources due to high proportion of perpetrators in classrooms. Such resources could include more attention (helping with their children on homework or preparing for exams after school, monitor if children are not engaged in misbehaviors or delinquencies), expenditure on private education, and moving to other schools. This hypothesis is plausible from Korean context, as parents and children place strong emphasis on education and obtaining high scores on exam, and individual child's ranking in nationally standardized exam among his/her cohorts in the nation is often provided as a result of practice exam for university entrance exam (College Scholastic Aptitude Test, CSAT, *Suneung* in Korean).

³Corporal punishment by teachers, such as hitting students on hands or legs with canes, forcing to do certain physical activities or maintain certain poses, was not legally prohibited in Korea at the time of survey which is analyzed in this chapter. According to a survey, 80% of the students experienced corporal punishment (Korean Teachers and Education Workers Union, 2014b).

There is no study, at least to the knowledge of the author, that investigated empirically this indirect effect of school violence on SWB and academic outcomes of children, with the exception of Wu and Lei (2012), although it did not directly estimate the impact of indirect effect on SWB. Wu and Lei (2012) investigated the effect of frequency of delinquency in classrooms of Taiwanese students on delinquency of students, and found that students who are in classrooms with more deviant peers are associated with developing higher level of delinquency. However, as authors admit, they could not rule out the possible bias of their estimation from self selecting into neighborhoods or social contexts. Huitsing et al. (2012) focused on the effect of perception of victimization in the classroom context, and found that the negative effect on WB outcomes were greater for students in classrooms in which classmates perceived victimization as a central issue. They also found that victims in classrooms with higher level of victimization were associated with less maladjustment. They explain that the possible reason behind this association is that the victims perceive themselves in a "shared plight" situation, where victimization is more attributed to external circumstances and less to their own fault.

2.3 Background

2.3.1 Korea's primary and secondary education system

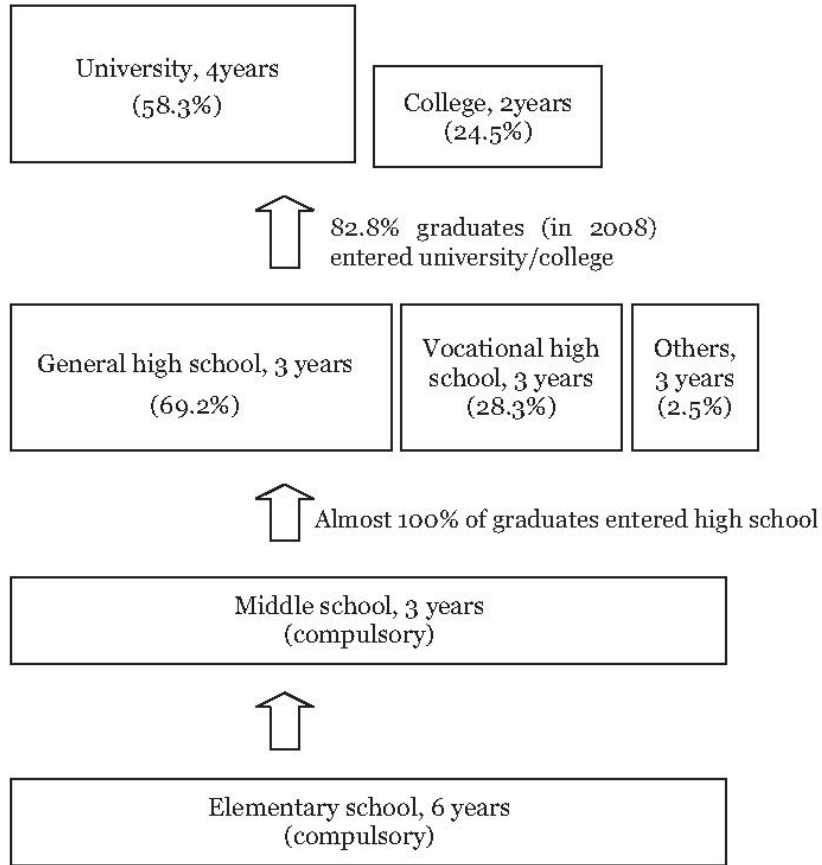


Figure 2-1: Flow chart of the Korean education system

As shown in figure 2-1⁴, The Korean primary and secondary education system is in total 12 years and consists of three parts: 6 years of elementary school, followed by 3 years of middle school (equivalent to lower secondary) and 3 years of high school (equivalent to upper secondary). Children who are at least 6 years old are eligible to enter elementary school. Education is compulsory for elementary and middle school, and optional for high school. Although high school is optional, almost all students who graduate middle school enter high school⁵. There is no admission exam for elementary and middle schools. For high schools, there is no admission exam for most of the schools except for special purpose schools. There is no qualifying exam for promotion or graduation, so most students promote to higher grade or higher schools, unless there

⁴"Others" refers to special purpose high schools for arts, science or foreign language (Source : Nam (2014))

⁵Of middle school students who graduated middle school, 99.7% of them entered high schools in the following year (Nam, 2014).

is unusual circumstances such as school discipline, failure to attend minimum number of days, or voluntary deferral by parents. Academic year consists of spring and fall semesters that begins respectively in March and August. Summer and Winter breaks between semesters starts in July/August and December respectively. Students typically enter their elementary school at the age of eight.

High schools graduate students, regardless of the types of schools explained above, can apply for 2-year vocational colleges or 4-year universities. High school students in their final semester take College Scholastic Aptitude Test (CSAT), which is national-level examination adopted from 1994. Admission to universities or colleges are decided on the basis of CSAT score, students' academic performance in high schools measured by school-level exams and school student record (*hakgyosaenghwalgirokbu* in Korean), and essays or student interviews administered by universities or colleges. Among these criteria, CSAT score is a decisive factor in admission to universities or colleges. Therefore high school students invest most of studying time on preparing for CSAT. In 2008, 72.5% of high school graduates took CSAT (Nam, 2014).

Two characteristics of Korean education system, namely "School Equalization Policy (*pyeongjunhwa jeongchaek*)" and "Fixed Classroom Structure (*hakgeupgyosilje*)", worth explanation as they are relevant to the research design of this chapter. The Korean government adopted School Equalization Policy from 1969 with an aim to reduce the gap in quality of education between regions and districts with varying level of income. Elementary and middle schools are equalized in terms of curricula, teachers' qualifications, school budget and school facilities (Korea Education Development Institute, 2007). Specifically, school equalization works in two ways. First, quality of schools are equalized. Although there are private and public schools, both type of schools are required to meet minimum standard in areas such as facilities, qualification of teachers and school finance. Second, new students for elementary and middle schools are allocated to schools by lottery-like random allocation mechanism. This mechanism randomly allocates students to schools in students' residential area called "school district (*hakgun* in Korean) (Paik, 2001) ⁶". So elementary and middle school students living a given school district are randomly allocated to schools in that same school district. In the case of high schools, such allocation mechanism only partly applies, to "general high schools" in large cities. Since special purpose high schools have demanding curricula and reputation for sending their graduates to prestigious universities, there exists high degree of competition of obtaining high scores in school exams and admission exams

⁶Article 68 of the Enforcement Decree of the Elementary and Secondary Education Act of Korea states : "The head of the district office of education shall allocate schools for applicants for admission to middle schools to enter by lottery according to districts and school groups, and for districts which are extremely distant and lack traffic facilities for students to go to school, he shall allocate schools to be entered according to the middle school districts set by the Superintendent of the Office of Education".

among middle school students who wish to enter those special purpose high schools (Suh and Kim, 2017).

fixed classroom structure refers to school policy applied to elementary, middle and high schools which requires the students to stay in a fixed classroom with fixed classmates throughout academic year, and teachers move between classrooms (Suh and Kim, 2017). Each classroom is supervised by "designated class teacher", who oversees progress of students in the classroom, holds home room meetings, and monitors extra classes after formal class hours ⁷. A benefit of fixed classroom structure compared to structure where students move between classes which is common among many western countries can be that they "provide default social groups in which students forge deep bonds and that serve as psychological anchors" (Min, 2016). Also, fixed classrooms are meaningful and strong reference group when we estimate the indirect effect of school violence on SWB.

We can exploit SEP and fixed classroom structure to identify exogenous variation of prevalence of school violence among peers. First, SEP ensures that students are randomly allocated to elementary and middle schools within their school districts. Therefore, we can consider the within-school-district variation of school violence prevalence in classrooms as exogenous. Second, students in a fixed classroom structure can be considered as relevant peers, because they spend most of their time together, both in official academic classes and unofficial academic classes such as extracurricular classes and home-room meetings. We can be assured that prevalence of school violence among classmates in a fixed classroom are observed among classmates. Furthermore, it is rational to assume that classmates are also more affected by classroom violence, because they may sympathize with the victims, feel the urge to resist to perpetrators, or fear that she could also become the victim of the violence. Identification and estimation method for the effect of school violence prevalence among peers are further explained in the following section.

2.3.2 Students' SWB in Korea

Korean students reported very low level of SWB in various international surveys. OECD (2017) found that average life satisfaction (from scale of 0 to 10) of 15 year-old Korean students was 6.36, which is second lowest next to Turkey among 72 countries surveyed. In the same survey, only 53% of Korean students responded that they are satisfied with their lives, which is much lower than that of the OECD average, which is 71%. Likewise, Korean students reported lowest level of SWB for 5 consecutive years (from 2009 to 2014) among children from OECD member countries in another international comparison survey (Youm et al., 2015). It is interesting that

⁷Size of this fixed classroom in the KYPS dataset has mean of 36 and ranges from 24 to 46.

Korean students ranked high in other well-being related measures in the same survey : Korean students ranked one of the highest in terms of healthy lifestyle (exposure to smoking, alcohol or substance abuse), health status and subjective safety. In the same survey, Korean students placed high value on materialism and reported that their happiness is more highly associated with material wealth than did students from other countries : 24% students in high school 3rd grade responded that money was most important for happiness, while only 17% responded that family was most important. In terms of mental health related measures, around 1 in every 5 students reported to have felt suicidal ideation, and 5% were high risk group for suicide (i.e. seriously considered to commit suicide more than 3 times a year). However, Korean students also showed high degree of aspiration for academic performance. 82% of them responded that they wanted to become best student in class in terms of academic performance, which is much higher than response of OECD average (59%) (OECD, 2017). We can deduce from these surveys that

2.3.3 State of school violence and related policy frameworks in Korea

School violence has been recognized as a serious social problem in Korea since 1990s. In 2006, when school violence was estimated to be peaked, 17% of all students (14,266 cases) reported to be victimized, and 13% of students (21,710 students) committed school violence (Korea Education Development Institute, 2010). Although total number of cases gradually decreased throughout 2010s⁸, sexual violence in schools increased by 2.5 fold from 2006 to 2009. Another important trend in school violence is that perpetrators are increasingly becoming groups. In 2009, 68% of violence was committed by group of perpetrators rather than individuals. In addition, evidence show that acts of violence have become more cruel and severe, and perpetrators has become younger over the years.

In general, students' trust in mechanisms to address school violence is found to be low. According to a nationwide survey conducted in 2009, 64.3% of school violence victims did not ask for help to schools or parents because they believed that "it would not solve the problem" or "it would make things worse" (Korea Education Development Institute, 2010). Students were also apathetic upon witnessing violence : 56.8% of students who witnessed violence pretended that they did not witness it, and did not do anything to help. Among above, 33% responded that they fear of becoming victims to violence if they intervened.

With regard to public policies on school violence, government's engagement was limited, and

⁸However, evidence show that this reduction in school violence victimization is due to the fact that more students underreport victimization, because they tend to disregard new type of violence, such as cyberbullying, as school violence. For instance, 14% of students surveyed responded that they believe cyberbullying does not constitute school violence (Korea Education Development Institute, 2010).

countermeasures has been mainly conducted by non-governmental institutions until early 2000s. The government began to assume main responsibility in addressing school violence from 2004, when the "Act on the Prevention of and Countermeasures Against Violence in Schools (hereinafter referred to as "the Act")" came into force. Under the Act, legal definition for school violation and bullying were made⁹, and "Autonomous Committees for Countermeasures against School Violence" were established in every schools, which are primary institutions consisting of school teachers, administrators, parents, and police that are mandated to deliberate on matters related to the prevention of and countermeasures against school violence as well as protective measures for victims. Protective measures for victims include psychological counseling or advice; temporary protection; treatment and recuperation for treatment; and change of classroom. Countermeasures against perpetrators include an order to give a written apology to a victim; prohibition against making contact with, threatening, or retaliation against a victim or whistleblowers; social work in schools or in local communities; special education or psychological treatment from an expert; suspension of attendance; change of classroom; transfer to other schools; and expulsion from a school. Notable characteristic of these countermeasures is that they are not measures under criminal code : they are in a grey area between legal actions and educational measures.

According to Moon (2014), shortcomings of Korea's policy frameworks on countermeasures against school violence include the following. First, protective measures for victims are not designed to be provided in a timely manner. The Autonomous Committees can take up to 21 days to reach a decision on implementing protective measures, but perpetrators and victims stay in the same space (fixed classrooms) until the decision has been made. Second, financial resources for protective measures are often insufficient. Third, gender-specific characteristics and considerations on countermeasures tailored to new types of violence (such as cyberbullying) are not reflected in the framework. Fourth, the Autonomous Committees lack expertise and are at risk of failing to maintain their independence from schools, because the majority members of Committee are students' parents. Fifth, the Autonomous Committees are not utilized enough in reality : in 2008, the Autonomous Committees deliberated on 8,813 school violence cases in total. Considering there are over 11,613 schools (elementary, middle, and high schools) in the nation, Committees deliberated on less than one case per school annually. Sixth, countermeasures are fragmented and lack coordination with stakeholders because there is no legal ground guaranteed under the Act for

⁹Article 2 of the Act defines school violence as "actions committed against students inside or outside of school premises resulting in a physical or mental injury, or damage to property through a battery, assault, confinement, threat, kidnapping, abduction, defamation, insult, extortion, coercion, forced errand, sexual violence, bullying, or cyber-bullying, or with obscene or violent information via an information and communications network" and defines bullying as "any form of constant or repeated actions whereby at least two students inflict physical or emotional harm on a specific student or a specific group of students inside or outside of school premises, and then inflict pain thereon".

education offices, juvenile courts or local police to intervene when Autonomous Committees deliberate on cases. Seventh, preventive education that are conducted in schools are not effective, as they are usually mass lectures and not tailored to school circumstances. Eighth, although household and parents' characteristics are argued to be associated with violence, measures to educate or support perpetrators' parents are insufficient and ineffective.

2.4 Description of the Data and Variables

Dataset

This paper uses Korea Youth Panel Survey (KYPS) dataset collected by National Youth Policy Institute (NYPI) in Korea. KYPS selected 2,844 elementary school (primary, age 11) students and their parents from all provinces in Korea except Jeju Island by stratified multi-staged cluster sampling in 2004 and followed them for 5 consecutive years annually. This panel survey contains rich information on measures of the youths' WB as well as socioeconomic and demographic characteristics, and school performance. In particular, the survey contains rich information on peers as the whole classmates in the fixed classroom were selected, which amounts to 84 classrooms.

This dataset has several advantages for the research objective of this chapter. First, the entire students in a classroom of initial year are observable. As mentioned above, the concept of fixed classroom structure in Korean schools has special meaning because it is the group in which students spend their school life together : they take the same classes together and participate in the same extracurricular activities. Although it is not possible to observe who are friends individually in a classroom as in Lavy and Schlosser (2011), we can assume the students in the same classroom as close peers because of the fixed classroom structure.

SWB variables

SWB and school outcomes are dependent variables of this paper. KYPS dataset contains rich set of variables related to SWB. With regard to SWB, self reported SWB measures are aggregated to build main psychosocial factors of child development following Eriksen et al. (2014) : overall life satisfaction, depressive feelings, behavior (aggression), and satisfaction with interpersonal relationship with peers. While a number of literature on happiness research focused on satisfaction with life in general or self reported happiness, this chapter analyzed other subdomains of satisfaction. This reflects the recommendations on analyzing childhood SWB highlighted by Clark et al.

(2018). According to Clark et al. (2018), children are less capable than adults in making judgment about their experience. Therefore we need to ask children questions about their mood and feelings in addition to life satisfaction, and their answers are usually aggregated as measure of child WB. Descriptive statistics for SWB variables are presented in Tables 2.1 They include responses by students about satisfaction in 5 domains. They are i) satisfaction with life in general (*life*), ii) emotional SWB represented by suicidal ideation (*suicidal*), iii) level of aggression (*aggression*), iv) satisfaction with peers (*peer*), and v) interpersonal trust (*trust*).¹⁰. All variables are measured in 5 point Likert scale which ranges from "completely agree (=1)" to "completely disagree (=5)". Emotion and peer satisfaction measures negative satisfaction, so they are recoded reversely (e.g. suicidal ideation decreases if the value of *suicidal* increases) for the ease of interpretation.

Table 2.1: Descriptive statistics (1) : SWB variables

	mean	sd	min	max
<u>life satisfaction (life)</u>				
How satisfied are you with your life in general?	3.86	0.93	1	5
<u>Emotion (suicidal ideation)</u>				
Sometimes I feel suicidal with no apparent reason	4.35	1.09	1	5
<u>aggression</u>				
I am often seized by an impulse to throw an object whenever I get angry	3.94	1.26	1	5
<u>peer satisfaction</u>				
I get stressed by lack of recognition from my frd.	4.31	0.98	1	5
<u>interpersonal trust</u>				
I will intervene or report to the police (teachers) if my frd. are assaulted	4.29	0.98	1	5
Observations	2844			

School violence variables

Many past studies has used the term "bullying" as object of analysis. It is because there exists working definition suggested by Olweus (2009) that is widely accepted among studies, mostly from western countries. Studies such as Hymel and Swearer (2015); Volk et al. (2017) define bullying as : "aggressive behavior intended to inflict harm on or control over another and is characterized by repetition and an imbalance of power" following Olweus (2009). However, the definition of bullying is more ambiguous in Korea, so this chapter uses the term "school violence", because its definition is more widely and uniformly recognized by students, as it is defined by the law

¹⁰KYPS is panel data, but these Tables only report the descriptive statistics of the first wave.

and frequently used in the media with that definition. The Act defines school violence as: "Actions committed against students inside or outside of school premises resulting in a physical or mental injury, or damage to property through a battery, assault, confinement, threat, kidnapping, abduction, defamation, insult, extortion, coercion, forced errand, sexual violence, bullying, or cyber-bullying, or with obscene or violent information via an information and communications network (Statutes of the Republic of Korea, 2014)". Bullying used in the Act above is translation from Korean text ("*jipdan-ddadolim*" in Korean) but it is not equivalent to above definition by Olweus (2009). Its literal meaning in Korean language is close to relational form of bullying used by Manzella (2018), which include isolating victims from activities of peers and information, embarrassing victims in public, spreading rumors, or purposeful exclusion. On the contrary, bullying is more widely defined under the Act above as : "Any act, which is directed towards certain individual or group of students to cause pain by attacking him/her physically or psychologically in a consistent or repeated manner, committed by two or more students inside or outside school". It is difficult to distinguish school violence and bullying in KYPS dataset, because other than "collective bullying (i.e. relational violence)", the KYPS questionnaires did not explicitly ask whether act of violence was repeated or consistently committed for other forms (i.e. verbal and physical) of violence. Descriptive statistics for school violence measures are presented in Tables 2.3 and 2.4. Children surveyed in KYPS were asked whether they engaged or victimized by school violence each year. These responses are categorized into verbal, physical, and relational type of school violence, in terms of incidence (i.e. 1 if child was victimized in given year, 0 otherwise) and intensity (i.e. number of times the child was victimized by certain type of violence in a given year). Incidence of all types of violence indicate whether student was victimized by any 3 forms of violence. Intensity of all type of violence is measured by the total number of acts of violence a student suffered in each surveyed year. Verbal violence consists of being threatened or severely teased. Physical violence consists of being severely beaten, robbed, or sexually assaulted. Relational school violence refers to whether victim is collectively bullied. We can see that the prevalence of victimization in classroom is not negligible. 23% out of 2,648 children surveyed reported that they were victimized to at least one type of school violence, with verbal form of violence being the most frequent(13%).

Socioeconomic characteristics of students and parents

Table 2.5 reports descriptive statistics for socioeconomic variables which are selected as control variables. The literature on child research suggest that relationship with parents and parenting style are strong predictor of children's SWB, and it is supported by studies such as Burton

Table 2.2: Descriptive Statistics (3) : school violence variables

	mean	sd	min	max
victimization incidence(all types)	0.23	0.42	0.00	1.00
victimization incidence(verbal)	0.16	0.37	0.00	1.00
victimization incidence(physical)	0.09	0.29	0.00	1.00
victimization incidence(relational)	0.07	0.26	0.00	1.00
no. victimized	1.99	10.37	0.00	160.00
% perpetrators in class	0.19	0.09	0.00	0.46
no. of prepetration in class	1.24	1.10	0.00	6.06
<u>Instrumental variables (IV)</u>				
mean classmates' response to : I am seriously beaten by parents	1.70	0.20	1.22	2.26
no. of close friends who severely beat others	0.17	1.03	0.00	40.00
no. of close friends who extort others	0.11	0.72	0.00	23.00
no. of close friends who blackmail others	0.28	1.40	0.00	54.00
Observations	2844			

Table 2.3: Descriptive Statistics (4) : variables used for construction of school violence variables

	mean	sd	min	max
<u>verbal</u>				
Being threatened during the last one year_occurence	0.06	0.25	0	1
severely teased or bantered during the last one year_occurence	0.13	0.34	0	1
<u>physical</u>				
Being severely beaten during the last one year_occurence	0.04	0.19	0	1
Being robbed during the last one year_occurence	0.06	0.23	0	1
Being sexually assaulted during the last one year_occurence	0.01	0.12	0	1
<u>relational</u>				
Being collectively bullied during the last one year_occurence	0.07	0.26	0	1
Observations	2844			

and Phipps (2008); Dinisman et al. (2017); Gherasim et al. (2016); McAuley and Layte (2012). In the case of Korea, frequency of domestic violence perpetrated by parents to their children or between parents, and how often parents interact with their child are found to be strongly associated with children's SWB (Lawler et al., 2018), developmental outcome (Hong et al., 2011; Kong, 2015) psychosocial outcomes (Han and Grogan-Kaylor, 2012) behavioral problems (Hong et al., 2017; Sook et al., 2014), and school adjustment (Hong et al., 2011; Um and Kim, 2015). Following these findings, domestic violence variables are included as control variables. KYPs data include 4 variables on domestic violence, divided by severity (verbal abuse or physical abuse) and whether violence was committed between parents or to their children. Considerable number of students in the data reported to have been exposed to domestic violence. Proportion of students who reported positively (i.e. their answers were higher than 3 which is "more or less") that they were verbally abused or physically beaten by their parents in the 1st wave were 10% and 20% respectively. Variable on how often student talk with their parents is included as a measure of positive relationship with parents. As a measure of material WB, monthly household income averaged over a surveyed year (measured in KRW) is included. Years of education attainment of student's mother and father are included because it affects unobserved wealth of household other than income and parenting style.

Table 2.4: Descriptive Statistics (5) : socioeconomic characteristics

	mean	sd	min	max
Male	0.54	0.50	0	1
How much is your average monthly household income?	302.14	176.52	0	3,000
I frequently see parents verbally abuse each other	1.74	1.07	1	5
I frequently see one of my parents beat the other one	1.39	0.81	1	5
I am often verbally abused by parents	1.43	0.81	1	5
I am often severely beaten by parents	1.70	1.06	1	5
My parents and I candidly talk about everything	3.23	1.21	1	5
years of Education attainment of father (Edu. Father)	13.79	2.56	0	20
years of Education attainment of mother (Edu. Mother)	12.91	2.23	0	20
employment of mother	0.50	0.50	0	1
Observations	2844			

2.5 Empirical Strategy

2.5.1 Identification of causal effect of school violence victimization

This paper aims to estimate the following : (i) causal effect of school violence victimization and perpetration, and (ii) causal effect of having peers who are perpetrators on children's SWB. I first estimate the following regression equation :

$$WB_{i,t} = \alpha_0 + \alpha_1 Violence_{i,t} + \alpha_X X_{i,t} + \delta_i + \epsilon_{i,t}, \quad (2.1)$$

$WB_{i,t}$ denotes SWB of student i in year t . As mentioned above, SWB variables are aggregates of satisfaction in domains of life satisfaction, emotional, behavioral WB and peer satisfaction. $Violence_{i,t}$ denotes a set of indicators for individual i being perpetrator or victim to school violence in year t . α_1 is the parameter of interest. Both school violence victimization and perpetration are measured by 3 types of aggression : verbal (blackmailing and mocking), physical (beating, extorting money or possessions, and sexually harassing or abusing) and relational (collectively excluding individual from relationship or information). This school violence variables are also measured in incidence (1 if perpetrated or was victimized by violence and 0 otherwise) and intensity (number of times victimized in surveyed year). $X_{i,t}$ is set of control variables that may be linked to outcome variables, which are explained above. $\epsilon_{i,t}$ indicate the error term.

In estimating the effect of school violence, endogeneity of violence victimization can cause bias in estimators, as suggested by recent economic literature on school violence such as Drydak (2014); Eriksen et al. (2014); Mukerjee (2018); Nikolaou (2017); Oliveira et al. (2018). My estimation strategy to address endogeneity in estimating effect of individual's victimization are threefold. First, victim status is instrumented by parents of classmates who commit domestic violence and number of close peers who commit school violence. Second, I use individual level fixed effect regression to control for unobserved individual heterogeneity that does not vary across time. In addition, to estimate the effect of prevalence of school violence in classrooms, I exploit SEP which allocates elementary and middle school students by lottery within student's residential district (school district). The effect of violence prevalence is estimated by the following equation 2.2 :

$$WB_i = \alpha_0 + \alpha_1 + Violence_s + Violence_{p_i} + Violence_{v_i} + D_s + \alpha_X X_i + \delta_i + \epsilon_i \quad (2.2)$$

The variable of interest $Violence_s$ denotes prevalence of school violence in classroom of individual i , s . It is measured by mean of students' response to victimization incidence (i.e. proportion

of students who reported to being victimized, which ranges from 0 to 1) and intensity (mean number of times victimized in a given classroom) in each classroom. Since students in the sample stay in the same classrooms only in the 1st wave, this estimation only analyzes first wave, so there is no time denominator t in above equation. The effect of school violence prevalence may capture effect of individual being victim or perpetrator. However, this chapter aims to isolate the effect of school violence prevalence itself. Therefore separate variables for victimization ($Violence_{v,i}$) and perpetration ($Violence_{p,i}$) of individual i is included in the equation. Variable D_s denotes dummy for each school district in equation 2.2. So $Violence_s$ measures effect of school violence prevalence that varies only within given school district. Since students are randomly allocated to schools within school districts, variable D_s is exogenous by design.

With regard to estimation methodology, I use linear OLS estimation as suggested by Ferrer-i-Carbonell and Frijters (2004) and followed by a number of literature of happiness economics such as Clark and Fawaz (2015) that the results are very similar whether ordered probit or linear OLS model is used.

2.5.2 Pooled OLS estimation results

First, I estimate the effect of victim status to school violence on SWB using pooled-OLS regression controlling for socioeconomic characteristics of students and their parents and year fixed effects. All specifications use robust standard errors clustered at individual level. Estimation results are reported in Table 2.5. Number of observations in the estimation presented in the following section are 11,553. Dependent variables in columns (1) to (5) indicate respectively satisfaction with life in general (life), emotional WB (suicidal), behavioral problem (aggression), and satisfaction with relationship with peers (peer), and interpersonal trust (trust). The variable of interest, victimization incidence (vic incidence), is dichotomous variable that measures if one is victimized by any form of school violence. F-statistics shown in the table indicate that the effect of Right hand side variables are jointly marginally significant for all specifications. The effect of being victim to school violence on all four variables of SWB is significant and negative. The magnitude of effect is larger for peer SWB and emotion SWB than life satisfaction or behavioral WB. The effects of control variables show that boys report higher SWB than girls for life, emotional and behavioral WB, but not for peer satisfaction. Contrary to previous findings on adult SWB, the effect of household on SWB is insignificant with the exception of the life satisfaction. Likewise, years of education attainment of father and mother of student is positively associated with life satisfaction. Self reported domestic violence, either committed between parents or to oneself is

negatively associated with all SWB variables, except for the effect of physical violence between parents on behavioral SWB. Magnitude of effect of domestic violence is larger for those inflicted on students than between parents themselves, and verbal form of violence has greater effect than physical form of violence. How frequent student talks with parents is positively correlated with all SWB variables.

2.5.3 Instrumental variable (IV) estimation results

Although observed individual heterogeneity is controlled for, the coefficient of above pooled OLS estimation do not correct for endogeneity of school victimization variable, such as physical appearance, personality or cognitive abilities which are unobserved and difficult to be quantified. For instance, Ammermueller (2012) found that gender, social and immigration background or the appearance of students are associated with likelihood of being bullied. To address this endogeneity, I follow Eriksen et al. (2014) and Carrell and Hoekstra (2010) and instrument the victim status with 4 instruments shown in Table 2.3. These IV's are number of close friends who perpetrated school violence (beating, blackmailing or extorting possessions of others) and mean classmates' response to question : "I am often severely beaten by my parents" in scale from 1 to 5. Carrell and Hoekstra (2010) explained that children who experience violence at home lack positive adult role model for conflict management, so they may show violent behavior in conflict with their peers. Eriksen et al. (2014) used proportion of classmates whose parents had criminal conviction or served in prison as IV for victim status, and IV estimation results showed negative and significant effect of school violence on academic performance of students. According to Carrell and Hoekstra (2010), this IV is associated with likelihood of children engaging in violence when they face conflict with their peers. They are exogenous in a sense that classroom peers' parents will affect SWB of child only through their children's violence. Also, we can rule out the possibility of reverse causality because victim status cannot affect domestic violence to their peers. However, although KYPs is panel data, only the 1st wave (2,648 observations) is used for the IV estimation because classmates are mixed into other classrooms every year, and information on mean classmates' domestic violence is unobserved from 2nd wave.

The IV estimates are presented in Table 2.6. Tests of robustness were performed to determine exogeneity, relevance, and validity of IVs. First, Durbin and Wu-Hausman tests were performed to check if victimization variable is exogenous. P-values of test statistics indicate that we can reject the null hypothesis of Durbin and Wu-Hausman tests that variables of interest are exogenous, so we can conclude that victim status is endogenous, with the exception of life satisfaction variable.

Table 2.5: Pooled OLS estimates : victimization incidence(all types)

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
vic. incidence(all types)	-0.18*** (0.02)	-0.35*** (0.03)	-0.30*** (0.04)	-0.49*** (0.03)	0.02 (0.03)
Male	0.14*** (0.02)	0.19*** (0.02)	0.22*** (0.02)	-0.01 (0.02)	-0.03 (0.02)
annual av. HH income	0.00* (0.00)	0.00 (0.00)	0.00 (0.00)	0.00* (0.00)	0.00 (0.00)
dom. violence b/w parents(verbal)	-0.03** (0.01)	-0.03** (0.01)	-0.10*** (0.01)	-0.04*** (0.01)	0.00 (0.01)
dom. violence b/w parents(physical)	-0.03* (0.01)	-0.07*** (0.02)	0.03 (0.02)	-0.06*** (0.02)	-0.06*** (0.02)
dom. violence by parents(verbal)	-0.04** (0.01)	-0.08*** (0.02)	-0.04 (0.02)	-0.07*** (0.02)	-0.04* (0.02)
dom. violence by parents(physical)	-0.08*** (0.01)	-0.13*** (0.02)	-0.12*** (0.02)	-0.09*** (0.01)	-0.04** (0.01)
moved residence	0.07 (0.04)	0.10* (0.05)	0.06 (0.06)	-0.02 (0.04)	0.05 (0.05)
frequently talk with parents	0.17*** (0.01)	0.08*** (0.01)	0.07*** (0.01)	0.06*** (0.01)	0.11*** (0.01)
employment of mother	-0.05*** (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.04* (0.02)
Edu. Father	0.01* (0.00)	0.01 (0.01)	-0.01* (0.01)	0.00 (0.00)	0.01 (0.01)
Edu. Mother	0.02*** (0.00)	0.01 (0.01)	-0.01 (0.01)	0.00 (0.01)	0.00 (0.01)
year FE	✓	✓	✓	✓	✓
N	11,553	11,552	11,548	11,546	11,550
R ²	0.12	0.09	0.08	0.10	0.12
F	91.74	58.61	60.46	60.61	96.44

Standard errors in parentheses

Robust standard errors in parenthesis.

* p < 0.05, ** p < 0.01, *** p < 0.001

Second, Cragg and Donald minimum eigenvalue statistics are reported to determine whether the IVs are significantly correlated with endogenous variable. Test statistics exceeds the critical eigenvalue for relative bias of 2 stage least squares (2SLS) estimator (5%), so we can conclude that IVs are relevant and not weak. Third, Sargan’s statistics for test of overidentifying restrictions are reported to determine whether IVs are uncorrelated with the error term. Sargan’s test statistics fail to reject the null hypothesis at the 5% significance level that IVs are uncorrelated with the error term. Therefore we conclude that victim status in this estimated models are endogenous and IVs are valid. Estimation indicates that victim status negatively affects SWB with regard to emotional, behavioral WB and peer satisfaction, which is consistent with previous estimation.

Table 2.6: IV estimates : victimization incidence(all types)

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
vic. incidence(all types)	0.35	-1.57**	-0.97	-1.59***	0.04
	(0.46)	(0.62)	(0.60)	(0.44)	(0.36)
controls	✓	✓	✓	✓	✓
N	2,648	2,646	2,645	2,645	2,647
Durbin & Wu-Hausman	0.166	0.002	0.169	0.002	0.926
Cragg & Donald minimum eigenvalue	9.775	9.747	9.821	9.728	9.761
Sargan’s statistics	0.683	0.077	0.729	0.842	0.507

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.5.4 Fixed effect estimation results

In addition to IV regression, I use fixed effect (FE) regression to address potential endogeneity issue. Among socioeconomic characteristics included in th pooled OLS above, time-variant socioeconomic variables (household income, domestic violence, talking with parents and mother’s employment status) are included in estimation. Robust standard errors, which allow for clustering at individual level, are used in all specifications. First, in order to address unobserved heterogeneity across units and potential serial correlation across years within individuals, Breusch-Pagan Lagrange multiplier (LM) test is performed to test whether variance of the random effect is zero. The test rejected the null hypothesis that variance of the random effect is zero, so random and fixed effect specification is estimated. FE estimation results are presented in Tables from 2.8 to 2.12. As presented in the tables, the Hausman statistics suggests that the null hypothesis that

random effects is consistent and efficient is rejected¹¹. F-statistics reported in tables 2.7 to 2.11 indicate that the effect of Right hand side variables of the model on WB variables are jointly marginally significant. Table 2.7 presents estimated effects of violence incidence of all violence types. Being victim has negative and significant effect on all 4 SWB variables, which is consistent with the pooled OLS estimates reported in Table 2.5. The magnitude of effect between SWB variables are also similar to pooled OLS, and the magnitude is smaller overall in FE estimates than pooled OLS, which implies that OLS estimates capture between individual effects or is overestimated from endogeneity. Other notable result is that effect of domestic violence, relationship with parents and household income on SWB is also similar to that of pooled OLS. As a next step, victim status is divided into verbal, physical and relational form of violence, in Tables 2.8 to 2.10. All three form of violence has negative and significant effect on SWB, with exception of relational violence on behavioral SWB. However, magnitude of effect is largest for relational violence, and smallest for physical violence. This is consistent with the past findings summarized by Mcdougall (2015). Table 2.11 presents estimates of victim status in terms of intensity. Increase of victimization intensity is associated with decrease in life satisfaction, behavioral WB and peer satisfaction, but its effect on emotional WB is marginally significant.

2.5.5 Effect of prevalence of school violence in classrooms on SWB

Tables 2.12 to 2.18 present estimates for the effect of prevalence of school violence in classrooms on SWB. The variables of interest are the proportion of perpetrators and the number of school violence per classmates. Standard errors are corrected for heterogeneity-robust standard errors for all specifications. Control variables used in pooled-OLS estimations are included for all specifications in Table 2.12. Effect of school violence prevalence in classrooms, controlling for being victim or perpetrators and for each school district, is negative and significant for emotional and behavioral WB and insignificant for life and peer satisfaction. This indicates that the effect of prevalence of violence in classroom is significant and comparable to one's own victimization. For instance, the coefficient of prevalence variable in column (2) (i.e. suicidal ideation) in Table 2.12 (= -3.71) indicate that 1% increase in perpetrators in classroom is associated with increase of suicidal ideation by 0.0371 points (from 0 to 5 Likert scale). So students in classroom which has 8% higher violence prevalence has effect equivalent to being victim. Consistent with FE and IV specifications, victim status is negatively associated with all 4 SWB variables. Being perpetrator is also negatively associated with emotional, behavioral and peer satisfaction. As shown in Table

¹¹The Hausman statistics reported in the tables in this chapter is computed from random and fixed effects estimated with normal standard errors.

Table 2.7: FE estimates : victimization incidence(all types)

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
vic. incidence(all types)	-0.04 (0.02)	-0.14*** (0.03)	-0.10*** (0.04)	-0.26*** (0.03)	0.01 (0.03)
annual av. HH income	-0.00** (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
dom. violence b/w parents(verbal)	-0.02** (0.01)	-0.03** (0.01)	-0.06*** (0.01)	-0.03*** (0.01)	-0.02 (0.01)
dom. violence b/w parents(physical)	-0.00 (0.01)	-0.04** (0.02)	0.02 (0.02)	-0.05*** (0.01)	-0.02 (0.02)
dom. violence by parents(verbal)	-0.04*** (0.01)	-0.09*** (0.02)	-0.03 (0.02)	-0.06*** (0.02)	-0.03 (0.02)
dom. violence by parents(physical)	-0.05*** (0.01)	-0.08*** (0.01)	-0.08*** (0.02)	-0.06*** (0.01)	-0.03** (0.02)
frequently talk with parents	0.10*** (0.01)	0.05*** (0.01)	0.04*** (0.01)	0.03*** (0.01)	0.07*** (0.01)
employment of mother	-0.04 (0.04)	0.08 (0.05)	0.04 (0.06)	0.01 (0.04)	-0.02 (0.05)
year FE	✓	✓	✓	✓	✓
N	11,940	11,939	11,935	11,932	11,937
R ² (within)	0.06	0.05	0.07	0.04	0.13
R ² (overall)	0.10	0.07	0.06	0.10	0.11
R ² (between)	0.15	0.10	0.07	0.20	0.08
F	46.35	36.18	51.90	29.66	106.58
hausman(χ^2)	214	99	69	176	61
hausman($p > \chi^2$)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2.8: FE estimates : victimization incidence(verbal)

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
vic. incidence(verbal)	-0.09*** (0.03)	-0.20*** (0.04)	-0.09** (0.04)	-0.35*** (0.03)	-0.00 (0.04)
controls	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓
N	11,940	11,939	11,935	11,932	11,937
R ² (within)	0.06	0.05	0.07	0.04	0.13
R ² (overall)	0.10	0.07	0.06	0.10	0.11
R ² (between)	0.15	0.10	0.07	0.20	0.08
F	46.87	36.57	51.63	30.76	106.58
hausman(χ^2)	261	68	65	170	61
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.9: FE estimates : victimization incidence(physical)

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
vic. incidence(physical)	-0.03 (0.03)	-0.09** (0.04)	-0.14*** (0.05)	-0.12*** (0.04)	-0.03 (0.04)
controls	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓
N	11,940	11,939	11,935	11,932	11,937
R ² (within)	0.06	0.05	0.07	0.03	0.13
R ² (overall)	0.09	0.07	0.06	0.07	0.11
R ² (between)	0.15	0.09	0.07	0.14	0.08
F	46.25	34.82	52.04	23.00	106.61
hausman(χ^2)	293	74	49	129	61
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.10: FE estimates : victimization incidence(relational)

	(1) life	(2) suicidal	(3) aggression	(4) peer	(5) trust
vic. incidence(relational)	-0.09** (0.04)	-0.24*** (0.06)	0.02 (0.07)	-0.49*** (0.05)	0.00 (0.06)
controls	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓
N	11,940	11,939	11,935	11,932	11,937
R ² (within)	0.06	0.05	0.07	0.04	0.13
R ² (overall)	0.10	0.07	0.06	0.09	0.11
R ² (between)	0.16	0.10	0.06	0.18	0.08
F	46.49	35.94	51.30	29.92	106.57
hausman(χ^2)	207	77	71	122	62
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.11: FE estimates : victimization intensity(all)

	(1) life	(2) suicidal	(3) aggression	(4) peer	(5) trust
vic. intensity(all types)	0.000 (0.001)	-0.002** (0.001)	-0.003** (0.001)	-0.005*** (0.001)	0.001 (0.001)
controls	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓
N	11,940	11,939	11,935	11,932	11,937
R ² (within)	0.06	0.05	0.07	0.04	0.13
R ² (overall)	0.09	0.07	0.06	0.08	0.11
R ² (between)	0.15	0.08	0.07	0.15	0.08
F	46.17	34.87	51.79	25.93	106.75
hausman(χ^2)	281	51	45	106	62
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

2.13, effect of prevalence of violence in terms of intensity (i.e. number of violence in classrooms) is also negative and significant. However, the two estimations are different that effect of victimization intensity on life satisfaction, emotional and behavioral WB is insignificant. This implies that being victim is negatively associated with SWB, but increase in intensity of victimization does not lead to linear decrease of SWB.

Tables 2.14 and 2.15, I divide the sample into boys and girls to estimate whether the effect of violence prevalence on SWB is different by gender. The results show that prevalence of violence has quite contrasting effects on boys and girls. The effect is only significant and negative for suicidal ideation and aggression of girls. This is consistent with Yang et al. (2006) who found that the negative effect of violence on WB was greater for girls. This may reflect the gender difference in patterns of violence : while violence among boys is based on established hierarchy of power between perpetrators and victims, violence among girls occurs between those whose relations were more horizontal or even close friends, as suggested by (Noh, 2019). So bullying among boys tend to be more concentrated on fewer victims and targeted to those who are hostile relationship with bullies and physically weaker. Bullying among girls tends to occur in a more unstable relationship : friendship relations can turn into bullying more easily. So bullying among girls can be reciprocal : bullies can be victims and vice versa. Therefore likelihood of being victim when there exists higher prevalence of school violence can be higher for girls. It is more difficult to predict who will become victim for girls than boys.

In Tables 2.16-2.18, I estimate the effect of the school violence prevalence in classrooms on SWB after five years (i.e. SWB in the 5th wave in 2008). Right hand side variables are identical to previous specifications (Tables 2.13-2.15) but dependent variables (SWB) are the ones reported by the same individuals five years afterwards. Estimates reported in Table 2.16 suggest that the effect of school violence prevalence remain negative and significant for all 4 dependent variables after 5 years. This means that students who faced higher prevalence of violence reported lower SWB compared to students who were in the same school district in the first wave. This suggests that the prevalence of violence has lasting effect on SWB, at least for 5 years. Another notable result is that life satisfaction (life) and interpersonal trust variable (trust), which previously had no significant effect on SWB in the same year as violence, has negative and significant effect after 5 years. Gender difference of effect (Tables 2.17-2.18) show similar results us simultaneous effect in Tables 2.14-2.15 : effects are negative and significant for girls, but not for boys.

2.5.6 Robustness checks

As check of robustness, I replicated FE of victimization and school district FE of school violence prevalence on SWB with similar alternative variables in each SWB domain (excluding life satisfaction). Descriptive statistics of these alternative SWB variables are presented in Table 2.19 of appendix section. The estimation results are presented in Tables 2.20-2.31. Estimation results are in general very similar to those of original specification.

Table 2.12: School District FE estimates : Effect of prevalence of perpetrators on SWB

	(1) life	(2) suicidal	(3) aggression	(4) peer	(5) trust
prevalence	-0.24 (2.44)	-3.71*** (0.85)	-5.56*** (1.23)	8.09 (5.00)	-2.62* (1.46)
vic. incidence(all types)	-0.11** (0.05)	-0.30*** (0.06)	-0.24*** (0.07)	-0.46*** (0.05)	0.01 (0.05)
perp. incidence(all types)	-0.04 (0.05)	-0.12* (0.06)	-0.47*** (0.07)	-0.20*** (0.05)	-0.09* (0.05)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	2,652	2,650	2,649	2,649	2,651
F	4.79	3.98	3.89	5.21	2.76
R ²	0.14	0.11	0.10	0.18	0.09

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

2.6 Discussion

With regard to effect of being victimized by peers, estimation results suggest that victimization affects negatively SWB. FE and IV estimates imply that results are not biased by endogeneity of victim status. This is first work that analyzes Korean students on the effect of school violence on SWB that addresses endogeneity, at least to author's knowledge. However, the results are consistent with past findings that suggest bullying victimization affects emotional WB more than other domains (Arango et al., 2016). It is also notable that victimization to verbal and relational form of violence are associated with greater reduction of SWB compared to physical violence. This is consistent with past findings that social pain has stronger negative effect on WB as suggested by Mcdougall (2015).

Table 2.13: School District FE estimates : Effect of class violence (intensity) on SWB

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
no. of violence in class	-0.13 (0.44)	-0.60*** (0.13)	-0.86*** (0.19)	1.16 (0.71)	-0.36* (0.21)
vic. intensity(all types)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.01*** (0.00)	0.00 (0.00)
perp. intensity(all types)	0.00 (0.00)	-0.01*** (0.00)	-0.03*** (0.00)	-0.01*** (0.00)	-0.00 (0.00)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	2,652	2,650	2,649	2,649	2,651
F	4.72	3.63	3.40	4.80	2.74
R ²	0.14	0.10	0.09	0.16	0.09

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.14: School District FE estimates : Effect of prevalence of perpetrators on SWB (boys)

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
prevalence	-2.73 (13.00)	9.60 (13.84)	-1.32 (14.55)	24.96* (15.07)	5.05 (21.79)
vic. incidence(all types)	-0.08 (0.06)	-0.26*** (0.08)	-0.16* (0.09)	-0.46*** (0.07)	0.05 (0.07)
perp. incidence(all types)	-0.02 (0.06)	-0.08 (0.08)	-0.43*** (0.09)	-0.23*** (0.07)	-0.16** (0.07)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	1,417	1,416	1,414	1,415	1,416
F	3.27	2.29	2.63	3.90	2.29
R ²	0.16	0.13	0.13	0.21	0.13

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.15: School District FE estimates : Effect of prevalence of perpetrators on SWB (girls)

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
prevalence	0.36 (2.39)	-3.37*** (1.18)	-5.32*** (1.61)	8.09 (5.00)	-1.65 (1.80)
vic. incidence(all types)	-0.16** (0.07)	-0.40*** (0.09)	-0.33*** (0.10)	-0.50*** (0.08)	-0.07 (0.07)
perp. incidence(all types)	-0.12* (0.07)	-0.16 (0.11)	-0.56*** (0.12)	-0.12 (0.09)	0.02 (0.08)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	1,235	1,234	1,235	1,234	1,235
F	3.06	3.10	2.91	3.09	2.11
R ²	0.18	0.18	0.14	0.21	0.11

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.16: School District FE estimates : Effect of prevalence of perpetrators on SWB (5 years later)

	(1)	(2)	(3)	(4)	(5)
	life	suicidal	aggression	peer	trust
prevalence	-4.43** (1.94)	-4.69*** (1.61)	-6.52*** (0.90)	-4.41*** (1.00)	-7.08*** (1.02)
vic. incidence(all types)	-0.07 (0.05)	-0.09 (0.06)	-0.25*** (0.07)	-0.12** (0.05)	0.05 (0.06)
perp. incidence(all types)	-0.12*** (0.05)	0.00 (0.06)	0.07 (0.07)	-0.05 (0.05)	-0.06 (0.06)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	2,294	2,294	2,294	2,294	2,294
F	2.37	2.36	5.11	1.94	2.31
R ²	0.09	0.08	0.07	0.07	0.06

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.17: School District FE estimates : Effect of prevalence of perpetrators on SWB (5 years later, boys)

	(1) life	(2) suicidal	(3) agresion	(4) peer	(5) trust
prevalence	-9.73 (15.15)	-25.84 (16.54)	4.82 (16.90)	-4.85 (15.50)	15.28 (21.96)
vic. incidence(all types)	-0.07 (0.06)	-0.02 (0.07)	-0.31*** (0.09)	-0.07 (0.07)	0.11 (0.08)
perp. incidence(all types)	-0.09 (0.06)	-0.03 (0.07)	0.07 (0.10)	-0.03 (0.07)	-0.07 (0.08)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	1,216	1,216	1,216	1,216	1,216
F	1.18	1.95	1.41	1.91	1.52
R ²	0.08	0.11	0.09	0.10	0.09

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.18: School District FE estimates : Effect of prevalence of perpetrators on SWB (5 years later, girls)

	(1) life	(2) suicidal	(3) agresion	(4) peer	(5) trust
prevalence	-4.18* (2.15)	-4.87*** (1.81)	-6.47*** (1.40)	-4.38*** (1.22)	-7.47*** (1.17)
vic. incidence(all types)	-0.08 (0.07)	-0.18* (0.10)	-0.15 (0.11)	-0.16** (0.08)	0.01 (0.09)
perp. incidence(all types)	-0.21** (0.08)	0.01 (0.11)	0.06 (0.13)	-0.04 (0.09)	-0.04 (0.10)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	1,078	1,078	1,078	1,078	1,078
F	1.81	2.41	2.82	3.45	3.99
R ²	0.12	0.13	0.09	0.12	0.10

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

The estimation results also showed that the indirect effect of violence, measured by proportion of perpetrators and violence in classrooms is significant and negative on emotional WB. This is consistent with studies which found negative externalities of crime (Brenig and Proeger, 2018; Cohen, 2008; Dustmann and Fasani, 2016; Michalos and Zumbo, 2000; Moore, 2006) on SWB of adults. I further showed that this indirect effect is significant when individual's victimization is controlled for. This implies that non-victims are also affected by existence of violence from negative externalities such as individual perception about safety and fear of violence, general strain, loss of self esteem and solidarity and quality of relationship with peers.

The results supports the claim (Moon, 2014) that Korean legal and school framework on tackling school violence has limitations. Current Korean school framework focuses on disciplining perpetrators of more severe (physical) violence. Also, according to the Act and relevant laws, school headmasters have discretion to terminate the deliberation on school violence case if the violence is less severe than physical damage that requires more than 2 weeks of injury or damage to properties (Statutes of the Republic of Korea, 2014). But estimation results indicate that the government needs to invest more resources on preventing less severe and relational form of violence. It also implies that measures for reducing relational and verbal violence, which is mainly disciplining the perpetrators, need to be reconsidered. In particular, disciplining physical and other forms of violence on the same criteria of severity may not be effective in preventing verbal or relational violence. Also, measures of relational violence should be identified in more detail to estimate its effect on SWB. With regard to preventing relational violence, one measure that needs to be measured is cyber-bullying, as students spend more time on social media and chatrooms, and relational violence can be committed in a more covert manner through cyber-bullying. More data could be also collected on how school disciplinary measures on violence affect behavioral changes of students.

Negative effect of violence prevalence on SWB of students regardless of being victim, perpetrator or bystander, suggest that there is strong need to establish measures to timely protect students (victims and potential victims) from perpetrators. Anti-bullying legislation in many countries, such as Anti-bullying laws in Sweden, United States, or Japan (Child abuse prevention law), have measures to provide immediate protection of victims once violence is reported. On the contrary, there is no mandatory clause in the Korean law that protects victims when violence is reported (Statutes of the Republic of Korea, 2014)¹². As is often the case, if victims and perpetrators are in the same classroom, they stay in the same classroom until school violence committee takes

¹²Article 16 of the Act ("Protection of Victim Students") states that head of schools may take emergency measures (e.g. psychological counseling or advice, temporary protection, treatment and recuperation for treatment change of class, etc) to protect victims if she deems it is necessary, but this is not mandatory.

decision on measures, which can take up to 21 days since report of violence. Therefore there is ample possibility that perpetrators retaliate to victims during this period when victims often receive no protection at all from perpetrators. It also probable that if this clause in the Act is unchanged, victims may easily become perpetrators in their attempt to defend themselves or face disciplinary measures by avoiding to coming to schools (Noh, 2019). Recently, lack of adequate protection measures compel victims to resort to "primitive measures" (Smith and Lee, 2019) such as hiring thug-like private service personnel for protection, which cannot be the fundamental solution. There needs to be immediate and preemptive steps to protect victims and peers once violence is reported, depending on the severity of violence. There also needs to be legal ground for relevant institutions such as local police offices and juvenile courts to intervene for protective measures, which does not exist in the current law (Cheon, 2018).

The negative effect of violence prevalence on interpersonal trust implies that policies that influence bystanders of school violence to engage more actively to counteract school violence or create environment that prevents school violence could be effective. Prevention programs which target all students and allowing students to agree on their own rules and disciplinary measures to counteract bullying, such as Olweus Bullying Prevention Programs (OOBP) of Denmark, could be a reference (Lee and Noh, 2014).

More fundamentally, we need to examine the quality of interpersonal relationship among students. It seems that Korean education placed excessive emphasis on academic competition and transfer of knowledge, and insufficient attention on how competition may erode relationship and sense of solidarity among students. If school violence is only tackled by strengthening disciplinary measures to perpetrators, the quality of relationship could be further deteriorated. As Cheon (2013) suggests, school violence may be result of social exclusion of those who were excluded from academic competition. Empowering bystanders and victims to prevent and stand up to school violence should be conducted as a part of comprehensive civic education that aims to increase social bond and sense of community among students. Such measures can be especially effective in Korea as fixed classroom structure provides strong and close bond among peers.

With regard to gender difference in responses to school violences, more attention and research should be conducted to better understand the determinants of bullying among female students. Further work needs to be done on whether current disciplinary and protective measures are effective against solving bullying among female students. In particular, evidence on the existence of the lasting effect of prevalence of violence on SWB supports the idea that early intervention is desirable.

In addition, collecting more data on peer relationship, building on panel surveys such as KYPS,

could provide useful insights on school violence in peer context. For instance, KYPS can be further developed to identify individual's self assessed relationship with each classmates, teachers' assessment violence in classrooms, information on how teachers interact with students to prevent and address violence. Such information could also be complemented by including questionnaire for parents on their child's exposure to school violence. Collecting information on mental health and medical history as well as adult outcomes of SWB is also cost effective as such data are being collected and compiled in administrative data (i.e. Edudata) .

2.7 Conclusion

This chapter investigates the effect of school violence, in direct and indirect forms, on children's SWB in Korea. I analyze KYPS dataset which contains rich information on various domains of children SWB, school violence perpetration and victimization, relationship and interaction with peers. To estimate the causal effect of being victim to school violence (direct effect) and address potential bias from endogeneity of variable of interest, the paper uses individual level fixed effect and IV estimation. The results indicate that being victim has detrimental effect on satisfaction with life, emotional and behavioral WB and peer satisfaction. I further find that prevalence of relational violence can have detrimental effect on SWB that is comparable or greater than more severe form of violence, which supports past findings on the effect of social pain on SWB.

The chapter also explores the indirect effect of school violence on SWB, by analyzing observed behaviors of classroom peers in the first wave of the KYPS dataset. It exploits the Korean education law that allocates students randomly within districts to ensure that the variation of proportion of perpetrators or intensity of violence in classroom is exogenous given school district. Estimation results show that higher proportion of perpetrators is associated with lower SWB. The effect is consistent for children who are neither perpetrators nor victims, indicating that there is negative externalities of school violence in terms of reduced SWB.

Drawing on the results of the paper, following policies could be considered to improve students' SWB and school outcomes. First, school policies that is currently concentrated on disciplining perpetrators should invest more on preventing less severe but more detrimental form of violence which is relational violence. Second, more innovative measures should be developed to enable students, regardless of victim status, to actively engage in tackling school violence. Third, collection of more data on peer relationship, teacher and parents' perspectives, medical information and adult SWB outcomes are recommended for future research.

2.8 Appendix : Further Estimation Results

Table 2.19: Descriptive statistics (2) : Alternative SWB variables

	mean	sd	min	max
<u>Emotion (anxiety)</u>				
I feel extremely sad and gloomy with no apparent reason	3.94	1.23	1	5
<u>aggression 2</u>				
I can't suppress an impulse to hit other people	3.91	1.16	1	5
I consider myself as an explosive soon to be blown off	4.09	1.10	1	5
<u>peer satisfaction</u>				
I get stressed by sense of inferiority to my frd.	4.22	1.04	1	5
<u>interpersonal trust</u>				
I will report to the police/teachers if my frd. are assaulted	4.29	0.98	1	5
Observations	2844			

Table 2.20: FE estimates : victimization incidence(all types)

	(1) anxiety	(2) aggression2	(3) aggression3	(4) peer2	(5) trust2
vic. incidence(all types)	-0.30*** (0.03)	-0.14*** (0.03)	-0.09*** (0.03)	-0.15*** (0.03)	-0.04 (0.03)
annual av. HH income	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
dom. violence b/w parents(verbal)	-0.03** (0.01)	-0.05*** (0.01)	-0.04*** (0.01)	-0.02** (0.01)	0.00 (0.01)
dom. violence b/w parents(physical)	-0.07*** (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.03** (0.02)	-0.03* (0.02)
dom. violence by parents(verbal)	-0.06*** (0.02)	-0.11*** (0.02)	-0.09*** (0.02)	-0.07*** (0.02)	-0.01 (0.02)
dom. violence by parents(physical)	-0.07*** (0.02)	-0.03** (0.02)	-0.07*** (0.02)	-0.05*** (0.01)	-0.02 (0.02)
frequently talk with parents	0.04*** (0.01)	0.02* (0.01)	0.01 (0.01)	0.04*** (0.01)	0.10*** (0.01)
employment of mother	0.09* (0.05)	0.06 (0.05)	0.07 (0.05)	0.03 (0.05)	-0.01 (0.05)
year FE	✓	✓	✓	✓	✓
N	11,937	11,937	11,933	11,939	11,940
R ² (within)	0.05	0.02	0.03	0.03	0.17
R ² (overall)	0.06	0.04	0.05	0.05	0.14
R ² (between)	0.07	0.07	0.08	0.09	0.09
F	34.69	15.88	18.93	23.81	140.81
hausman(χ^2)	61	49	63	96	45
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.21: FE estimates : victimization incidence(verbal)

	(1)	(2)	(3)	(4)	(5)
	anxiety	aggression2	aggression3	peer2	trust2
vic. incidence(verbal)	-0.34*** (0.04)	-0.16*** (0.04)	-0.07* (0.04)	-0.19*** (0.04)	-0.01 (0.04)
controls	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓
N	11,937	11,937	11,933	11,939	11,940
R ² (within)	0.05	0.02	0.03	0.03	0.17
R ² (overall)	0.05	0.04	0.05	0.05	0.14
R ² (between)	0.07	0.07	0.07	0.09	0.09
F	33.64	15.62	18.57	23.84	140.70
hausman(χ^2)	49	46	64	94	46
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.22: FE estimates : victimization incidence(physical)

	(1)	(2)	(3)	(4)	(5)
	anxiety	aggression2	aggression3	peer2	trust2
vic. incidence(physical)	-0.26*** (0.04)	-0.16*** (0.04)	-0.14*** (0.04)	-0.10*** (0.04)	-0.08* (0.05)
controls	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓
N	11,937	11,937	11,933	11,939	11,940
R ² (within)	0.04	0.02	0.03	0.03	0.17
R ² (overall)	0.05	0.04	0.05	0.04	0.14
R ² (between)	0.05	0.07	0.07	0.07	0.09
F	31.09	15.54	19.23	22.32	140.97
hausman(χ^2)	39	49	50	62	45
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.23: FE estimates : victimization incidence(relational)

	(1) anxiety	(2) aggression2	(3) aggression3	(4) peer2	(5) trust2
vic. incidence(relational)	-0.35*** (0.06)	0.02 (0.06)	-0.05 (0.06)	-0.21*** (0.06)	0.10 (0.06)
controls	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓
N	11,937	11,937	11,933	11,939	11,940
R ² (within)	0.04	0.02	0.03	0.03	0.17
R ² (overall)	0.05	0.04	0.04	0.05	0.14
R ² (between)	0.06	0.06	0.07	0.08	0.09
F	30.76	14.51	18.38	22.89	140.92
hausman(χ^2)	70	49	58	67	47
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.24: FE estimates : victimization intensity(all)

	(1) anxiety	(2) aggression2	(3) aggression3	(4) peer2	(5) trust2
vic. intensity(all types)	-0.003*** (0.001)	-0.003*** (0.001)	-0.004*** (0.001)	-0.003*** (0.001)	0.002* (0.001)
controls	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓
N	11,937	11,937	11,933	11,939	11,940
R ² (within)	0.04	0.02	0.03	0.03	0.17
R ² (overall)	0.04	0.04	0.05	0.04	0.14
R ² (between)	0.04	0.07	0.07	0.07	0.09
F	29.21	15.18	19.83	22.94	140.98
hausman(χ^2)	35	49	48	50	49
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.25: School District FE estimates : Effect of prevalence of perpetrators on SWB

	(1)	(2)	(3)	(4)	(5)
	anxiety	aggression2	aggression3	peer2	trust2
prevalence	-4.01*** (1.23)	-6.27*** (1.41)	-4.52*** (0.98)	-5.23*** (0.96)	-2.75 (1.99)
vic. incidence(all types)	-0.41*** (0.06)	-0.10* (0.06)	-0.18*** (0.06)	-0.27*** (0.05)	-0.03 (0.06)
perp. incidence(all types)	-0.16** (0.07)	-0.33*** (0.06)	-0.26*** (0.06)	-0.26*** (0.06)	-0.08 (0.06)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	2,649	2,649	2,650	2,652	2,651
F	3.77	3.17	3.80	3.97	2.55
R ²	0.12	0.08	0.09	0.11	0.08

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.26: School District FE estimates : Effect of prevalence of perpetrators on SWB (boys)

	(1)	(2)	(3)	(4)	(5)
	anxiety	aggression2	aggression3	peer2	trust2
prevalence	23.94** (10.46)	22.94** (11.60)	15.03 (13.24)	9.33 (12.06)	3.68 (16.51)
vic. incidence(all types)	-0.33*** (0.09)	-0.14* (0.08)	-0.18** (0.08)	-0.22*** (0.07)	0.07 (0.08)
perp. incidence(all types)	-0.08 (0.08)	-0.32*** (0.08)	-0.26*** (0.08)	-0.24*** (0.07)	-0.14* (0.08)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	1,416	1,416	1,415	1,417	1,417
F	2.24	2.53	3.04	2.78	2.27
R ²	0.13	0.11	0.12	0.15	0.13

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.27: School District FE estimates : Effect of prevalence of perpetrators on SWB (girls)

	(1)	(2)	(3)	(4)	(5)
	anxiety	aggression2	aggression3	peer2	trust2
prevalence	-4.16** (1.67)	-6.40*** (1.91)	-4.55*** (1.30)	-4.92*** (1.55)	-2.87 (2.50)
vic. incidence(all types)	-0.56*** (0.10)	-0.06 (0.08)	-0.16* (0.09)	-0.36*** (0.08)	-0.20** (0.09)
perp. incidence(all types)	-0.28** (0.12)	-0.34*** (0.11)	-0.27*** (0.10)	-0.31*** (0.09)	0.09 (0.10)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	1,233	1,233	1,235	1,235	1,234
F	3.14	1.98	3.26	2.66	1.73
R ²	0.16	0.11	0.12	0.15	0.11

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.28: School District FE estimates : Effect of class violence (intensity) on SWB

	(1)	(2)	(3)	(4)	(5)
	anxiety	aggression2	aggression3	peer2	trust2
no. of violence in class	-0.60*** (0.23)	-0.99*** (0.22)	-0.72*** (0.14)	-0.82*** (0.15)	-0.39 (0.28)
vic. intensity(all types)	-0.00* (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.01*** (0.00)	0.00 (0.00)
perp. intensity(all types)	-0.00 (0.01)	-0.01** (0.01)	-0.02*** (0.00)	-0.01* (0.01)	-0.00 (0.01)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	2,649	2,649	2,650	2,652	2,651
F	2.92	2.53	3.92	3.25	2.50
R ²	0.09	0.07	0.08	0.10	0.08

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.29: School District FE estimates : Effect of prevalence of perpetrators on SWB (5 years later)

	(1)	(2)	(3)	(4)	(5)
	anxiety	aggression2	aggression3	peer2	trust2
prevalence	-0.67 (3.80)	-5.12*** (1.46)	-5.39*** (1.58)	-3.69*** (1.11)	-9.07*** (0.92)
vic. incidence(all types)	-0.12** (0.06)	-0.02 (0.06)	-0.02 (0.06)	-0.16*** (0.06)	-0.09 (0.06)
perp. incidence(all types)	0.00 (0.07)	-0.11 (0.07)	-0.05 (0.06)	0.03 (0.06)	-0.13** (0.07)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	2,294	2,294	2,294	2,294	2,294
F	3.62	1.54	1.36	1.56	5.56
R ²	0.12	0.05	0.05	0.06	0.06

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.30: School District FE estimates : Effect of prevalence of perpetrators on SWB (5 years later, boys)

	(1)	(2)	(3)	(4)	(5)
	anxiety	aggression2	aggression3	peer2	trust2
prevalence	-33.60** (15.37)	-2.64 (16.52)	2.71 (14.74)	-7.93 (20.61)	18.34 (21.52)
vic. incidence(all types)	-0.07 (0.08)	0.06 (0.08)	0.06 (0.08)	-0.10 (0.08)	-0.06 (0.09)
perp. incidence(all types)	0.02 (0.08)	-0.06 (0.08)	-0.09 (0.08)	0.04 (0.07)	-0.20** (0.09)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	1,216	1,216	1,216	1,216	1,216
F	1.93	1.06	1.19	1.28	1.39
R ²	0.10	0.07	0.08	0.07	0.08

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 2.31: School District FE estimates : Effect of prevalence of perpetrators on SWB (5 years later, girls)

	(1) anxiety	(2) aggression2	(3) aggression3	(4) peer2	(5) trust2
prevalence	-0.36 (3.54)	-4.11*** (1.27)	-4.46*** (1.29)	-2.42 (1.49)	-9.30*** (1.24)
vic. incidence(all types)	-0.18* (0.10)	-0.12 (0.09)	-0.08 (0.10)	-0.21** (0.09)	-0.13 (0.10)
perp. incidence(all types)	-0.04 (0.12)	-0.22* (0.11)	-0.07 (0.11)	0.00 (0.10)	-0.06 (0.10)
controls	✓	✓	✓	✓	✓
school district FE	✓	✓	✓	✓	✓
N	1,078	1,078	1,078	1,078	1,078
F	1.75	2.10	2.21	2.45	6.20
R ²	0.12	0.12	0.11	0.15	0.11

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Chapter 3

Academic pressure, peer effect and subjective well-being of students : Empirical evidence from Korea

The Committee is concerned at the increase in clinical depression and attention deficit hyperactivity disorder cases among students caused by extreme competition and academic stress.

United Nations Committee on the Economic Social and Cultural Rights (2010) (Recommendations to the Republic of Korea)

3.1 Introduction

A more educated population is usually a wealthier and healthier population, which makes education a top priority for any country. Nonetheless, transforming from a system in which education was the privilege of the few, to a universal education system in which 46.9% of the population obtained tertiary education from 0.03% in 1944 -as in the case of Republic of Korea (hereinafter referred to as Korea)- may come at a cost in terms of individuals' well-being (WB).

One implication of Korea's massive investment in education is that their students are among the highest performers in the world, according to the OECD Program for International Student

Assessment (PISA) report (OECD, 2013), which was one of the reasons why U.S. President frequently cited Korea as an "exemplar nation with qualified teachers and public education (Kim, 2016)". However, those same students also happen to be the least happy, at least amongst those countries that participate in PISA. This should be taken seriously, as youth suicide rate in Korea, an important indicator for mental health, increased by 57.2% from 2001 to 2011, which is one of the largest increase in the same period among OECD members. Besides, low levels of self-reported SWB for the youth can have lasting effect to adulthood, as suggested by Clark et al. (2018). Therefore negative impact of academic pressure should not be overlooked as necessary trade-off for a successful adult life in future.

Many countries have a strong tradition of substituting or complementing a shortage of public education by resorting to a private education market. The case of Korea is different in two aspects: first, the public education (hereinafter referred to as private tutoring (PT)) has been successful both in terms of equity and efficiency, so the private education system has to concentrate on after school and week end hours. Second, and more importantly, Korea is one of the few countries which developed a private education market on a very large scale. Many Korean children start their PT or attending cram schools even before they reach school age. According to the OECD, the percentage of 15-year olds attending *hagwon* (private institutions for after-school lessons) is more than twice the OECD average. The Korean government has been keen on tackling the negative impacts of PT, but PT is still pervasive and more than 70% of students still participate in PT in 2019 (Statistics Korea, 2019). This Korean experience can be a warning to other countries in several ways, in particular to many developing countries willing to benchmark Korean education model. It shows that once PT becomes pervasive and embedded in the economy, it becomes increasingly difficult to regulate it. In addition, as competition for higher education and admission to prestigious universities become fierce, consumption of PT exhibits property of positional good, and PT in turn may have additional negative impact on well-being (WB) through spillover effects.

This chapter contributes to two strands of literature. First, it contributes to extension of research of literature on economics of happiness, which has concentrated mainly on analyzing SWB of adults. Clark (2018) review progress made so far by literature on happiness economics and suggests that further extension of research in this strand of literature could be "to consider childhood well-being as an outcome in its own right". Furthermore, this chapter contributes to extension of literature on social comparison, which happiness economics also made progress mainly in areas of relative income and relative economic status (Bhuiyan, 2018; Burton and Phipps, 2008; Charness and Grosskopf, 2001; Clark, 2014; Clark and Oswald, 1996; D'Ambrosio and Frick, 2007;

Distante, 2013; Ferrer-i Carbonell, 2005; Firebaugh and Schroeder, 2009; Luttmer, 2005; McBride, 2001) and education attainment (Nikolaev, 2016).

In this chapter, I show that PT has detrimental effect on subjective well-being (SWB) and other WB related outcomes of Korean students. Using Korea Youth Panel Survey (KYPS) data on 2,332 middle (lower secondary) and high school (upper secondary) students over 5 waves (2003 to 2007), I estimate fixed effects (FE) panel regression which suggest that not only the increase in PT has negative effect on individual's emotional WB, but also suggests that the relative increase of PT among individual's reference group has additional negative effect on SWB. Estimation results also suggest that increasing PT *per se* does not lead to rise in relative academic performance in terms of ranking of exam scores among school mates. It is found that one's ranking in academic performance rises if one outspends her reference group on PT (either in terms of duration or expenditure), and such behaviors has additional negative effect on emotional WB. Furthermore, estimates indicate that outspending reference group has positive impact on interpersonal satisfaction vis-a-vis reference group. The results suggest that invisible cost of PT in terms of loss of WB is significant and could be widespread among students who consume PT but do not experience rise of relative position in terms of academic performance. This implies that policies to tackle negative impacts of PT should take into consideration additional benefits of reducing burden of PT, as well as the need for more fundamental reform in education system that changes gains from academic competition, the need for substantial change in curricula to make studying more enjoyable, and the need for creation of better data that captures peer effect aspect of PT in more depth and causal impact on adult outcomes. Policies to change students' perception towards excessive consumption PT as positive behavior and source of social recognition are also needed. The remainder of this chapter is organized as follows. Next section presents background information related to PT in the context of Korean education system and reviews related literature. The data and empirical methods are explained in Section 3.3. Section 3.4 and 3.5 presents estimation results and discussion of the findings respectively. Section 3.6 concludes.

3.2 Background and brief review of related literature

3.2.1 Background

PT is widespread phenomenon in many countries. Although PT has been most conspicuous in East Asian countries including Japan, Korea, Taiwan and China, South Asian countries such as Bangladesh, India, Pakistan, and Sri Lanka, also has long traditions of PT. Past studies suggest that the influence of Confucianism has formed the basis for demand for PT (Dang and Rogers,

2008; Kuan, 2011; Lei, 2005). Perceptions of inadequacies in public education among these regions are suggested to be another major driver of PT.

In Korea, PT is widely consumed. A nationwide government survey on PT showed that 68.8% of students in primary (age 7 to 12) and secondary education (from age 13 to 18) received PT in 2013. According to the same survey, the main motive of consuming PT is to raise academic grades for higher education, especially for university entrance exam. Household expenditure on PT amounted to around 80% of government expenditure on public education for students in elementary, middle, and high schools in 2006 (Kim and Lee, 2010). Expenditure has showed increasing trend from 1998 to 2009, which only decreased slightly in 2010, in which gross PT expenditure recorded 20.8 trillion KRW (around 17.3 billion USD) (Byun and Baker, 2012).ă

The main reason behind prevalence of PT in Korea that Korea is an academic achievement-oriented society. The share of adult (aged 25 to 64) population with qualification in tertiary education is 45%. The share is even higher for population aged between 25-34, which is 68%, the highest among OECD countries (OECD, 2015a). The current university enrollment rate (in 2015) is 70.9% (Korea National Statistical Office, 2016). Reasons for this strong zeal for education is multifaceted : on one hand, cultural tradition based on Confucianism that dates back to more than 500 years viewed education attainment as a requisite for assuming public office and a means for perfection of the self. On the other hand, there exists a large wage gap between those with the tertiary (i.e. university) education degree and those without degree : the income gap recorded 160 (i.e. those with the degree earned on average 1.6 times more than those without the degree). which is the highest level among the OECD countries (OECD, 2012). This large gap incentivizes individuals to invest in their children's education. Consequently, there has been large investment on education, both at public and private levels. Korea spent 8% of GDP on education, from public and private funds altogether, against 6% of OECD and its partner countries (OECD, 2015b). However, 73% of the investment came from private sources, as opposed to 31% of the OECD average. This shows that funding on education is heavily dependent on individuals.ă

Since the establishment of the 1st Republic in 1948, heavy economic burden of households for PT expenditure and psychological burden by students led to discontent with education system and increased demand for education reforms. Consequently the Korean government implemented a series of reforms aimed at tackling PT since 1960s. Major reforms include abolishing middle school entrance examinations and replacing it with random lottery (i.e. School Equalization Policy) from 1969 which gradually extended to the whole country by 1971. Although this reform contributed

to reducing elementary students' burden of preparing exam, the burden was eventually shifted to high school (Byun and Baker, 2012). This led to implementation of high school equalization policy in 1974 which adopted similar lottery based student allocation system. Again, PT was not subdued, as university entrance examination provided motivation for PT. In 1980s, the military government prohibited most forms of supply of PT. However, some PT continued in more covert form, and prohibition gradually relaxed. In 2000, the prohibition of PT was ruled unconstitutional and thus abolished. Reforms continued in 1990s, which include introduction of new college entry system in 1994 and College Scholastic Ability Test (CSAT) to encourage high-level thinking and discourage cramming memorization of fragmented information. In 2000s, main direction of PT policies shifted to providing substitutes of PT by the public education. Such examples include public broadcasting of courses via television channels and After School Program (ASP), which provided courses similar to PT at schools after official classes at low cost¹. Studies suggest that ASP contributed to reducing financial burden of PT, in particular for girls, students in rural area, and low-income families (Bae et al., 2010). However, the latest PT survey conducted nationwide by Korea Statistics Office shows that in 2018, households still spend 19.5 trillion KRW on PT, and 72.8% of students in primary and secondary education participate in PT (Statistics Korea, 2019), spending on average 6.2 hours per week on PT. This shows that policies to reduce PT have not been effective.

3.2.2 Brief review of related literature

This chapter is closely related to mainly two strands of literature : namely, the impact of PT on student outcomes, and impact of academic pressure on WB. PT has been subject of increased attention in economic literature. However, most of the attention has been focused on the determinants of PT expenditure (Dang, 2007; Lei, 2005) and its impact on academic achievement (Choi et al., 2012; Kang, 2009; Sohn et al., 2010). Most of the literature on impact of PT on student outcomes addressed academic achievements of students in East Asian countries, in particular in Korea. Economic literature published earlier than around 2005 and literature from other disciplines also analyzed impact of PT on academic performance, but most of them did not control for potential endogeneity of PT variable (Choi et al., 2012; Sohn et al., 2010), which is major challenge in identifying the effect of PT as innate endogeneity such as cognitive abilities of students and preferences for children's education. Among literature which attempts to control for endogeneity, empirical findings about the effect of PT on academic performance are mixed. Sohn et al. (2010)

¹For detailed analysis of Korean government's policies to tackle PT during years analyzed in this chapter, see Korea Education Development Institute (2007).

found that among 6 studies that examined relationships between PT expenditures and academic performance, 5 showed positive correlations. Choi et al. (2012) found the effect was positive for mathematics and reading, and insignificant for science. Byun and Baker (2012) used propensity score matching to assess the effect of PT on mathematics score for middle school Korean students and found that PT led to small but positive achievement gains in terms of the score. Kang (2009) also found positive but small effects of PT expenditure on academic scores for Korean students. Zhang (2013) analyzed students in China and found positive relationship between PT and academic achievement for low-performing urban students but a negative relationship for rural students who were not top performers. Cheo and Quah (2005) analyzed students in 3 premier secondary schools in Singapore, who found that PT can have positive effect on subjects of PT but overall academic achievement could decline due to additional time taken for PT. Dang (2007) studied national household survey data of Viet Nam which found positive association between tutoring and achievement. Briggs (2001) found positive effects of PT-like instruction in the US on SAT (Maths and Verbal) and ACT (Maths and English) test scores and found negative effects on the ACT Reading score. Ryu and Kang (2013) analyzed Korea Education Longitudinal Study (KELS) with instrumental variables (IV) estimation method and found that 10% increase in PT expenditure is associated with increase in test score by 0.03 standard deviation or 1.1% among middle school students. None of past studies have analyzed effect of PT of reference group, and individual's PT in relation with that of reference group, at least to the knowledge of author.

With regard to past studies on effect of academic pressure on WB, there has been few studies that focused on the negative effect of education on SWB, and most studies analyzed East Asian countries. Juon et al. (1994) found that Korean students who reported higher academic stress and higher education attainment were more likely to have stronger suicidal ideation. Likewise, Wai et al. (1999) also found that academic difficulties were main predictor of suicidal attempts among students in Singapore. Töero et al. (2001) found that the pressure to excel in competition in school has strong link with suicidal attempts for students in Hungary. Wang (2013) found that the decline in academic ranking leads to greater suicidal tendency, using KYPS dataset. Although his study has close relation with academic pressure on SWB, we believe that measuring academic pressure in more comprehensive manner and estimating its effect on multidimensional domains of SWB will shed more light on understanding of mechanism of academic stress on SWB, which will be explained in the following sections. Kim (2018) is the only study which assessed relationship between life satisfaction and duration of PT, using KYPS dataset, which is the dataset used in this chapter. He used logit regression for middle and high school students from a single wave of the

data and found no correlation between life satisfaction in general and duration of PT. However, as this study did not control for endogeneity of PT, estimates could be biased.

Additional aspect of PT which this chapter focuses is its property as positional good. Past studies has viewed educational qualifications as positional good such as Hollis (1987), found that given that people's motivation for securing more educational qualifications depends on their perception whether it is adequate relative to the amounts held by peers and competitors. Educational qualification itself may not be considered as positional good in country like Korea where large portion of population already obtains higher education degrees. However, PT or admission to prestigious university is more appropriate example of positional good, because "when PT is received by one group, other groups feel that they must follow until almost everybody is receiving it and those who do not are disadvantaged (Byun and Baker, 2012)". Korea Youth Panel Survey (KYPS) dataset, which is selected for analysis of this chapter, provides useful information to explore PT as positional good because there are information on individual's peers, their academic performance as well as consumption of PT.

3.3 Data and Variables

3.3.1 Dataset

This chapter uses KYPS dataset collected by National Youth Policy Institute (NYPI) in Korea. The Survey selected 3,449 middle school (age 14) and 2,844 elementary school (age 11) students and their parents from all provinces in Korea except Jeju Island by stratified multi-staged cluster sampling in 2003 (middle school) or 2004 (elementary school) and followed them for 6(middle school)/5(elementary) consecutive years. This panel survey contains rich information on youth well-being and socioeconomic and demographic characteristics, and school performance. In particular, the survey contains information on peers as the whole classmates were selected (104 middle school and 84 elementary cohorts) by sampling. In Korean education system, classmates are close peers, because classmates spend most of their time together in school. They take all classes together and participate together in extracurricular activities. In addition, students in middle and high schools are informed of their ranking among their classmates in school exam scores, which is reported in this survey. This shows that classmates can be considered as reference group, so their behavior such as learning, participation in PT or misbehavior can affect individual's SWB and behavior.

3.3.2 Well-being variables

Descriptive statistics on well-being variables are reported in Table 3.1. *Life satisfaction* measures how students responded to question "How satisfied are you with your life in general?"² on a 5-point scale response option³. *Emotional well-being* consists of 3 subquestions "Sometimes I feel suicidal with no apparent reason", "Sometimes I feel extremely anxious with no apparent reason", and "Sometimes I feel extremely sad and gloomy with no apparent reason". These subquestions are measured on a 5-point scale⁴. *Interpersonal (peer) satisfaction* consists of 2 subquestions on satisfaction with student's relationship with friends, which are responses to "I get stressed by lack of recognition from my friends" and "I get along well with friends at school". Both of them are measured on a 5-point scale. Since the value of response to the former question decreases with level of well-being and that of the latter increases, the values of the former question is reversed in order (so if student strongly agrees that he/she is stressed by lack of recognition from his/her friends, the value is 1). The variable is computed average of revised responses. *School satisfaction* is measured by averaging responses to 3 subquestions : "I am not interested in school work, and find it difficult to catch up", "I am under great anxiety due to study", and "I get stressed because it is boring to study". Since level of satisfaction decreases with increase of 5-point scale of responses, the value of this variable is reversed as done in the case of interpersonal satisfaction. Descriptive statistics for above subquestions are reported in Table 3.2. *Academic performance* is measured by ranking of exam scores of student among his/her schoolmates in the most recent semester⁵.

3.3.3 PT variables

PT hours is weekly average hours of PT over the past year, measured in hours. KYPS surveyed PT hours of 7 subjects (i.e. Korean language, English language, mathematics, social studies, science, music, fine arts and physical education) separately. Since the aim of this chapter is to identify the effect of academic pressure on SWB, we use the sum of hours of first 5 subjects (i.e. Korean language, English language, mathematics, social studies, and science) and exclude the last 2 subjects because the academic scores for them are not reflected in university admission. *PT expenditure* is parents' response to monthly household expenditure of PT on student surveyed, averaged over

²All questionnaire of KYPS are conducted in Korean. Questions and responses shown in this chapter are translations of National Youth Policy Institute.

³5-point scales are : (1) very unsatisfied, (2) unsatisfied, (3) neither unsatisfied nor satisfied, (4) satisfied, and, (5) very satisfied

⁴(1) strongly disagree, (2) disagree, (3) neither disagree nor agree, (4) agree and (5) strongly agree.

⁵KYPS survey was surveyed in October in every wave, and Korean schools has 2 semesters every year that begins from March through July/August and from September through February. So ranking refers to end-of-semester exam around July and August.

the past year. This expenditure was answered by parent or guardian of student and measured in 10,000 Korean Won (KRW) (1 USD = approximately 1,200 KRW). As shown in Table 3.1, on average, sample households spent 246,200 KRW (approximately 205 USD) monthly on their child in 2004. The difference between PT hours variable and expenditure variable is that while tutoring hours is sum of 5 academic subjects, expenditure is the sum of entire expenditure PT.

3.3.4 Socioeconomic characteristics of students and parents

Table 3.1 reports descriptive statistics for socioeconomic variables which are selected as control variables. As indicated in the previous chapter, domestic violence and household income are selected as socioeconomic characteristics. As for domestic violence, 4 variables, divided by severity (verbal abuse or physical abuse) and whether violence was committed between parents or to their children, are included. As a measure of material WB, monthly household income averaged over a surveyed year (measured in KRW) is included.

Table 3.1: Summary statistics of SWB and socioeconomic characteristics

	(1)			
	mean	sd	min	max
<u>SWB variables</u>				
Life	3.52	0.78	1	5
Peer	3.85	0.71	1	5
Emotion	3.36	0.93	1	5
School	3.16	0.68	1	5
<u>PT variables</u>				
PT hrs	10.33	9.11	0	60
PT expenditure	26.78	28.98	0	400
<u>Academic performance</u>				
Rank	138.23	113.51	1	632
<u>socioeconomic characteristics</u>				
Income	302.22	185.83	24	3000
Verbal Abuse between Parents	2.08	1.10	1	5
Verbally Abused by Parents	1.75	0.97	1	5
Beating between Parents	1.71	0.97	1	5
Beaten by Parents	1.75	1.04	1	5
Talk with Parents	3.25	1.02	1	5
Observations	2332			

Table 3.2: Summary statistics of domain satisfaction variable in 2004

	(1)			
	mean	sd	min	max
<u>Peer satisfaction</u>				
Get along well with friends	3.83	0.84	1	5
Stressed from lack of recognition from friends	2.13	0.93	1	5
<u>School satisfaction</u>				
Interest in School work	2.01	1.01	1	5
Stressed because study is boring	3.07	1.03	1	5
Anxious due to studying	3.43	0.99	1	5
<u>Emotional WB</u>				
Suicidal Ideation	2.26	1.14	1	5
Anxiety	3.15	1.09	1	5
Feeling sad	2.82	1.12	1	5
Observations	2332			

3.4 Empirical strategy

I identify the causal effect of academic pressure on SWB using panel data regression model. First, I estimate the following regression equation :

$$WB_{i,t} = \alpha_0 + \alpha_1 PT_{i,t} + \alpha_X X_{i,t} + \epsilon_{i,t} \quad (3.1)$$

$WB_{i,t}$ indicates SWB of individual i in year t (from 2003 to 2008), which consists of sub-domains, namely satisfaction with life in general, emotion, school life and peer relationship, altruistic behavior, and ranking of individual in school exam score among cohorts in school. $PT_{i,t}$ denotes weekly average hours spent or monthly average expenditure of PT on individual i in year t . $X_{i,t}$ denote the set of control variables that measures material well-being and socioeconomic characteristics of household. Linear OLS and FE (FE) regression with year FE are used, following the methodology used in the previous chapter. PT is expected to have effect through following channels. First, PT will have detrimental effect on emotional SWB because it will crowd out one's leisure. Second, PT will have positive effect on SWB, in particular on peer relationship as suggested by Self-Determination Theory (SDT) which explains that individuals experience higher level of SWB if she satisfies the intrinsic need of autonomy, competence and relatedness (Conzo et al., 2017). The two channels work in opposite direction. It would be important to check relative level of PT among individual's peers to determine the direction of the effect, considering the

characteristics of PT as positional good. If everyone in the competition invests the same level of PT, individual's position in the ranking of academic outcome is expected to remain unchanged, assuming that PT has the same effectiveness across individuals. Considering the high level of prevalence and abundant supply of PT, and that the nature of PT market is close to perfect competition, it is reasonable to assume that PT effectiveness is very similar across individuals, for a given level of consumption. Therefore it is not absolute level of PT but the relative level of PT, which is expected to affect one's relative position in academic performance (i.e. ranking of exam score among schoolmates). Such ranking is expected to be positively related with SWB as it is related to one's prospect of advancing to university, increased expected future income and positive labor market outcome.

3.5 Estimation Results

3.5.1 Effect of individual's PT on WB

Firstly, I estimate the effect of change in individual student's PT (duration and expenditure) on her WB. Table 3.3 presents pooled-OLS estimates of the effect of duration (measured in hours per week) of PT. The effect of PT is positive and significant for satisfaction with life in general (*Life*), peer relationship (*Peer*), School life (*school*), but insignificant for emotional well-being (*Emotion*). As shown in column (5) of the Table 3.3, increase PT duration is positively associated with higher ranking in exam score among school mates in the same year. 2 hours of PT per week is associated with approximately rise of 1 rank. Household income is only positively associated with life satisfaction. The effect of existence of domestic violence between parents, as well as victimization to domestic violence by parents are consistently and negatively associated with SWB. Change in ranking is only negatively associated with the victimization to physical violence and its magnitude is significant : 1 scale increase in student's response to victimization ("I was beaten by parents") is associated with fall of ranking by more than 4 ranks. Another control variable which measures relationship with parents, namely, how often student talks with her parents, is also positively associated with all WB variables. Table 3.4 reports the effect of PT measured in terms of expenditure in a given year. Its effect on WB is similar with duration of PT, but it is different as regards to the effect on emotional WB, which is negative and significant. However, as pooled OLS does not address unobserved heterogeneity across units, serial correlation may exist across years within individual students. Socioeconomic factors such as cognitive ability, personality traits, non-income wealth of household may be associated with SWB and PT. Therefore, Breusch-Pagan

Lagrange multiplier (LM) test is performed to test whether the variance of the random effect is zero. The test results reject the null hypothesis that variance of the random effect is zero, so random effect and FE specification is estimated.

Table 3.5 reports FE estimates of duration of PT on WB. F-statistics reported indicates that the effect of right hand variables of the model on WB variables are jointly significant. As presented in the Table, the Hausman statistics suggests that the null hypothesis that random effects is consistent and efficient estimator is rejected. FE estimations presented in the throughout this chapter are estimated with robust standard errors which also allowed for clustering at individual levels.⁶ Estimates suggests that within-individual increase of PT duration has negative and significant effect on emotional SWB, but it has no effect on other domains. Therefore increase of PT duration is associated with increase in positive response to suicidal ideation, feeling sad and anxious. Main difference between FE and pooled OLS is that the effect of PT is insignificant for FE estimates. This implies that pooled-OLS estimates may overestimated due to unobserved heterogeneity across individuals. Also, the result is consistent with the hypothesis stated earlier that PT has property of positional good, and its effect will be only significant if consumption of PT is different vis-a-vis PT of her reference group as suggested by Hollis (1987) and Byun and Baker (2012). Specifically, change in individual's PT is expected to be positively affected by the change in reference group's PT. The reason why the effect of PT on ranking is insignificant could be because overall PT of reference group (i.e. school mates) may have also changed in the same direction and magnitude. The effect of PT of the reference group and individual's relative PT vis-a-vis the reference group on WB is estimated in the following subsection. With regard to the effect of other variables, change in income is positively associated with emotional WB. The effect of domestic violence and parent relationship on WB variables are significant and mostly consistent with pooled-OLS estimates, with the exception that the effect of domestic violence is insignificant on life satisfaction. Table 3.6, which reports the effect of expenditure on PT, shows that the effect of PT measured in expenditure is also similar with estimates of duration of PT. The effect of PT expenditure on rank seems to be positive and significant but it is only marginally significant at 10% significance level. Tables 3.7 and 3.8 report the effect of change in mean duration of and expenditure on PT of reference group (i.e. school mates). The effect is negative and significant on school satisfaction, which consists of loss of interest in school work, experience of stress because studying is boring, and anxiety due to studying. 1 hour increase in PT duration per week in terms of mean of reference group is also associated with fall of individual's rank in exam score among school mates by almost 6 ranks, as shown in the column (5). Likewise, Table 3.8 shows that increase of 10,000 KRW on

⁶The Hausman statistics reported in the tables in this chapter is computed from random and FE estimated with standard errors.

PT expenditure per month of the reference group is associated to fall of approximately 1 rank in exam ranking. It is unclear from this specification how individual's PT changes in relation with that of reference group. Therefore, PT difference (i.e. (individual's PT) - (mean PT of reference group)) shown in the following is computed as difference between individual's own PT and mean PT of the reference group.

Tables 3.9 and 3.10 show estimates of the effect of above mentioned PT difference on WB. The effects on emotional WB are statistically significant and negative, and the magnitude is also similar to those of the effect of individual's PT on WB, as shown in Tables 3.5 and 3.6. Notable difference between individual PT and difference in PT specification is the effect on ranking : the effect of PT is positive and significant if individual's PT exceeds that of mean of reference group. If individual spends 1 more hour of PT than that of the mean reference group, rank in exam score among school mates is estimated to rise by around 1 rank. With regard to PT expenditure, as shown in Table 3.10, spending 50,000 KRW more than that of mean of reference group on PT expenditure per month is associated with rise of 1 rank in ranking.

I further estimate the effect of PT by stratifying the reference group into different income groups to which individual's households belong. Considering that students in the sample have diverse level of household income in the same school due to school equalization policy, some students may be with richer school mates who can afford more PT, while some are with poorer school mates. Whether reference group consumes more PT that is not affordable to individual or not may have differing effect on WB. If individual considers the reference group as different than oneself because they are richer, their consumption may have less negative effect on peer satisfaction. On the contrary, if the reference group have similar level of wealth (measured in household income) but consumes more PT, individual may report decrease in peer satisfaction, because individual can feel relative deprivation with regard to her peers who have similar household income but parents who spend more. The reference group is further divided into group with school mates with similar range of income level⁷. The effect of mean PT and difference between individual and mean PT of reference group (i.e. school mates in the same quintile of household income) on WB variables are presented from Table 3.11 to Table 3.14. Difference of effect of PT between this income-adjusted reference group with the previous reference group is that the effect is positive and significant for peer domain satisfaction (*Peer*). Increase of mean reference group's PT is associated with decrease in peer satisfaction, and difference of PT between individual and mean reference group is positively associated with peer satisfaction. The effect of difference on emotional WB is negative and significant which is consistent with estimates of the previous reference group. While the effect

⁷Household income is categorized into quintile of income for elementary and middle school cohort subgroups of sample

of difference of PT duration is positive and significant on ranking, the effect of difference of PT expenditure on ranking is insignificant. Possible reasons for this different results could be the following. While PT duration measures academic subjects (i.e. Korean language, mathematics and English language), PT expenditure consists of all extracurricular education. Therefore the difference in PT does not necessarily reflect the difference in PT in academic subjects that is related to school exam. In addition, since the reference group is stratified into smaller subgroups, this PT expenditure on non-academic subjects may have greater effect on ranking. In addition, even if difference reflects PT expenditure on academic subjects, its effect on ranking can be limited if individual belongs to income quintile that has small proportion in school. Also, if individual belongs to poorer income subgroup, her absolute level of PT expenditure could be small, so the effect on ranking could be also small.

Table 3.3: Pooled-OLS Estimation : Duration of PT

	(1) Life	(2) Peer	(3) School	(4) Emotion	(5) Rank
PT hrs	0.004*** (0.001)	0.004*** (0.001)	-0.009*** (0.001)	0.000 (0.001)	-0.636*** (0.124)
Income	0.000*** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.009* (0.005)
Verbal Abuse between Parents	-0.059*** (0.010)	-0.012 (0.010)	-0.046*** (0.010)	-0.069*** (0.013)	2.073 (1.389)
Verbally Abused by Parents	-0.063*** (0.014)	-0.091*** (0.013)	-0.050*** (0.013)	-0.083*** (0.017)	-0.546 (1.855)
Beating between Parents	-0.003 (0.013)	-0.064*** (0.012)	0.041*** (0.013)	-0.005 (0.016)	1.036 (1.775)
Beaten by Parents	-0.024* (0.013)	-0.058*** (0.012)	-0.023* (0.012)	-0.060*** (0.016)	4.640*** (1.725)
Talk with Parents	0.194*** (0.008)	0.074*** (0.007)	0.107*** (0.008)	0.093*** (0.010)	-7.208*** (0.982)
year FE	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ²	0.12	0.11	0.06	0.08	0.03
F	120	104	62	84	30

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.4: Pooled-OLS Estimates : PT Expenditure

	(1)	(2)	(3)	(4)	(5)
	Life	Peer	School	Emotion	Rank
PT expenditure	0.001*** (0.000)	0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.109*** (0.036)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ²	0.12	0.11	0.05	0.08	0.03
F	124	102	53	85	28

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.5: Fixed Effect Estimates : Duration of Individual PT

	(1)	(2)	(3)	(4)	(5)
	Life	Peer	School	Emotion	Rank
PT hrs	-0.001 (0.001)	0.001 (0.001)	-0.002* (0.001)	-0.003** (0.001)	-0.222 (0.159)
Income	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000** (0.000)	-0.006 (0.007)
Verbal Abuse between Parents	-0.023* (0.013)	-0.013 (0.012)	-0.024** (0.012)	-0.033** (0.014)	-0.022 (1.691)
Verbally Abused by Parents	-0.031* (0.017)	-0.053*** (0.015)	-0.037** (0.015)	-0.055*** (0.020)	0.149 (2.059)
Beating between Parents	0.016 (0.018)	-0.049*** (0.017)	0.031** (0.015)	0.003 (0.019)	-1.124 (2.031)
Beaten by Parents	-0.023 (0.018)	-0.062*** (0.015)	-0.029* (0.015)	-0.058*** (0.019)	2.216 (2.016)
Talk with Parents	0.118*** (0.012)	0.044*** (0.011)	0.054*** (0.011)	0.059*** (0.013)	-3.515*** (1.309)
year FE	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.05
R ² (overall)	0.09	0.10	0.03	0.07	0.02
R ² (between)	0.12	0.12	0.01	0.08	0.01
F	17	21	73	12	28
hausman(χ^2)	174	65	347	108	86
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.6: Fixed Effect Estimates : PT Expenditure

	(1)	(2)	(3)	(4)	(5)
	Life	Peer	School	Emotion	Rank
PT expenditure	0.000	0.000	-0.000	-0.001***	0.087*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.047)
year FE	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.05
R ² (overall)	0.10	0.10	0.03	0.07	0.02
R ² (between)	0.13	0.12	0.01	0.09	0.01
F	17	22	73	13	28
hausman(χ^2)	166	72	394	108	87
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.7: Fixed Effect Estimates : Duration of Mean Classmates PT

	(1)	(2)	(3)	(4)	(5)
	Life	Peer	School	Emotion	Rank
PT hrs(classmates)	-0.005	0.003	-0.010***	0.000	5.976***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.422)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.09
R ² (overall)	0.09	0.10	0.04	0.07	0.03
R ² (between)	0.11	0.12	0.01	0.09	0.01
F	17	21	75	12	42
hausman(χ^2)	172	62	281	82	120
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.8: Fixed Effect Estimates : PT Expenditure of Mean Classmates

	(1)	(2)	(3)	(4)	(5)
	Life	Peer	School	Emotion	Rank
PT exp(mean)	-0.001 (0.001)	0.000 (0.001)	-0.003*** (0.001)	-0.001 (0.001)	1.391*** (0.132)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.09
R ² (overall)	0.09	0.10	0.03	0.07	0.04
R ² (between)	0.12	0.12	0.01	0.09	0.03
F	17	21	75	12	36
hausman(χ^2)	180	74	382	103	83
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.9: Fixed Effect Estimates : Difference in Duration of PT

	(1)	(2)	(3)	(4)	(5)
	Life	Peer	School	Emotion	Rank
PT hrs(difference)	-0.000 (0.001)	0.001 (0.001)	-0.000 (0.001)	-0.003** (0.001)	-1.058*** (0.151)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.06
R ² (overall)	0.10	0.10	0.03	0.07	0.03
R ² (between)	0.13	0.12	0.01	0.09	0.02
F	16	21	73	12	32
hausman(χ^2)	178	76	404	105	70
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.10: Fixed Effect Estimates : Difference in PT Expenditure

	(1) Life	(2) Peer	(3) School	(4) Emotion	(5) Rank
PT exp(difference)	0.001* (0.000)	0.000 (0.000)	0.001* (0.000)	-0.001** (0.000)	-0.220*** (0.047)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.05
R ² (overall)	0.10	0.10	0.03	0.07	0.03
R ² (between)	0.13	0.12	0.01	0.09	0.02
F	17	21	73	13	30
hausman(χ^2)	175	77	408	104	98
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.11: Fixed Effect Estimates : PT Duration of Reference Group(schoolmates with similar HH income)

	(1) Life	(2) Peer	(3) School	(4) Emotion	(5) Rank
PT hrs(classmates)	-0.003 (0.002)	-0.005** (0.002)	-0.001 (0.002)	-0.000 (0.003)	2.165*** (0.294)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.06
R ² (overall)	0.09	0.09	0.03	0.07	0.03
R ² (between)	0.12	0.11	0.01	0.09	0.02
F	17	21	73	12	30
hausman(χ^2)	178	82	365	95	51
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.12: Fixed Effect Estimates : PT Expenditure of Reference Group(schoolmates with similar HH income)

	(1) Life	(2) Peer	(3) School	(4) Emotion	(5) Rank
PT exp(mean)	-0.001 (0.001)	-0.001* (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.487*** (0.090)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.05
R ² (overall)	0.09	0.10	0.03	0.07	0.03
R ² (between)	0.12	0.11	0.01	0.09	0.02
F	17	21	73	12	30
hausman(χ^2)	180	84	389	104	59
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.13: Fixed Effect Estimates : PT Duration Difference with Reference Group(schoolmates with similar HH income)

	(1) Life	(2) Peer	(3) School	(4) Emotion	(5) Rank
PT hrs(difference)	-0.000 (0.001)	0.002** (0.001)	-0.001 (0.001)	-0.003** (0.001)	-0.640*** (0.139)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.05
R ² (overall)	0.10	0.10	0.03	0.07	0.02
R ² (between)	0.13	0.12	0.01	0.09	0.02
F	16	22	73	12	29
hausman(χ^2)	177	71	388	106	78
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 3.14: Fixed Effect Estimates : PT Expenditure Difference with Reference Group(schoolmates with similar HH income)

	(1)	(2)	(3)	(4)	(5)
	Life	Peer	School	Emotion	Rank
PT exp(difference)	0.001*	0.001**	0.000	-0.001**	-0.058
	(0.000)	(0.000)	(0.000)	(0.000)	(0.040)
year FE	✓	✓	✓	✓	✓
controls	✓	✓	✓	✓	✓
N	10,919	10,919	10,919	10,919	10,919
R ² (within)	0.04	0.05	0.13	0.03	0.05
R ² (overall)	0.10	0.10	0.03	0.07	0.02
R ² (between)	0.13	0.12	0.01	0.09	0.01
F	17	22	73	12	28
hausman(χ^2)	173	77	404	104	91
hausman(p> χ^2)	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

3.6 Discussion

The estimation results presented above offer new findings on the effect of academic pressure on SWB as well as alternative explanation of the mixed results on the effect of PT on academic performance, taking into account of the nature of PT as positional good.

Exploiting the longitudinal data structure, the results have shown that individual's PT has no effect on relative academic performance (i.e. ranking) (Tables 3.5 and 3.6) This contrast with previous studies that found positive relationship between PT and academic performance with cross-sectional data. As shown in the pooled-OLS estimates (Tables 3.3 and 3.4), the results supports the view that this positive relationship is biased from unobserved heterogeneity across individuals. Also, contrary to previous findings that found positive relationship between PT and academic performance which used longitudinal data, the results of this chapter suggest that relative change of PT with regard to peer (with whom individuals compete) matters for the change of academic performance.

Estimation results showed that while the absolute level of PT does not affect ranking, it still has negative effect on emotional WB(Tables 3.5 and 3.6). This means that if everyone increases PT by the same amount to gain higher ranking in exam, there will be no change in individual's

relative position (i.e. ranking) but everyone will lose in terms of SWB. The negative effect of difference of PT on WB (3.9 and 3.10) indicates that individuals experience further negative effect on emotional WB in addition to above if one consumes more PT than her reference group. Therefore the effect of PT on relative academic performance is always constant (since number of students who enter prestigious universities are limited), the negative effect of PT on WB is universal. This may be one of the reason behind low level of SWB of Korean students among students from other countries as indicated in Diener and Oishi (2004); Diener et al. (2010); Kutsar and Kasearu (2017); OECD (2017).

One may argue that PT, as a part of education, could have intrinsic value from increased quality of life, derived from developing and fulfilling individual's potential, a concept called "eudaemonia" (Nettle, 2006). However, the analysis has not found any positive effect of PT on WB that could be attributed to the joy of learning or self development. On the contrary, the effects of PT of reference group on WB such as school satisfaction (which consists of variables closely related to eudaemonic WB such as interest in school work) or peer satisfaction are negative (Tables 3.7 and 3.8). This implies that PT does not seem to contribute, if not hamper, to students' eudaemonic happiness. This is also supported by the finding by OECD (2017) that Korean students showed relatively low level of interest in studying despite scoring high marks in assessment.

Positive and significant effect of difference of PT with regard to reference group on peer domain satisfaction (as shown in Tables 3.13 and 3.14) suggests the motivation behind consuming PT that is other than one or parents' desire to enter prestigious universities. This means individuals experience higher satisfaction from recognition from peers if she outspends her peers in terms of PT. It is notable that this peer satisfaction exists only if individual consumes more PT than peers of similar income level. This is consistent with literature on conspicuous consumption on domain satisfaction such as Winkelmann (2012), which found negative income satisfaction associated with neighbor's conspicuous consumption (density of luxury brand cars in the residential district). This also implies that WB effects vis-a-vis reference group is dependent on different characteristics of subgroups : the reference group of similar income has distinct significance for children, in particular for social recognition. This finding is consistent with past studies that suggest that the subjective value of materialism is relatively higher for Korean society (Diener et al., 2010; Suh, 2014)).

Policy implications from analysis of this chapter are as follows. First, detrimental effect of PT

on SWB should be considered as hidden and significantly large cost in designing policies to regulate PT. In particular, negative spillover effect from the arms race-like conspicuous consumption of PT on emotional WB should be targeted in tackling PT.

Second, PT's nature as positional good is empirically explained. The fact that PT exhibits characteristics of positional goods explains why past policies which attempted to substitute PT with public education has failed. It is unrealistic to completely substitute PT with public education as long as any kind of university entrance exam differentiates students with different academic capabilities. This implies that, in order to reduce PT, the payoff from academic competition (i.e. entrance to prestigious universities) should be reduced. This solution will require fundamental change not only of the education system but also of economic structure, such as reducing income gap between university and high school graduates, or expanding (or dismantling) prestigious universities. Historically, Korean government has not addressed PT in this fundamental direction but passed on the academic burden to higher education (such as abolishing entrance exam for elementary, middle and high school as a part of SEP). The results imply that it is now time to aim for more fundamental solution.

Third, if above mentioned fundamental solution takes time, efforts should be made to shape university entrance system to increase eudaemonic WB. In particular, College Scholastic Ability Test (CSAT), which has been the main criteria for university entrance and source of demand for PT, needs to be improved to encourage eudaemonic WB from studying at school. Kim (2004) suggests, however, that the recent university entrance exams changed in the opposite direction : although CSAT improved way of teaching and learning in high schools, short-term memorization of fragmented information still exists in instruction, which discourage high-level thinking in studying. Fourth, measures should be taken to change students' value system which associates peer recognition with excessive consumption of PT.

Fifth, better data on PT and peer relationship should be created for better policies to curb PT. For instance, expenditure data on PT could be disaggregated to academic subjects. Also, panel survey such as KYPS can include questionnaire on individual's relation with each peer in the survey. This would help to identify the reference group in more detailed dimensions. The scale of domain satisfaction should also be divided into more scales. In addition, there are emerging data on youth suicide and mental health⁸, but their value is limited by fragmentation of database. Integrating these data into a single database will enable researchers to better identify causal relationship between PT and mental health and suicide.

⁸For instance, Korea Health Insurance Review and Assessment Service (HIRA) provides microdata on medical records, and Korea Statistics Office provides microdata on causes of death.

Sixth, future survey on PT and peers should be extended to WB in adult life. As suggested by Clark et al. (2018) and Layard et al. (2014), childhood emotional WB can have lasting effect on SWB of adult life. Such survey could also include satisfaction at tertiary education, whether individuals experience burnouts or feel if specialization (major) in the university suits individual's desired career or aptitude. This is because excessive competition for prestigious universities is known to induce individuals to choose universities based on titles rather than specialization. Such lasting effect of PT on adult outcome could be reflected in identifying the cost and benefit of designing policies to tackle PT.

In this context, further research could be conducted in the following areas. The effect of PT on SWB aspect of adult and tertiary education outcomes could be further investigated. Negative spillover of PT on public education could be extend to analyzing SWB and self-efficacy of teachers as well as SWB of students of in lower end of distribution in terms of academic performance.

3.7 Conclusion

PT is widespread phenomenon in a number of countries. It is especially pervasive and causing considerable financial and psychological burden on students and parents of Korea. While the impact of PT on academic achievements and its determinants have been studied, few studies have analyzed the effect of PT on WB. In this chapter, I estimate the effect of PT in terms of duration and expenditure on subjective well-being (SWB) and other WB related outcomes including ranking among peer group of Korean students. Using KYPS data on 2,332 middle and high school students over 5 waves (2003 to 2007), I apply FE estimation to control for potential endogeneity of PT variables. The effect of individual's consumption of PT as well as consumption of peer (school mates) and difference between the former and the latter on WB of individuals. The results suggest that increase in PT has negative effect on individual's emotional WB. Increase of PT among individual's reference group also has negative effect on domain satisfaction with school life. Results also suggest that increasing PT does not lead to rise in ranking of exam scores among school mates but it is positively associated with difference between individual's consumption of PT and consumption of PT by the reference group (either in terms of duration or expenditure) in PT. Such difference in PT also has negative and significant impact on emotional WB. Estimates further indicate that consuming more PT than reference group has positive impact on satisfaction with peers. This shows that cost of PT in terms of reduction of WB is significant and could be widespread among students who consume PT but do not experience rise of relative position in

terms of academic performance. Policies to tackle negative impacts of PT should take into consideration additional benefits of reducing burden of PT, as well as the need for more fundamental reform in education system that changes gains from academic competition, the need for substantial change in curricula to make studying more enjoyable, and the need for creation of better data that captures peer effect aspect of PT in more depth and causal impact on adult outcomes. Policies to change students' perception towards excessive consumption PT as positive behavior and source of social recognition are also needed. Further studies could investigate the effect of PT on adult outcomes, negative externalities of PT on public education, and differing effect of PT on students' SWB by various distribution of academic performance.

Chapter 4

The effect of prohibition of corporal punishment on student well-being

4.1 Introduction

Ever since the United Nations Convention on the Rights of the Child (United Nations, 1989) came into force in 1990, all forms of violence against children is universally recognized as violation of human rights, as 195 countries have ratified CRC and established domestic laws to implement them. However, as of June 2016, only 49 countries have prohibited corporal punishment (CP), and it is still lawful in many other countries (Global Initiative to End All Corporal Punishment of Children, 2016). UNICEF (2014) found that in 62 countries surveyed, 80% of children experienced violent discipline at home in past month. CP has long been considered an effective way to discipline children, and such idea is still accepted in a number of countries. Despite a wide range of studies have found that CP is associated with a various negative child development outcomes such as decreased cognitive abilities, mental and physical damages, and increased aggressive and antisocial behaviors, there is ongoing debate and controversy on prohibition of all forms of CP on children. One of the challenges of identifying causal effect of CP on child outcomes is that CP on children is not feasible nor ethical to experiment, and appropriate natural experiment has not yet been found.

In this chapter, I estimate the causal effect of prohibiting CP¹ at schools on health, academic

¹In this chapter, CP is defined following the UN Committee on Rights of Children, as : "any punishment in which physical force is used and intended to cause some degree of pain or discomfort, however light". Most CP involves hitting ('smacking', 'slapping', 'spanking') children, with the hand or with an implement a whip, stick, belt, shoe, wooden spoon, etc. It can also involve, for example, kicking, shaking or throwing children, scratching, pinching, biting, pulling hair or boxing ears, forcing children to stay in uncomfortable positions, burning, scalding or forced ingestion (Committee on the Rights of the Child, 2006).

performance and violence of students in the Republic of Korea (hereinafter referred to as "Korea"). The recent education reforms in Korea is conducive to identify the effect of CP on students' well-being (WB). In Korea, CP at schools has been legal for decades. A survey conducted in 2014 revealed that 93.8% of students experienced CP (Korean Teachers and Education Workers Union, 2014b). However, as local governments obtained autonomy of electing education governors in 2007, some regions enacted "Students' Human Rights Ordinances (hereinafter referred to as the "reforms)". As of now, 4 provinces, namely Seoul, Gyeong-gi do, Gwang-ju si, and Jeonrabuk -do, enacted the reforms in 2012, 2011, 2013, and 2013, respectively. These reforms explicitly prohibit all forms of CP at schools. As a result, while 4 municipalities above officially prohibit all forms of CP at schools, 28 municipalities allow CP in schools. These partially implemented reforms provide with quasi-experiment setting that enables estimation of the effect of prohibition of CP on students' WB.

In the remainder of the chapter we present the overview of educational system related to prevalence and prohibition of CP in Korea as well as previous studies on the effect of CP. The data and empirical methods are explained in Section 4.3. Section 4.4 presents estimation results and robustness checks. Section 4.5 discusses the findings. Section 4.6 concludes.

4.2 Background and review of literature

4.2.1 Student rights reform in Korean education context

School discipline in Korea

United Nations Convention on the Rights of the Child (CRC) states that "No child shall be subjected to torture or other cruel, inhuman or degrading treatment or punishment (Article 37, CRC)" and that "States Parties shall take all appropriate legislative, administrative, social and educational measures to protect the child from all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse, while in the care of parent(s), legal guardian(s) or any other person who has the care of the child (Article 19, CRC)." Since Korea became party to CRC in 1991, the Korean government has legal obligation to all appropriate measures to prohibit all forms of CP in any settings². However, CP both at home and schools has been prevalent in Korea. according to a survey (Korean Teachers and Education Workers Union, 2014a), over 80% of students experienced CP by school teachers in 2005.

²The Committee on the Rights of the Child interprets the violence includes corporal or physical punishment, "as any punishment in which physical force is used and intended to cause some degree of pain or discomfort, however light (Committee on the Rights of the Child, 2006)"

The Committee on the Rights of the Child made recommendation to the Korean government to abolish all type of CP repeatedly (Committee on the Rights of the Child, 2003). In response to this recommendation, the Korean government revised the relevant law(The Enforcement Decree of the Elementary and Secondary Education Act 2009) in 2011 to prohibit CP in schools, but the new law does not ban indirect CP (such as forcing students to maintain painful positions or to punitive physical exercises (Global Initiative to End All Corporal Punishment of Children, 2017). This could be attributed to following cultural and historical traditions of the Korean education system.

First, the traditional Confucianist culture of has lasting influence on the Korean society since Confucianism became official curriculum in the National Academic Institute (Daehak) in 372 A.D.. As filial piety emphasized in Confucianism, students are required to obey parents and teachers. Obedience and conformity to teachers and school rules is recognized as more important than respect for students' rights or opinions.

Second, as explained by Moon (2005), Korea have maintained authoritarian practices to discipline students. Schooling functioned as a mechanism to shape students' mind, attitudes and conducts as members of the anti-communist nation in military government which established anti-communism as the top national policy. The crucial goal of education has been indoctrination of anti-communist identity. In order to achieve this, schools employed heavy surveillance and "normalization" of students, which are instruments of "disciplinary power" in modern society (Foucault (1977), as cited in Moon (2005)). Students were subject to close surveillance that assemble militaristic practices, such as use of school uniforms, strict codes for hair style, socks, shoes and underwear suitable for students. Violation of those codes led to individual or collective CP to inculcate obedience and collective orientation. Korea is not unique in history which employed such authoritarian discipline of students borrowing from militaristic practices. However, a distinct aspect of the Korean case is that the authoritarian education persisted after the end of military authoritarian regime (1961-1987) (Moon, 2017). Authoritarian education practices including CP has been criticized since democratization by civic groups and students associations, but moves towards reform and prohibition of CP were blocked by teachers, conservative media, private education institutes and related interest groups. The factors leading to persistence of authoritarian education could be complex, but one decisive factor could be heavy emphasis on academic competition among students and academic credentialism.

The Korean society places considerable importance on academic achievement. In 2012, Korea's education expenditure recorded 6.7 % of GDP, which ranks second place among 34 OECD coun-

tries (OECD, 2015b). Higher education and a diploma from a prestigious university is perceived to a major social success. School teachers face pressure to prepare their students to enter prestigious universities, which is determined to a great extent by a nationally administered examination (CSAT, College Scholastic Aptitude Test) at the end of the high school. Students face in general highly competitive school environment, and spend additionally long hours of studying after school in *hagwon*(private tutoring (PT) institutions). Human rights of students, such as freedom from violence, rights to privacy and rest, were deliberately neglected because they will impede authoritarian, or "efficient" way of transmitting knowledge in schools and prevent individuals from excelling others in academic competition. This explains why, apart from school teachers, the majority of parents have advocated the use of CP on their children and have given permission to teachers to administer it (Ellinger and Beckham (1997), as cited in Paik (2001)). Paik (2001) found that CP is most often used by parents to punish fighting with siblings or insufficient studying.

Student rights ordinance

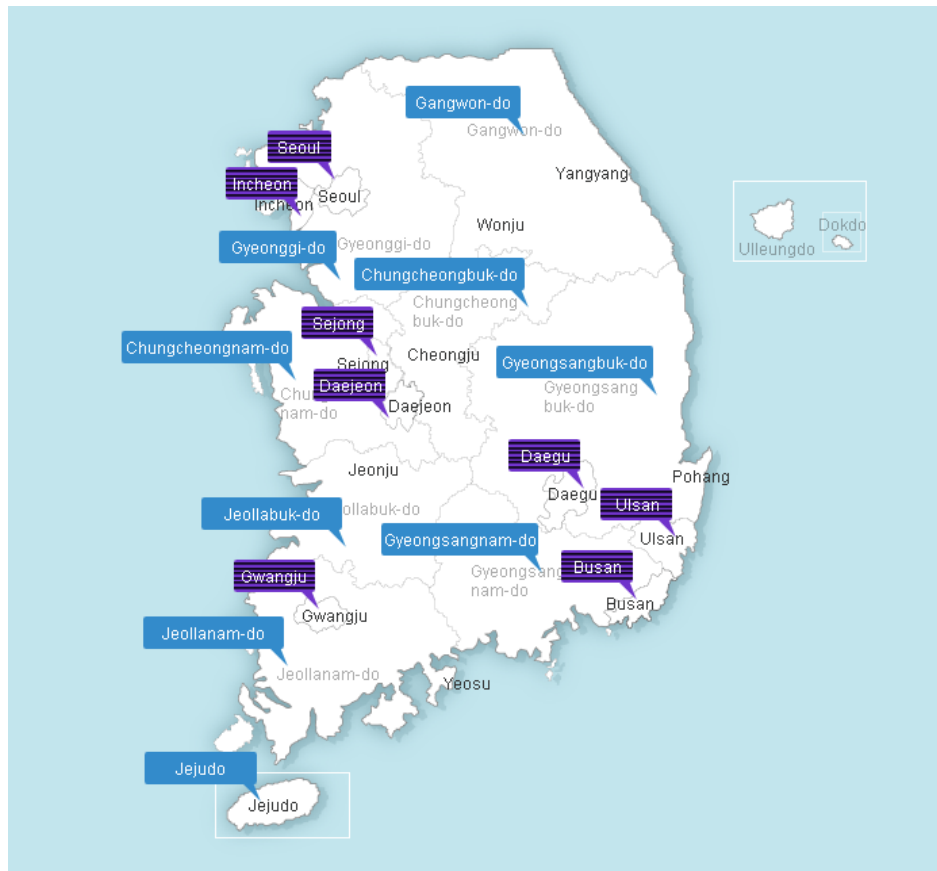


Figure 4-1: Map of local governments of Korea

From early 2000s, the Korean government faced pressure, both external and internal, to shift from authoritarian education and from overemphasis on academic competition. As mentioned above, UN CRC recommended to the Korean government abolish CP in 2003 (Committee on the Rights of the Child, 2003). UN Economic, Social, and Cultural Rights Committee expressed that it was "concerned at the increase in clinical depression and attention deficit hyperactivity disorder cases among students caused by extreme competition and academic stress" and recommended the government to "educate parents and the general public about the long-term effects of the overburdening of children with schoolwork", as well as to "curb the operation of private night schools and cram schools", and, "reassess the *Iljegosa* (NAEA, National Assessment of Education Achievement) system, which creates unnecessary competition between schools and limits the choice of study paths in higher education" (United Nations Committee on the Economic Social and Cultural Rights, 2010). Also in the domestic front, the public support for human rights-friendly education increased throughout 2000s.

Moves to prohibit CP materialized with the revision of Korea's Provincial Education law which enabled the direct election of education superintendents from 2007³. As shown in figure 4-1⁴, the Korean administrative branch consists of 12 regional local governments. Education superintendents represent those 12 regional local governments in terms of education policy. From 2010s, 4 education superintendents with liberal political orientation⁵ who were elected pushed for enactment of the reforms, which succeeded.

Although the reforms in above 4 provinces are not identical, they all incorporate the common elements to promote human rights of students in schools, such as explicit prohibition of all forms of CP, freedom from violence (including CP), freedom of rally, expression, conscience and religion, clothing and hairstyle, rights to be not discriminated based on gender, religion, social status, ethnicity, sexual orientation, grades, etc. It is also notable that the reforms guarantee students freedom to engage in educational activities after formal curricula. Prior to enactment of the reforms, students reported that they were forced to engage in so called self-study sessions or supplementary lessons after formal curricula⁶. The reforms incorporate institutional arrangements to ensure the students human rights are protected and school environment is improved : the reforms stipulate establishment of student human rights screening committee in charge

³Education superintendents were elected indirectly by representatives of parents association and government officials before 2007.

⁴Source : Ministry of Culture, Sports and Tourism of Korea (http://m.mcst.go.kr/english/kinfo/gover/local_gover.jsp)

⁵The regions and dates the reforms were enacted are : Gyeonggi-do, November 2010 ; Gwangju and Seoul, January 2012 ; Jeollabuk-do, July 2013

⁶For instance, Article 9 of Gyeonggi-do Students' Human Rights Ordinance states that "The School shall not force students to attend evening self-study sessions and supplementary lessons, etc."

of evaluation of students' human rights and adoption of relevant policies, Student Participation Committee for participation of students in education policies, appointment of the Student Rights Defense Officers who are mandated to provide students with counseling and relief when students' human rights are violated. Student Rights Defense Officers can order corrective measures to schools which is legally binding⁷

While most students, human rights activists and civic groups welcomed the enactment of the reforms, it also created major controversy in the society. Rather than engaging in policy debate on the effect of reforms, stakeholders were dragged into fierce ideological conflict between liberals and conservatives. Korean Federation of Teachers' Associations (KFTA), which is country's largest right-wing teachers union, criticized that the reforms will be detrimental to education system. According to KFTA, the reforms gives students excessive rights and no corresponding responsibilities, and infringes students' "right to education" and teachers' "right to teach" (Korean Federation of Teachers' Association, 2011). The Association emphasized "teaching and discipline of students are fundamental function of the school" as opposed to civic groups who are of the view that the human rights of the students are fundamental and inviolable (The Korea Herald, 2011). KFTA also announced that guaranteeing students' rights to rest and choice to engage in extracurricular activities (such as self-study or supplementary sessions) will lead to worsened academic outcomes and inability to maintain order in school, which will lead to more aggression and violent behavior of students. KFTA also argued that the reforms are premature to be implemented in Korea because the class size is too big to maintain order without resorting to CP.⁸ They also asserted that due to differences in school environments, schools should be able to decide disciplinary measures that is optimal for their environment. KFTA's perspective reflects that the culture of Confucianism and authoritarianism is still prevalent among teachers and school administrators. It is in line with the view that students are immature human beings who are incapable of deciding what is best for themselves and should be disciplined. KFTA also shares the view that academic outcome is more important than health and WB, as they opposed the right to rest for concerns for worsened academic outcomes. Conservative civil society and religious groups also rallied against enactment of reforms in other provinces, on the ground that they are

⁷For instance, Article 44 of Gyeonggi-do Students' Human Rights Ordinance states that "Unless there are justifiable reasons, the Office of Education, local offices of education, school and/or faculty that received the notification for corrective action from the Student Rights Defense Officer must comply and execute the notification, and report the results to the Student Rights Defense Officer and Superintendent of Education immediately".

⁸In Korean schools there were about 10 more students in a class on average than other OECD nations in 2009. The average class size of the Korean elementary schools and middle schools were 31 and 35.6 respectively. The OECD average for elementary schools and middle schools were 21.4 and 23.9 respectively.

"allowing young people to engage in indiscriminate sexual intercourse and teaching homosexuality. (Hankyoreh, 2018)". Not only private sector opposed the reforms, but also the Ministry of Education actively attempted to block the enactment, filing litigation to the Supreme Court to nullify the reform on the grounds that it was enacted without social consensus and violated relevant laws.

4.2.2 Effect of CP on children's WB

Although the relationship between CP and children's SWB is not directly suggested by theory, it could be guided by theoretical perspectives on physical abuse of children and school adjustment. One perspective is known as "cycle of violence" hypothesis following Widom (1989), which suggests that children who are physically abused by caregivers are likely to exhibit more aggressive behaviors and school maladjustment. Another perspective is the attachment theory (Veltman and Browne, 2001), which suggests that abusive environment leads to formation of attachment type that negatively affects development of characteristics conducive to school adjustment, self-esteem, or interest in school work. However, these perspectives do not distinguish CP from other physical abuses. They are also focused on physical abuse by caregivers, which can be different from CP in schools. In addition, while this chapter investigates reduction of negative effect (from negative to positive SWB), these perspectives explain incidence of negative effect (from positive to negative SWB). Past studies such as Diener and Emmons (1984) found that factors that contribute to reduction of unhappiness and to increase of happiness can be different. Kim (2000a,b) found that CP negatively affects solidarity and trust between teachers and students, and CP aggravates student maladjustment leading to even harsher CP. Furthermore, CP structures differences between "good" and "problematic" students by stigmatizing victim students. This will lead to more delinquencies by problematic students.

With regard to relevant empirical studies, a wide range of literature found that negative outcomes are associated with CP. However, most of past studies used cross-sectional data, and their suggested relationship between CP and child outcomes are correlational in nature, limiting the possibility to identify causal links. Recent meta studies by Gershoff (2017); Gershoff and Grogan-Kaylor (2016) have analyzed literature which show that CP is associated with behavioral problems such as bullying and violence against peers in school, involvement in crime, deterioration of mental health, illness (asthma and health risking behaviors such as smoking and alcohol consumption), and cognitive underdevelopment. Gershoff and Grogan-Kaylor (2016) found detrimental effect of CP in 102 studies out of 111 studies analyzed, but 70% of studies relied on cross-sectional data, so there is difficulty in proving causally link between CP and child outcomes. Neurobiological re-

search (Tomoda et al., 2009) found that severe CP (i.e. using objects for CP rather than using open hands) is associated with alterations in regions of brain's gray matter volume (GMV) related with depression, anxiety and anger-hostility. However, they point out that their control and treated groups differ significantly in terms of parent's educational attainment and perceived financial stress, and there could be reverse causality (i.e. differences in prefrontal cortical development can be associated with increased risk of exposure to CP). Zhu et al. (2019) analyzed longitudinal data of Chinese adolescents and found that CP by parents is linked with being victimized (bullied) by their peers. Um and Kim (2015) found that physical abuse including CP by parents are associated with school maladjustment (peer and teacher relationship, class attitudes, adherence to school rules, participation in school events) among Korean students, but it did not sufficiently control for potential bias from endogeneity, because they only used cross-sectional data and they did not include family level variables. However, very few attention was given to CP in schools.

Although reforms were center of controversy in Korea as mentioned above, it is striking that only one empirical study (Jung and Kang, 2015) has investigated the effect of the Korean reforms on student outcomes. Jung and Kang (2015) used DD estimation with individual-level panel data on Korea Children and Youth Panel Survey (KCYPS), and found that reforms are associated with increased misbehavior of students in treated regions, effect is insignificant for reduction in school violence. This chapter also used KCYPS, but it is different from Jung and Kang (2015) in a sense that this chapter used younger age cohorts (elementary school 1st grade students) and they used middle school students cohorts⁹. Their data is also restricted to years 2010 to 2013, and this chapter include data from 2009 to 2015. Since they only have one year before the reform, it is not possible to test if treated and control groups exhibit parallel trend in WB in pre-reform period, which is a major limitation in testing identifying assumptions of DD framework.

4.3 Data and empirical strategy

4.3.1 Description of the data and variables

Two datasets were used for analysis : school-level microdata from Korea Ministry of Education Dataset called EDSS(edu-data statistics service)¹⁰ and individual-level longitudinal data (KCYPS) from Korea National Youth Policy Institute.

⁹This chapter did not use middle school students cohorts data because it lacks SWB variables over a number of waves.

¹⁰This data is available on request from EDSS website (<https://edss.moe.go.kr>).

EDSS (Edu-Data Statistics Service) microdata

EDSS is an online web database operated by the Ministry of Education of Korea and National Statistics of Korea. The EDSS dataset is produced by primary and secondary schools (i.e. elementary, middle and high schools) and include school-level data reported annually by 2,272 middle and high schools nationwide from 2009 to 2016. Since schools included in EDSS amounts to 90% of all schools which data is available in the EDSS ¹¹, it is nationally representative.

The dataset is conducive in estimating causal impact of prohibition of CP on students. First, the dataset has longitudinal dimension, so it is possible to control for unobserved characteristics at school level and address potential endogeneity issue. The dataset also has variables of interest for pre-treatment (enactment of the reforms) period for treated and untreated regions, which is 2009 and 2010. This aspect of the data allows us to exploit DD regression estimation to identify the causal effect of the prohibition of CP. Second, the dataset has rich information on WB of students which are reliable as they are standardized nationwide (for instance, all indicators that measure health status of students have the same scale and criteria across schools, and NAEA and CSAT have the same questionnaires and are multiple choice questions) and consistent across time. Third, it is possible to disaggregate the effect of the reforms on outcomes of students by types of schools, characteristics of the teachers and duration of the reform. Types of school, in particular public and private schools, can affect the extent and intensity to which the reform is implemented, because in Korea teachers in public schools are public servants while those in private schools are not. Therefore teachers in private schools are more inclined to comply with the policies of school administrator who hold the right to appoint or dismiss its teachers. Evidence show that in pre-treatment period, students in private schools experienced more CP and emotional abuses in schools than those in public schools(ref to be included). It is also notable that the two largest teachers' unions, KTU and KTFA, expressed opposite views on the reform. Therefore teachers' membership to the either of the unions may have effect on the implementation of the reform. The effect of Ordinance may also have different by the level of the schools (elementary, middle and high schools). Some previous studies found that younger students are more likely to be subject to CP (Gyeonggi Provincial Office of Education, 2015). We can also see older age groups who are used to receiving CP in pre-treatment period. Fourth, the dataset has variables that can be used as a control for dynamic and cross-regional and school differences that addresses some concerns raised by opponents of the reforms. For instance, as stated above, the KFTA opposed the reform because class size and number of teachers per student is insufficient to maintain order

¹¹EDSS randomly removes 10% of observations for de-identification of schools before the data is provided for research

in school without imposing CP.

3 variables are selected from EDSS as dependent variables: academic performance, mental health indicator and school violence prevalence. Academic performance is measured by proportion of students in unit of analysis (i.e.school) who scored "beyond normal proficiency" in nationally administered examination called National Assessment of Educational Achievement (NAEA).¹² NAEA is relevant indicator for academic performance because it is administered across all schools in the nation, and questionnaires are identical. Therefore it can measure educational outcome of students and is free from selection bias (selection bias can exist if exams were tailored to schools and regions, poor performing schools would face easier exams than better performing schools, so the effect of academic performance could be underestimated). Among academic subjects of NAEA, Korean language is selected because it is the one of the compulsory subjects while other subjects are elective and therefore unable to compare between different schools.

Mental health is measured by number of psychiatric counseling provided to students by psychiatrist (employed or contracted by schools) per total number of students. Since the counseling is provided with students' voluntary demand for such counseling, higher rate of counseling indicates that more students are in need of psychosocial support.

Violence prevalence is measured by total number of school violence cases registered by the Autonomous Committees for Countermeasures against School Violence.¹³ Since school violence committee are obligated to review cases submitted to them by victims or teachers, we can assume that it is the most objective data available for the prevalence of school violence.

EDSS dataset is useful means to estimate the effect of student rights ordinance on student WB in a number of ways. First, it is nationally representative data, with uniform variables across control and treated regions, so potential bias arising from unobserved heterogeneity in schools can be prevented. Second, it contains variables that are relevant to dimensions of student WB which could be used as dependent as well as control variables. Third, it is one of the rare dataset which contains data before and after the enactment of student rights ordinance. However, its limitation is that it is school-level data so it is difficult to directly measure subjective WB of children. Also, it does not include younger (elementary school) students. Therefore, another dataset (KCYPS) is used in this chapter to complement these limitations.

¹²NAEA scores are categorized into normal, basic, and poor.

¹³Autonomous Committees for Countermeasures against School Violence are established in each schools as mandated in the "Korean School Violence Prevention and Countermeasure Act" which entered into force in July 30, 2004 (Statutes of the Republic of Korea, 2014)

Korea Children and Youth Panel Survey(KCYPS)

KCYPS is panel data survey that contains student level individual data that is collected by NYPI via surveyors visiting schools or interviewing parents by telephone and residence visits. This survey originally selected 7,071 students from 3 age cohorts (2,342 elementary 1st grade students, 2,373 elementary 4th grade students, and 2,351 middle school 1st grade students in the 1st wave (i.e. 2009)). The Survey selected all students from selected classrooms across nationwide schools using multiple-stage cluster sampling method, which is similar to KYPS dataset analyzed in the chapters 2 and 3. 271 classrooms were survey in total, across 16 cities/provinces. KCYPS contains rich information about demographic and socioeconomic characteristics of students, parents, and households. Students were interviewed either at school (or a place where they felt comfortable), and their parents (or guardians if parents were absent) were interviewed via telephone.

Table 4.1 shows the descriptive statistics for the variables chosen from KCYPS for analysis. Two variables, peer and teacher satisfaction(*Peer* and *Teacher* respectively), were selected from KCYPS to measure domains of SWB. *Peer* measures response to "I apologize first to my classmates when I have a fight" on scale of 1 (disagree totally) to 4 (agree very much). *Teacher* variable measures response to question "I wish my current homeroom teacher can be homeroom teacher again next year" on scale of 1 to 4. The effect of reforms on these variables is expected to show whether reforms will reduce peer violence or if it will create disorder in class and lead to more violence as argued by Teachers' Federation and suggested by Jung and Kang (2015), and whether reforms will cause disorder and negatively impact teachers' control over class or students' perception toward teachers will improve as they are free of fear of being subject to CP or other type of abuse. Time usage of student (Time spent on hanging out with friends (*Friends*) and on PT (*PT*), and duration of sleep (*Sleep*) is also selected as the dependent variables, because although they are not SWB, they measure whether reforms actually affect school practices. The reforms abolished forced evening self-study classes. So if the reforms are implemented, students would have more free time after school. It is important to find how this additional free time is spent. Students may spend more time in leisure such as hanging out with friends or sleep more. They may also spend more time on PT to raise academic scores. All time usage variables are daily average and measured in minutes. Students responded that on average, they slept for around 9 hours, hung around with friends for about an hour, and participated in PT for 34 minutes.

Table 4.2 presents descriptive statistics for variables that measure socioeconomic characteristics of students and parents. 4 variables are selected for time variant controls. *Income* is measured in annual household income (in KRW) reported by parents, which was on average around 43 million KRW (equivalent to around 35,800 USD) in the sample in 2010. Time parents spent with their child

(*Time(Parents)*) is measured by response to question "How often do parents not stay with child after school?" which ranges from 1(almost never) to 4(almost every day). This follows studies (Ma and Huebner, 2008; Nickerson and Nagle, 2004) that suggested children's SWB is associated with duration of time parents spent with them. On average, parents stay with their children often, as the value is around 1.7(1 is "almost never", 2 is "1-2 days a week"). *Moved school* is a dummy variable which takes value of 1 if student moved school from/to provinces where the reforms are not enacted in the surveyed year and 0 otherwise. This is to control for potential bias which may arise from self-selecting in or out of reforms. *Family Structure* takes value 1 if a student lives with both father and mother in the family and 0 otherwise. On average 82% of students in the sample lived with father and mother in 2010.

Table 4.1: Descriptive statistics (1) : SWB variables

	mean	sd	min	max
<u>life satisfaction (life)</u>				
How satisfied are you with your life in general?	3.86	0.93	1	5
<u>Emotion (suicidal ideation)</u>				
Sometimes I feel suicidal with no apparent reason	4.35	1.09	1	5
<u>aggression</u>				
I am often seized by an impulse to throw an object whenever I get angry	3.94	1.26	1	5
<u>peer satisfaction</u>				
I get stressed by lack of recognition from my frd.	4.31	0.98	1	5
<u>interpersonal trust</u>				
I will intervene or report to the police (teachers) if my frd. are assaulted	4.29	0.98	1	5
Observations	2844			

4.4 Empirical strategy

We first estimate the effect of reforms on WB of students by fixed effect DD regression. I estimate the following regression equation :

$$WB_{i,t} = \alpha_0 + \alpha_1 Treat_{i,t} + \alpha_X X_{i,t} + \epsilon_{i,t} \quad (4.1)$$

$WB_{i,t}$ is the within-school/student change in WB of school/student i . The variable of interest, $Treat_{i,t}$ is a dummy variable which takes the value of 1 if school i implemented the reforms in year t , and 0 otherwise. It is thus an interaction term of region and time : it takes the value of 1

Table 4.2: Summary statistics of student-level data(KCYPS) in pre-reform period(2010)

	mean	sd	min	max
<u>Time usage</u>				
Time(PT)	21.40	25.34	0.00	162.86
Time(Leisure)	219.25	88.32	0.00	630.00
<u>School Satisfaction</u>				
School	3.59	0.68	1.00	4.00
Homework	3.41	0.68	1.00	4.00
Peer	3.35	0.78	1.00	4.00
Teacher	3.54	0.69	1.00	4.00
<u>Socioeconomic characteristics(controls)</u>				
moved province	0.00	0.00	0.00	0.00
Moved School	0.04	0.20	0.00	1.00
Mother works	0.49	0.50	0.00	1.00
Income	0.04	0.05	0.00	2.00
Parent Structure	0.94	0.24	0.00	1.00
Family Structure	0.85	0.35	0.00	1.00
Observations	1918			

if the school is in the region where the reform is enacted and if it is the year when the reform comes into force. $X_{i,t}$ is a vector of school/student i 's observed socioeconomic characteristics in year t . The regression equation model assumes that the effect of reform is the same across different intensity (i.e. duration of the reform) and different institutional background, such as private and public schools, co-educational schools and single-sex schools and age cohorts. However, this assumption may not reflect reality. For instance, survey conducted by KTU indicated that some schools did not comply with the reform in early period and administered prohibited activities such as CP and evening self-study classes (Korean Teachers and Education Workers Union, 2014a). Cho (2016) also suggests that compliance to reform may differ significantly by type of schools (private or public) and different age cohorts¹⁴. In addition, Conti and Heckman (2014) suggest childhood interventions can be more productive in certain time of age. The model is thus modified in the following sections to relax this assumption and estimate the effect of reform by intensity, age co-

¹⁴In Korea, all elementary schools are public, and middle and high schools have private and public schools. In the previous chapter, I have explained that private and public schools are equal in terms of overall school quality, government subsidy, curriculum, or allocation of new students as a result of the school equalization policy. However, main difference between private and public schools are that while teachers in public schools are public servants teachers in private schools are employed by owners of those schools. Therefore teachers in private schools are under stronger control of administrator of schools than public school teachers. Private schools also enjoy a certain degree of autonomy in regulation of students and curricula.

horts and institutional differences. School and individual level fixed effect estimation was used to control for unobserved school/student characteristics. Year fixed effects were included to account for any year specific shocks. Standard error are clustered at school/student level to account for serial correlation. Before presenting the estimation results, I provide in the following subsection evidence for validity of assumptions for identification. I show that the treated and control groups were similar and exhibit common trend of change in pre-treatment period. I further show that the estimation model meets the common trend assumption that treated and control group have common trends before reform.

Drawing from findings of aforementioned previous studies on the effect of CP on cognitive ability, mental health (Gershoff, 2017; Tomoda et al., 2009) and problematic behavior (Gershoff and Grogan-Kaylor, 2016), the reforms are expected to have positive effect on academic performance, mental health and reduction of victimization to school violence.

4.4.1 Test of identifying assumptions

Are control and treated schools observationally similar in pre-treatment period?

I test whether schools and students in the treated (reformed) and control groups are statistically equivalent in terms of their socioeconomic characteristics and WB related outcomes in pre-reform period (2009 or 2010). Tables 4.3 and 4.4 present descriptive statistics of variables in pre-reform period. The schools and students are statistically very similar in pre-reform period, both in terms of WB and socioeconomic characteristics. As shown in Table 4.3, the two groups in terms of mental health and violence prevalence are statistically indistinguishable. With regard to academic performance, the control group performed better in terms of proportion of students above normal performance in NAEA result, but the difference was as small as 3.3%. As for the control variables, government subsidy per student on lunch was not statistically different, indicating that there were on average no substantial difference in proportion of poor students between the two groups. Indicators of air and lighting quality and proportion of private schools were statistically different but the difference was marginal. The between group difference was largest for class size and proportion of coed schools. On average, treated schools had greater class size by 3.38 students. This is perhaps due to the fact that there are more rural schools in control groups, while treated schools are mainly metropolitan areas. Due to migration of population from rural to urban areas, treated regions have more younger population and more students. Treated schools also have higher proportion of coed schools by 13%.

Table 4.3: Balancing test of schools' characteristics and well-being in treated and control provinces(EDSS)

	control		treated		difference	
	mean	sd	mean	sd	b	t
<u>Student outcomes</u>						
academic	68.75	19.15	66.48	18.27	2.27**	(2.87)
mental	14.35	27.81	13.86	28.90	0.49	(0.40)
violence	21.58	56.85	24.72	40.94	-3.14	(-1.53)
<u>School Characetristics(control)</u>						
class size	29.77	7.66	33.14	6.94	-3.38***	(-10.98)
air	1.13	0.49	1.23	0.64	-0.11***	(-4.28)
lighting	1.14	0.51	1.23	0.63	-0.09***	(-3.57)
govt subsidy	68762.77	90044.28	66923.19	67523.45	1839.57	(0.56)
coed	0.64	0.48	0.77	0.42	-0.13***	(-6.92)
private	0.25	0.43	0.30	0.46	-0.05**	(-2.63)
middle	0.60	0.49	0.62	0.48	-0.02	(-1.09)
Observations	1296		976		2272	

Table 4.4: Balancing test of students' SWB and characteristics in treated and control provinces (KCYPS)

	control		treated		difference	
	mean	sd	mean	sd	b	t
<u>Time Usage</u>						
Time(PT)	21.79	25.72	18.66	22.38	3.12*	(1.98)
Time(Leisure)	218.59	87.64	223.84	92.94	-5.25	(-0.82)
<u>Student WB</u>						
School	3.60	0.67	3.52	0.80	0.07	(1.30)
Homework	3.41	0.67	3.40	0.74	0.01	(0.21)
Peer	3.35	0.78	3.37	0.79	-0.02	(-0.34)
Teacher	3.54	0.69	3.52	0.73	0.02	(0.46)
<u>Student Characetristics(control)</u>						
Moved School	0.04	0.20	0.06	0.23	-0.02	(-1.08)
Mother works	0.48	0.50	0.54	0.50	-0.07	(-1.89)
Income	0.04	0.06	0.04	0.02	0.01***	(3.41)
Parent Structure	0.94	0.23	0.90	0.31	0.05*	(2.34)
Family Structure	0.87	0.34	0.78	0.42	0.09**	(3.19)
Observations	1678		240		1918	

Do treated and control groups have common time trend in SWB in the absence of treatment?

The key identifying assumption of DD estimation is that the trends of dependent variables would be the same in both treated and control groups in the absence of treatment (Angrist and Pischke, 2008). I use pre-reform data from 2009 to 2011¹⁵ to estimate differential time trends in student WB outcomes for treated and control schools. The results for school-level data (EDSS) and individual-level data (KCYPS) are presented respectively in Table 4.5 and 4.6. I regress the students' WB on series of year dummies (year 2009, 2010, and 2011) interacted with treatment dummy with year 2009 as base reference. Fixed effects was used with aforementioned time-variant control variables. Standard error are clustered at school (EDSS) and individual (KCYPS) level to address the serial correlation. The effect of the interaction variable is expected to be statistically significant if the two groups have different time trends in the absence of the reform. However, the estimated coefficients of the interaction term of year dummies with treated regions are practically zero for all dependent variables in both dataset, indicating that the time trend between treated and control schools are not statistically different. Therefore we can conclude that there exist common time trend in among treated and control schools before the reforms.

Table 4.5: Treatment-control differences of school outcomes in pre-reform period(2009-2010)(EDSS)

	(1) academic	(2) mental	(3) violence
treat x 2010	0.545 (0.562)	1.206 (0.940)	-1.119 (1.586)
Observations	6413	6413	6413
R ²	0.049	0.019	0.096

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

¹⁵In the case of KCYPS dataset, data of 2009 was not available because the 1st waves begin from 2010. Therefore years 2010 and 2011 were used as pre-reform period for KCYPS. Consequently, Gyeonggi-do is excluded because the province was implemented the reform in 2010.

Table 4.6: Treatment-control differences in pre-treatment period(2010-2011) (KCYPs)

	(1)	(2)	(3)	(4)	(5)	(6)
	Time(PT)	Time(Leisure)	School	Homework	Peer	Teacher
reform x 2011	-0.024 (2.163)	0.040 (7.292)	-0.082 (0.063)	-0.069 (0.062)	-0.050 (0.069)	-0.051 (0.061)
Observations	3535	3535	3535	3535	3535	3535
R ²	0.032	0.035	0.066	0.033	0.004	0.018

Standard errors in parentheses

Standard errors clustered at individual level; all regressions include year fixed effects.

* p < 0.10, ** p < 0.05, *** p < 0.01

4.5 Estimation results

4.5.1 General effect of reform on student WB

Estimation results for the regression equation 4.1 are reported for EDSS and KCYPs dataset in tables 4.7 and 4.8 respectively. With regard to school-level regression, the effect of reform on mental health and violence are positive and significant. The reform on average is associated with reduction of psychiatric counseling per student by 10% and reduction of school violence per student by 9.8%. However, the effect of reforms on academic performance is insignificant. Regarding the effect of socioeconomic characteristics of school, class size is positively associated with mental health and violence prevalence, which is contrary to existing literature which found that smaller class size is associated with positive educational outcomes such as educational attainment (Brown and Taylor, 2008) and student achievement (Hoxby, 2000). The effects of schools' air and lighting quality are insignificant. The effect of government subsidy on lunch is marginally significant for academic performance.

Table 4.8 shows the estimated results for KCYPs dataset. Fixed effect regression with year fixed effect and standard errors clustered at student level are performed for the effect of reform on students' time usage in PT, leisure activities (both in minutes per day), satisfaction with school life, how hard students do homework, satisfaction with peers, perception towards teachers. The effect of reforms is significant and positive for school satisfaction and students' effort on homework. Effect of reform on perception towards teachers is marginally significant at 10% significance level. With regard to effect of students' characteristics on SWB, the effect household income on PT is statistically significant : increase in income of 1 million KRW is associated with 63 more minutes on PT per day.

Possible reasons behind these results may be following : first, CP is more prevalent in certain age cohorts (probably in middle and high schools than in elementary schools as suggested by Cho (2016)) or certain type of schools (probably private schools) before reform, so the effect of prohibition of CP is limited to those groups and overall effect on the whole sample is less significant. Second, schools may have implemented reforms gradually, so immediate effect is limited but the effect increases by the duration. Third, even if the reform is fully implemented, it may create confusion among teachers and students, so in the early years of reform the effect is negative (e.g. teachers have less control over class so their teaching becomes less effective; or students use more violence or fall victim to violence and experience more negative emotions) Fourth, the effect of reform can be only effective towards certain age cohort because other cohorts have passed the critical stage as suggested by Conti and Heckman (2014).

Table 4.7: Difference-in-Differences Estimates : Baseline (EDSS)

	(1) academic	(2) mental	(3) violence
Reform	0.284 (0.270)	-10.194*** (1.453)	-9.750*** (2.179)
class size	0.037 (0.030)	-0.907*** (0.220)	-1.546*** (0.551)
lighting	0.076 (0.360)	-1.780 (2.118)	-5.247 (4.828)
air	0.029 (0.254)	-1.943 (1.799)	-3.872 (3.261)
govt subsidy	0.000* (0.000)	-0.000 (0.000)	-0.000 (0.000)
year FE	✓	✓	✓
N	24,537	24,537	24,537
R ² (within)	0.33	0.24	0.10
R ² (overall)	0.16	0.19	0.08
R ² (between)	0.43	0.13	0.05

Standard errors in parentheses
standard error are clustered at schools.
* p < 0.10, ** p < 0.05, *** p < 0.01

4.5.2 Effect of reform on student WB by intensity of reform

Tables 4.9 and 4.10 shows the estimated results for effect of reform by intensity on student outcomes for EDSS and KCYPS data respectively. In this specification, the variable of interest (reform)

Table 4.8: Difference-in-differences estimates : Baseline (KCYPs)

	(1)	(2)	(3)	(4)	(5)	(6)
	Time(PT)	Time(Leisure)	School	Homework	Peer	Teacher
Reform	2.304 (1.498)	6.199 (4.677)	0.090*** (0.035)	0.093*** (0.032)	0.048 (0.034)	0.065* (0.034)
moved province	-0.996 (2.497)	10.438 (7.613)	-0.015 (0.050)	-0.014 (0.050)	-0.055 (0.059)	-0.110* (0.056)
Moved School	0.061 (1.448)	-8.907* (4.670)	-0.009 (0.037)	0.008 (0.035)	0.005 (0.037)	0.048 (0.034)
Mother works	-0.158 (1.149)	1.648 (3.628)	-0.037 (0.028)	0.007 (0.026)	0.050* (0.026)	-0.002 (0.026)
Income	63.001** (29.595)	-96.621 (81.893)	0.025 (0.724)	-0.599 (0.682)	0.321 (0.636)	0.440 (0.679)
Parent Structure	2.738 (3.781)	13.386 (14.522)	-0.044 (0.093)	0.006 (0.088)	-0.078 (0.096)	-0.055 (0.085)
Family Structure	-0.883 (2.227)	-9.304 (6.126)	0.100* (0.052)	-0.051 (0.042)	0.000 (0.048)	0.020 (0.046)
year FE	✓	✓	✓	✓	✓	✓
N	8545	8545	8545	8545	8545	8545
R ² (within)	0.06	0.04	0.07	0.03	0.02	0.01
R ² (overall)	0.05	0.03	0.05	0.02	0.01	0.01
R ² (between)	0.03	0.00	0.03	0.00	0.00	0.01

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

is divided into duration of reform : 1 year indicates the first year of reform (for example, this takes value of 1 if the province is Seoul and year is 2012, and 0 otherwise). With regard to EDSS dataset (Table 4.9), academic performance is positively associated with reform from 4th year to 5th year of reform, which is notable as the overall effect of reform shown in table 4.7 (which assumed that the effect of reform was the same over the duration) was insignificant. As for mental health and school violence, their effect is significant from 2nd year of enactment through 5th year, and the magnitude of reform increased every year. With regard to KCYPS dataset (Table 4.10), results are similar to EDSS dataset in the sense that the effect of reform is insignificant or marginally significant (as in *Homework* variable) in the first year of reform. Variables of which the effect of reform was significant for 2nd and 3rd years are School Life satisfaction and Homework. Time spent on PT and perception toward teacher are positively associated the reform only in the 3rd year of reform. The effect of time spent on leisure and satisfaction with peer are positively associated only in the 2nd year. The reason for this is perhaps that as students enjoy more free time after enactment of reform, the reaction of parents to supplement takes a year. The reaction may take the form of increased PT, which is consistent with result in column (1) that PT increased from 3rd year of reform. It is notable that all the results are either positively associated or insignificant, but none of the results show negative effect of the reform on any measures of WB.

4.5.3 Effect of reform on student WB by age cohorts

Tables 4.11 and 4.12 report the effect of reform stratified by middle and high schools from EDSS dataset. With regard to the effect on mental health and school violence, the magnitude of reform is greater in all variables for middle schools. The effect of reform on academic performance is positive and significant for middle school student, which is only significant result across all the specifications. This result is consistent with Cho (2016), who finds that the level of awareness of student rights were lower in middle schools compared to high schools, and more middle school students reported to be subject to CP. The result is also consistent with Seoul Education Policy Institute (2015) who found that more high schools responded positively to local education offices' request to report measures to carry out the reforms, and that proportion of middle school teachers who administered CP even after the reform amounted to over 20%, while proportion of those in high school was lower. Effect of the reform on middle schools is perhaps greater because they administered more CP before the reform. Alternatively, although the prevalence of CP was similar between middle and high schools, the effect of reform could be greater because interventions have greater effect at earlier stage of life as suggested by Clark et al. (2018); Heckman (2006); Layard et al. (2014).

Table 4.9: Difference-in-Differences estimates by intensity of reform (EDSS)

	(1) academic	(2) mental	(3) violence
1 year	-0.188 (0.267)	0.040 (1.464)	-3.553 (2.267)
2 years	-0.302 (0.309)	-13.635*** (1.739)	-6.825** (3.324)
3 years	0.044 (0.344)	-18.124*** (2.193)	-18.761*** (2.973)
4 years	2.416*** (0.394)	-20.203*** (2.369)	-18.689*** (3.891)
5 years	4.240*** (0.519)	-22.758*** (3.233)	-24.831*** (5.150)
year FE	✓	✓	✓
controls	✓	✓	✓
N	24,537	24,537	24,537
R ² (within)	0.33	0.24	0.10
R ² (overall)	0.16	0.20	0.08
R ² (between)	0.41	0.13	0.05

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 4.10: Difference-in-differences estimates by intensity of reform (KCYPs)

	(1) Time(PT)	(2) Time(Leisure)	(3) School	(4) Homework	(5) Peer	(6) Teacher
1 year	0.051 (1.477)	0.787 (4.966)	0.063 (0.039)	0.072* (0.037)	0.018 (0.037)	0.042 (0.035)
2 years	2.525 (2.269)	19.305** (7.577)	0.111** (0.050)	0.128*** (0.048)	0.114** (0.045)	0.069 (0.050)
3 years	7.197** (2.810)	2.334 (7.706)	0.125** (0.050)	0.100** (0.049)	0.037 (0.047)	0.115** (0.052)
controls	✓	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓	✓
N	8545	8545	8545	8545	8545	8545
R ² (within)	0.06	0.04	0.07	0.03	0.03	0.01
R ² (overall)	0.05	0.03	0.05	0.02	0.01	0.01
R ² (between)	0.03	0.00	0.03	0.00	0.00	0.01

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 4.11: Difference-in-differences estimates by age cohorts : middle school(EDSS)

	(1) academic	(2) mental	(3) violence
Reform	0.599** (0.265)	-11.377*** (2.017)	-9.404*** (3.004)
year FE	✓	✓	✓
controls	✓	✓	✓
N	15,593	15,593	15,593
R ² (within)	0.47	0.28	0.12
R ² (overall)	0.27	0.23	0.09
R ² (between)	0.02	0.15	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 4.12: Difference-in-differences estimates by age cohorts : high school(EDSS)

	(1) academic	(2) mental	(3) violence
Reform	-0.139 (0.526)	-6.339*** (1.405)	-7.507*** (2.206)
year FE	✓	✓	✓
controls	✓	✓	✓
N	8,944	8,944	8,944
R ² (within)	0.30	0.19	0.08
R ² (overall)	0.16	0.10	0.08
R ² (between)	0.37	0.01	0.09

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

4.5.4 Effect of reform on student WB by gender

Differing effect of reforms by gender are explored in Tables 4.13 to 4.16. First, EDSS dataset was stratified by single-sex and coeducational schools. While effect of reform on mental health and school violence were both significant and positive, effect on mental health was greater in coeducational school and effect on reduction of school violence was greater for single-sex schools. This result may be partly explained by the fact that coeducational schools usually exhibit lower prevalence of school violence compared to all-boy single sex schools. However, it is not possible to distinguish all-boy and all-girl single sex schools from the EDSS dataset, so further investigation is needed to identify the reasons behind these results. From tables 4.15-4.16, I find that most of the effects of the reform on WB is significant only in the sample of boys : Boys in the treated group are more satisfied with school life and their peers, and enjoy more leisure time compared to boys in the control regions after the treatment. This result is intriguing as it is in contrast to previous study by Yang et al. (2006) which found greater detrimental effect of school violence on emotional WB in girls in Korean elementary schools.

Table 4.13: Difference-in-Differences Estimates by gender : single sex school (EDSS)

	(1) academic	(2) mental	(3) violence
Reform	-0.037 (0.431)	-10.329*** (2.095)	-15.254*** (3.054)
year FE	✓	✓	✓
controls	✓	✓	✓
N	8,122	8,122	8,122
R ² (within)	0.36	0.30	0.12
R ² (overall)	0.16	0.20	0.10
R ² (between)	0.39	0.03	0.07

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

4.5.5 Effect of reform on student WB by type of schools

Tables 4.17 and 4.18 reports estimated results by public and private schools.¹⁶ The effect is positive and significant for mental health and violence in both type of schools but it is greater for private

¹⁶KCYPS dataset does not disclose information on the this type of schools, so KCYPS dataset is excluded from analysis.

Table 4.14: Difference-in-Differences Estimates by gender : co-ed school (EDSS)

	(1) academic	(2) mental	(3) violence
Reform	0.199 (0.343)	-11.291*** (1.918)	-9.197*** (2.880)
year FE	✓	✓	✓
controls	✓	✓	✓
N	16,415	16,415	16,415
R ² (within)	0.32	0.23	0.11
R ² (overall)	0.16	0.21	0.08
R ² (between)	0.42	0.17	0.04

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 4.15: Difference-in-differences estimates : stratification by gender (boys) (KCYPS)

	(1) Time(PT)	(2) Time(Leisure)	(3) School	(4) Homework	(5) Peer	(6) Teacher
Reform	1.975 (1.965)	15.125** (6.314)	0.099** (0.050)	0.101** (0.046)	0.106** (0.045)	0.056 (0.048)
controls	✓	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓	✓
N	4438	4438	4438	4438	4438	4438
R ² (within)	0.06	0.05	0.04	0.03	0.04	0.01
R ² (overall)	0.04	0.03	0.03	0.02	0.03	0.01
R ² (between)	0.02	0.01	0.02	0.02	0.01	0.01

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 4.16: Difference-in-differences estimates : stratification by gender (girls) (KCYPS)

	(1) Time(PT)	(2) Time(Leisure)	(3) School	(4) Homework	(5) Peer	(6) Teacher
Reform	2.715 (2.320)	-4.917 (6.891)	0.059 (0.047)	0.089* (0.046)	-0.028 (0.049)	0.074 (0.048)
controls	✓	✓	✓	✓	✓	✓
year FE	✓	✓	✓	✓	✓	✓
N	4107	4107	4107	4107	4107	4107
R ² (within)	0.07	0.03	0.13	0.03	0.02	0.02
R ² (overall)	0.06	0.03	0.09	0.01	0.00	0.01
R ² (between)	0.03	0.00	0.03	0.01	0.01	0.00

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

schools than public schools. This is consistent with findings that CP has been more prevalent in private schools (Seoul Education Policy Institute, 2015).

Table 4.17: Difference-in-Differences estimates by school type : public school (EDSS)

	(1) academic	(2) mental	(3) violence
Reform	0.437 (0.339)	-8.895*** (1.832)	-6.349** (2.784)
year FE	✓	✓	✓
controls	✓	✓	✓
N	17,214	17,214	17,214
R ² (within)	0.34	0.24	0.11
R ² (overall)	0.17	0.21	0.09
R ² (between)	0.43	0.18	0.03

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

4.6 Discussion

The estimation results in general are supportive of previous studies which found CP is detrimental to children's health, antisocial behavior and cognitive development including academic achievement, as found in various disciplines and summarized in the meta-analyses by Gershoff (2017); Gershoff and Grogan-Kaylor (2016), among others. In the Korean context, it would be im-

Table 4.18: Difference-in-Differences estimates by school type : private school (EDSS)

	(1) academic	(2) mental	(3) violence
Reform	0.163 (0.447)	-10.166*** (2.231)	-10.380*** (2.923)
year FE	✓	✓	✓
controls	✓	✓	✓
N	7,323	7,323	7,323
R ² (within)	0.32	0.25	0.09
R ² (overall)	0.14	0.17	0.07
R ² (between)	0.42	0.05	0.06

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

portant to note that reform does not negatively impact academic outcomes but improves them, which refutes repeated arguments of the advocates of CP that students in reformed schools show more problematic behaviors, interrupt classes and violate other students' right to education. The results also challenges the common belief that physical abuse on children can be justified by academic success and rewards therein (as argued by Korean Federation of Teachers' Association (2011)). The results imply that policy makers should exercise patience and take into account the time lag in policy to take effect. It is also important to gather data to identify the compliance to reform : the major limitation of this analysis was due to the fact that there is no comparable data on prevalence of CP in treated and control regions. In the Korean context, it is especially important to coordinate between local education offices across treated and control regions to conduct joint survey on the effect of reforms and prevalence of violation of human rights. This would be challenging as local educational offices enjoy policy autonomy, and superintendents have different political orientations. However, efforts should be made to overcome ideological and cultural differences and institutional and intergovernmental barriers and silos.

Estimated results on different groups of students suggest that WB gains to reform is unevenly distributed across subgroups. Gains were greater for younger (middle school) students, boys, and private schools. Based on further investigation on prevalence of CP and other human rights violation, resources should be allocated more into promoting human rights of those vulnerable subgroups. As the reform also stipulates measures to prevent discrimination, it would be instrumental to identify the effect of reform on groups vulnerable to discrimination, such as immigrant, disabled, sexual and ethnic minority students.

As the reforms are implemented, we need to collect more data that enable to estimated the adult

outcomes of the reform. It would be most relevant to track individuals in existing longitudinal data such as KCYPS and collect information in areas such as adult labor market outcomes, crimes, academic achievement in tertiary education, emotional WB, among others. This would help us better identify the cost and benefits of preventing corporal in amore comprehensive perspective. It is also desirable to encourage stakeholders (teachers, school administrators, student representatives, policy makers, legislators) to engage in policy dialogue on enactment of student rights ordinance in education sector. Such dialogue should be evidence-based to prevent it from becoming ideological confrontation. Evidence based analysis and recommendations conducted by objective party will help encourage productive dialogue and consensus on nationwide reform on promoting students' human rights.

With regard to limited effect of reform on students relations with teachers, further information on teachers such as teachers' fatigue, efficacy on teaching, demand for training on human rights promotion or tackling school violence.

4.7 Conclusion

This chapter exploits reforms prohibiting CP in schools that were enacted in some parts of regions in Korea from 2009-2016. Using DD estimation method with school-level administrative data and individual level longitudinal data, this chapter estimates causal effect of banning CP on students' outcomes such as academic performance, mental health, school violence, SWB with regard to school, peer and teachers, and time usage. Stratification of estimation by age cohorts indicate that while the effect of the reforms have stronger effect on younger cohorts, while its effect is negative on some variables such as health and violence for older cohorts. The chapter also finds that some positive effect takes several years to take effect. With regard to difference in effect by subgroups, reforms has little positive effect on girls, and has positive but smaller effect on private schools than public schools. The effect on single sex and coeducational schools are mixed. Estimation results suggest that arguments on negative effect of reforms on academic outcomes is not supported by empirical evidence. They also suggest that time lag should be taken into consideration when evaluating of reforms. Information such as school level compliance to reforms, SWB measured in adulthood, or regionally comparable data on student from vulnerable groups will contribute to more accurate estimation of the effect of reforms.

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Chapter 5

Conclusion

Rapid rise of Korean economy during the last century benefited from large private and public investment on education. Fierce competition for admission in prestigious universities from young age, long hours of extracurricular education and authoritative way of education has resulted in overall increase in education attainment and top performing students in internationally comparative student assessment such as PISA. At the same time, Korean students report lowest SWB among students across countries. This phenomenon leads to the need for rigorous investigation on the effect of overemphasis on education, in particular preparation and competition for academic credentials.

The three preceding chapters investigated impact of school violence, private tutoring (PT) and student rights reforms on SWB of students. Results of chapters focusing on main empirical findings, policy implications and suggestions for future research are the following :

The second chapter investigated the effect of school violence, in direct victimization and prevalence of violence among peers, on elementary students' SWB in Korea. I analyze individual-level 5-year-longitudinal data of elementary 4th grade (10 years old) Korean students. Being victim has detrimental effect on life satisfaction with life, emotional SWB (suicidal ideation and anxiety) aggression, and peer satisfaction. Among sub-types of violence (verbal, physical and relational violence), relational violence have greater detrimental effect on SWB. Prevalence of violence among peers (i.e. classmates) increases suicidal ideation and aggression for female students. It has negative effect on life satisfaction, suicidal ideation, aggression, peer satisfaction and interpersonal trust for SWB after 5 years. This effect also is significant for female students. The results are robust if SWB variables were replace by similar variables. Policy implications are the

following. First, school policies that is currently concentrated on disciplining perpetrators should invest more on preventing less severe but more detrimental form of violence which is relational violence. Second, more innovative measures should be developed to enable students, regardless of victim status, to actively engage in tackling school violence. Third, more timely and effective protective measures are needed to protect victims and bystanders. Fourth, there is need to measures for bystanders of violence to engage more actively to counteract school violence or create environment that prevents school violence could be effective. Fifth, comprehensive programs to improve quality of interpersonal relationship among students should be developed. Third, collection of more data on peer relationship, teacher and parents' perspectives, medical information and adult SWB outcomes are recommended for future research.

Third chapter focuses on private tutoring (PT) which is pervasive and causing considerable financial and psychological burden on students and parents of Korea. I estimate the effect of PT in terms of duration and expenditure on subjective well-being (SWB) and other WB related outcomes including ranking among peer group of Korean students. Using KYPS data on 2,332 middle and high school students over 5 waves (2003 to 2007), I apply fixed effects estimation to control for potential endogeneity of PT variables. The effect of individual's consumption of PT as well as consumption of peer (school mates) and difference between the former and the latter on WB of individuals. The results suggest that increase in PT has negative effect on individual's emotional WB. Increase of PT among individual's reference group also has negative effect on domain satisfaction with school life. Results also suggest that increasing PT does not lead to rise in ranking of exam scores among school mates but it is positively associated with difference between individual's consumption of PT and consumption of PT by the reference group in PT. Such difference in PT also has negative and significant impact on emotional WB. Estimates further indicate that consuming more PT than the reference group has positive impact on satisfaction with peers. This shows that cost of PT in terms of reduction of WB is significant and could be widespread among students who consume PT but do not experience rise of relative position in terms of academic performance. Policies to tackle negative impacts of PT should take into consideration additional benefits of reducing burden of PT, as well as the need for more fundamental reform in education system that changes gains from academic competition, the need for substantial change in curricula to make studying more enjoyable, and the need for creation of better data that captures peer effect aspect of PT in more depth and causal impact on adult outcomes. Policies to change students' perception towards excessive consumption PT as positive behavior and source of social recognition are also needed. Further studies could investigate the effect of PT on adult outcomes, negative externalities of PT on public education, and differing effect of PT on students' SWB by

various distribution of academic performance.

Fourth chapter investigated the impact of reforms which prohibits corporal punishment in schools that were enacted in some parts of regions in Korea from 2009-2016. Using difference-in-differences estimation method with school-level administrative data and individual level longitudinal data, I estimated causal effect of banning corporal punishment on students' outcomes such as academic performance, mental health, school violence, SWB with regard to school, peer and teachers, and time usage. Stratification of estimation by age cohorts indicate that while the effect of the reforms have stronger effect on younger cohorts, while its effect is negative on some variables such as health and violence for older cohorts. The paper also finds that some positive effect takes several years to take effect. With regard to difference in effect by subgroups, reforms has little positive effect on girls, and has positive but smaller effect on private schools than public schools. The effect on single sex and coeducational schools are mixed. Estimation results suggest that arguments on negative effect of reforms on academic outcomes is not supported by empirical evidence. They also suggest that time lag should be taken into consideration when evaluating of reforms. Information such as school level compliance to reforms, SWB measured in adulthood, or regionally comparable data on student from vulnerable groups will contribute to more accurate estimation of the effect of reforms.

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