The Effects of Parental Neglect on Behavioral and Emotional Problems in a Child: Evidence from a Long-term Follow-up Survey in Korea

By

HWANG, Hyunseong

THESIS

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF DEVELOPMENT POLICY

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Committee in charge:

Professor Han, Baran, Supervisor

Professor Kim, Taewan

Approval as of December, 2019

ACKNOWLEDGEMENTS

Let me start by thanking all the respected professors at KDI School of Public Policy and Management. My sincere gratitude goes to my supervisor, Professor Baran Han, who has consistently supported me by giving appropriate criticism and directions on my research with warm encouragement. I would like to thank Professor Taewan Kim, who seriously advised me about my future career and encouraged me to move beyond my comfort zone and challenge the new world. I am also truly grateful to Professor Booyuel Kim, who provided a practical basis for the research to be developed and encouraged me to have a high aim in an academic field.

The times that I spent at KDI School was the most memorable journey in my entire life. It was my greatest fortune and pleasure to meet and share time with good friends during the long school day. Especially, I would like to express my special thanks to KDI School elder sisters who always thoughtfully encourage me with positive motivation.

Above all, I have greatly benefited from the support and encouragement of my family. Special thanks go to my great aunt, who has consistently provided deriving force for me to continue studying. I am also thankful to my younger brother for always being on my side and cheer me up wherever I am. Lastly, with all my heart, I wish to express my deepest gratitude and love to my parents for their endless love, great encouragement, and support during my long journey.

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The Effects of Parental Neglect on Behavioral and Emotional Problems in a Child : Evidence from a Long-term Follow-up Survey in Korea

By

Hyunseong Hwang

Abstract

This paper examines the effects of parental neglect on behavioral and emotional problems in a child (1st grade cohort in elementary school) by using 5 years long-term follow-up survey in Korea. The survey had been conducted from 2010 to 2016, targeting 1st graders in elementary school and their parents (1st grade cohort includes 2,342 individuals at the initial survey in 2010). Based on data availability, this paper uses 5 years (2011, 2012, 2013, 2015 and 2016) panel dataset, and empirical analysis is implemented based on the panel fixed effects model using a strongly balanced panel data set. Results show that parental neglect leads to behavioral and emotional problems in a child; depression has the largest and significant effect size among developmental outcomes. This study is expected to be used as basic data for expanding and improving domestic child welfare policy to protect neglected children and prevent them from vulnerable conditions.

Keywords: Parental Neglect, Behavioral and Emotional Problems in a Child, Parental Absent Hours, Parental Role and Attitude, Household Socioeconomic Status

Ⅰ. Introduction

It is undeniable fact that parental role is the most important factor to affect to development of behavior and emotion in a child. Especially, childhood for school-age is the most important period in human life. A lot of literature has emphasized the importance of the parental role in childhood. Landry, Smith, and Swank (2003) presented that consistent responsiveness in terms of parenting skills across early childhood leads to faster rates of cognitive and social growth of a child. Paulussen-Hoogeboom, Stams, Hermanns, Peetsma, and Van Den Wittenboer (2008) showed that mothers' authoritative parenting style partially mediated the relations between negative emotionality and internalizing/externalizing problems in a child.

In Korean society, the effects resulted from a lack of parental role have been easily observed and it has aroused the necessity of a well-organized child welfare policy. A lack of parental role can be externalized in various ways such as neglect, physical or emotional abuse. Among the types of child maltreatment, this paper focuses on parental neglect that a child recognizes. Most of the previous literature has mainly analyzed the severity of child abuse rather than neglect and presented the effect of parental abuse on child developmental outcomes. Neglect frequently occurs in double-income households and poor families, but its' severity is less perceived than any other abuses (Kim & Yang, 2007). Chung (2014) stated that parental neglect was not presented in the media, because child neglect was considered less shocking than physical and sexual abuse (as cited in Park, 2014). Chung (2014) also mentioned that in academia, research on neglect is rare enough to be called '(research) neglect of (child) neglect' (as cited in Park, 2014). It is pointed out that the media and academia are not interested in this issue (Park, 2014). Given that the number of children staying alone after school has rapidly increased, the research on parental neglect is required.

Regarding existing studies on the relationship between neglect and child development, most of the analysis objects have been mainly limited to elementary school children (only higher graders) or only adolescents. Furthermore, few studies have dealt with all-inclusive child developmental problems caused by neglect. This study contributes to the literature by providing unified outcomes of

behavioral and emotional problems in a child which are externalizing and internalizing symptoms based on the long-term (5 years) follow-up survey; and by expanding the subjects (duration) of analysis to overall elementary school childhood including a first year of middle school compared to existing studies. In addition to this, not only to analyze parental neglect including abuse, but this paper deals with parents' absent hours to figure out whether the parental absent hours have a direct or significant effect on child developmental outcomes. Given that there are very few studies analyzing the effect of parental absenteeism related to neglect, this study could provide significant implications to the existing literature.

For the detailed analysis, this paper presents the heterogeneous effects of parental neglect by a child's gender and a mother's education level. According to Han (2007), the effect of parenting behavior on aggression or problem behavior of children depends on their gender (as cited in Choi & Ryu, 2012). That is, child developmental outcomes resulted from parental attitude or role could be different by gender. In addition, considering that parental socioeconomic status (SES) is known to have a direct impact on developmental factors in a child such as a child's self-esteem or academic achievement (Kim & Ko, 2007), this study utilizes maternal education level which is one of the representative variables explaining SES to identify whether the result of neglect depends on a mother's education level. To sum up, considering that there exists limited literature on the analysis of heterogeneous outcomes of neglect by a child's gender and a mother's education level, the present study plays an important role to expand the interpretation of the existing literature and presents the direction to go further.

The ideal way to capture the effect of parental neglect on the behavioral and emotional problems in a child is panel fixed effects analysis that can remove the time-invariant unobservable individual characteristics. This paper uses observed data of the Korean Children & Youth Panel Survey 2010 (KCYPS 2010) from Korea National Youth Policy Institute (NYPI) started in 2010 and the survey was persisted for 7 years. Based on the data availability, this paper analyzes 5 years (2011, 2012, 2013, 2015 and 2016) survey on the sample for the 1st graders in elementary schools (1st graders cohort includes 2,342 individuals at the initial survey in 2010).

As an overview of the analyzed results, parental neglect has a statistically significant effect on all of the factors that construct behavioral and emotional problems in a child. When parental neglect increases by one standard deviation, lack of concentration increases by .079 standard deviations; aggression increases by .089 standard deviations; physical symptom increases by .086 standard deviations; social withdrawal increases by .053 standard deviations; and depression increases by .121 standard deviations. Especially, the estimate of depression has the largest magnitude compared to other outcome variables. The above results are consistent with the male child group, but no significant and different effects of neglect by gender are figured out. The different result of neglect by the mother's education level is significant only in social withdrawal. Regarding parents' absent hours, it does not have a significant and direct effect on a child's outcomes. That is, parents' internal attitude or role that a child recognizes is a more important factor rather than physical factors such as absent hours at home.

To go further from the empirical analysis, the present study also suggests policy implications based on examining the current child welfare policy. This paper can be utilized as a basis to improve the existing domestic child welfare system in terms of parental neglect.

This paper is organized as follows. Section II reviews the literature related to parental neglect. Section III presents the background, data, and measurement that this study used for the analysis. In Section IV, the empirical strategy based on the panel fixed estimation model is presented, followed by the empirical results and interpretations on lack of concentration, aggression, physical symptom, social withdrawal, and depression that constitutes behavioral and emotional aspects in a child in Section V. Section VI presents the robustness check to solidify the outcomes of empirical analysis. Section VII discusses the limitation of the present study. Finally, Section VIII provides conclusion and policy implications to improve the existing child welfare policy in Korean society.

Ⅱ. Literature Review

Section Ⅱ provides related literature dealing with neglect by parents. In specific, Section Ⅱ will be followed by definition/types of parental neglect, psychological theory to provide the

rationale on the importance of the parental role. Furthermore, previous literature about child developmental outcomes resulted from parental neglect will be presented. Lastly, various factors that affect child developmental outcomes except parental neglect will be examined to capture the causal effect of parental neglect.

2.1 Definition and Types of Parental Neglect

According to Korean Child Welfare Act revised in January in 2001, neglect is defined as abandoning a child who needs protection/care from a protector or act of neglect that pretermits fundamental protection/nurture and treatment including the necessities of life (Ahn & Kang, 2003). In specific, neglect means the failure of a parent or other caregivers who have responsibility for a child to provide necessary clothing, shelter, food, medical care or supervision to the extent that the child's safety, health, and well-being are endangered (Children's Bureau, 2019). The above formal definitions of neglect are seemed to connote the protector's intentionality. However, as considering the current socio-economic changes such as the increase of double-income households or breakdown of a family which could lead to unintended parent's absence, it would also make children perceive themselves as being neglected. Kim (2014) stated that some recent studies suggest that how children perceive parental attitudes may be a more important factor than actual parental attitudes (as cited in Yoo & Chung, 2014). Yoo and Chung (2014) presented that this is because the behavioral response of children depends on how the children perceive and interpret their parental attitude or role. Thus, in the circumstances to define and interpret neglect, the child's recognition should be a consideration.

Welch and Bonner (2013) specifically categorized parental neglect into 3 types; (1) Care Neglect (Deprivation of Needs), (2) Supervisory/Environmental Neglect, and (3) Medical Neglect. Care neglect (deprivation of needs) means that a victim child is denied from basic food, clothing, and shelter or was abandoned without any supplies of such resources (Welch & Bonner, 2013). Supervisory/Environmental neglect indicates improper supervision by a caregiver who is responsible for a child; examples of improper supervisions could be defined as unintentional drowning in any body of water such as pools, lakes, and bathtubs; electrocution; poisoning; burns; or unintentional gunshot (Welch & Bonner, 2013). Medical neglect includes cases that a child is denied from

psychiatric care or medical and the need for the care that could lead to the child's death (Welch & Bonner, 2013).

2.2 Psychological Theory on Child Development

To suggest the importance of parental child-rearing attitude especially in early childhood, attachment theory by Bowlby (1988), security theory by Ainsworth (1970) and developmental theory by Cicchetti and Toth (1995) could be adaptable[1]. The above theories will be rationale to explain the relationship between parental neglect and developmental problems in a child.

According to attachment theory by Bowlby (1988), in order to survive safely in the surrounding environment, a child especially in the early stages of development process chooses an adult (usually parents) who is sensitive and consistently responds to the child's demand, and the child develops a strong emotional bond with the adult, and attachment relationships to maintain proximity to the caregivers, when stressed, ill, or afraid (Yoo & Chung, 2014; Scharfe, 2017). Differences in sensitivity of care or child-rearing attitude by parents are proposed to be associated with individual differences in attachment (Scharfe, 2017). Yoo and Chung (2014) stated that, for example, if a parent is reluctant and indifferent to a child's needs, the child may behave to avoid attachment, and these behavioral patterns could let the child be aggressive in the relationships with others or be too self-dependent. In other words, the child's behavioral development directly depends on the attachment or relationships with the parents, and it considerably affects personality, cognitive ability, and social development throughout a lifetime; from early childhood and adolescence to adulthood.

In addition to the attachment theory by Bowlby (1988), the security theory by Ainsworth (1970) explains the importance of maternal role. According to security theory, when young children are in a state of an unfamiliar environment, they need a secure dependence on their parents as a prerequisite (Jang, 2004). Regarding the experiment targeting infants (from a month to 24 months)

[1] Yoo and Chung (2014) introduced attachment theory (Bowlby, 1988) and developmental theory (Cicchetti & Toth, 1995) in their paper dealing with the issue of neglect and applied theories to explain the relationship between neglect and child behavioral development. The section of psychological theory on child development in this paper primarily referred to the paper of Yoo and Chung (2014) to establish and provide detailed rationale for presenting the importance of parental role and attitude in the childhood. Furthermore, Jang's (2004) paper introduced security theory (Ainsworth, 1970). The present paper mainly referred to Jang (2004) in terms of security theory by Ainsworth (1970).

conducted in Uganda from 1953 to 1954, Ainsworth figured out that there are individual differences in infant attachment, and the mother's sensitivity and responsiveness are required for stable attachment (Jang, 2004). Kwon, Kim, Ahn, and Lee (2005) also suggested that a mother's parenting attitude affects to children's behavioral problems, so a mother's consistent and affective parenting attitude could be the role of mother, which is essential for the healthy development of a child.

According to developmental theory by Cicchetti and Toth (1995), parenting styles and the corresponding child behavioral strategies will change as the child grows up and develops (as cited in Yoo & Chung, 2014). Del Giudice (2009) presented that in the time of infants and toddlers, they rely solely on parental care for survival; in the time of lower elementary school years, they depend on parental care to develop social competence in social areas which are rapidly expanded to peers, schools, and other adults (as cited in Yoo & Chung, 2014). Developmental theory indicates that parental care, supervision or attention to their child especially in early childhood has a significant impact on social development in the child. Furthermore, a child's self-recognition and expectation on parental role or attitude could flexibly change according to their developmental stages. That is, in the process of developmental stages, a lack of parental appropriate attitude and proper concern could disturb or delay the behavioral development at the childhood which is the most important period in human life.

2.3 Correlation between Parental Neglect and Child Development

2.3.1 Physical Problems

Neglected children are suffered from serious physical problems. Ahn and Kang (2003) clinically analyzed the outcome of neglect which is called "Failure to Thrive (FTT)" that the most common symptom being observed in neglected children. This symptom means the lack of weight and growth retardation resulting from the lack of taking proper nutrition associated with inadequate parenting (Ahn & Kang, 2003). According to Augoustinos (1987), Azar et al. (2017), Azar, Barnes, and Twentyman (1988), Fantuzzo and Polite (1990), and Kolko (1992), cognitive and language deficits have been discovered clinically to a victim child (as cited in Ruiz, 2018). Furthermore, Disalvo (2018) presented that the long term depression is more likely to cause greater inflammation in

the brain. According to Dr. Jeff Meyer, the greater inflammation in the brain has a common response with Alzheimer's and Parkinson's disease which are degenerative brain diseases as they progress (as cited in Disalvo, 2018). This process eventually damages the brain tissue in a long period (Disalvo, 2018).

2.3.2 Behavioral and Emotional Problems

Parental neglect does not only affect physical developments, but it leads to behavioral and emotional problems. Behavioral and emotional problems are categorized into externalizing and internalizing problems. Achenbach and Edelbrock (1893) presented that behavioral problems refer to externalizing problems such as aggression, hyperactivity, lies, kleptomaniac, and harassing other people; emotional problems refer to internalizing problems such as loneliness, social withdrawal, anxiety, depression, and fear (as cited in Kim, Mo, Choi, & Lee, 2008).

In addition to those physical injuries, psychological sequelae may be left behind with diminished mental capacities, developmental retardation, hyperactivity, and impulsive behavior (Ahn & Kang, 2003). Bland, Lambie, and Best (2018) stated that neglect can hamper early cognitive ability, sociality, personality, learning, and other life outcomes. Yoo and Chung (2014) empirically analyzed the effects of neglect on depression and aggressive behavioral problems of lower graders in elementary school, and it was found that the higher the degree of neglect, the more the problem of depression and aggression of a child increases. To examine the effects of after-school self-care on children’s development empirically, Lee and Cho (2011) showed that children’s school achievement and internalizing problems are negatively affected by the after-school self-care experiences, that is, school achievement decreases and internalizing problem also increases as the level of after-school self-care experiences increase.

Song and Park (2017) captured the effect of neglect and abuse by parents on delinquent behaviors in adolescents and presented that the more severe neglect or abuse, the probability that the adolescent does delinquent behavior increases. Furthermore, Currie and Tekin (2006) found that maltreatment nearly doubles the possibility of participating in many types of crime in a child. Meanwhile, Bland et al. (2018) reviewed the literature on the relationship between parental neglect

that a child experienced and violent behavior in the adult that may exist in future and stated that neglect may be the predictive factor to explain violent behavior in the adult, although the existing research is limited. According to Bland et al. (2018), protective factors for neglected children may prevent their violent behavior when they become adults, and further research is required to mitigate links between subtypes of neglect and violence in adults.

Furthermore, regarding outcomes related to sociality, Yoo and Chung (2014) presented that in the early stages of schooling, when exposed to the indifference of parents and neglect of supervision, a child has difficulties in peer relations and school life as well as in the relationship between parents. Also, a lack of cognitive development and social skills that should have been accomplished at early childhood could lead to maladjustment in terms of social behavior (Yoo & Chung, 2014). Cho, Ju, and Hyun (2015) presented that adolescents who have more negative parenting experience tend to feel more social withdrawal at the same time that increases the probability of exposure to victimization of peer delinquent behavior. Cho et al. (2015) also stated that in the context of the initial effects of negative parenting attitudes on victimization, it was figured out that the initial value of social withdrawal partially mediated the relationship between negative parenting attitudes and victimization of peer delinquent behavior. K. W. Park (2014) also analyzed the effects of parental maltreatment including neglect and abuse on school adjustment which is mediated by social withdrawal in adolescents. What K. W. Park (2014) found was that parental neglect directly affects adolescents' school adjustment and also indirectly affects adolescents' school adjustment mediated by social withdrawal. The results presented that parental neglect is a more significant contributor to adolescents' school adjustment than adolescents' social withdrawal (K. W. Park, 2014).

2.3.3 Behavioral and Emotional Problems: Different Outcomes by Gender

Lee (2017) examined personal characteristics among the neglect victims (age of 0 to 17). What Lee (2017) found was that there was no significant difference in gender regarding the total number of damage; the distribution of boys (51.5%) were somewhat more than girls (48.5%) based on a reported survey. Yoo and Chung (2014) especially figured out that the different effects by gender of a child, and they presented that neglect has a significant effect only on female lower-graders in terms

of depression and aggression, compared to male lower-graders (Yoo & Chung, 2014). The study of Asscher, Van der Put, and Stams (2015) also examined gender differences in the correlation between neglect/abuse during childhood and sexual/violent offending in juvenile delinquents. Asscher et al. (2015) figured out that female juvenile offenders who had a history of neglect and maltreatment than male juvenile offenders were more frequently the victim of sexual and physical abuse. Jwa (2018) examined the effects of parenting behavior on the internalizing and externalizing problems of children and adolescents; especially, in elementary school students, supervision and affection were common protective factors for internalization problems, while neglect and abuse were common risk factors.

2.3.4 Behavioral and Emotional Problems: Different Outcomes by Mother's Education

A mother's parental attitude is a considerable factor to directly affect developmental outcomes in a child, and the mother's parenting skills could be affected by the mother's education level. Kwon et al. (2005) presented that if a mother's education level is high, scores of problem behavior in a child regarding all areas are low. This result is consistent with the analysis of Lee (1997); a mother's SES influence to mother's parenting behavior which affects a child's problem behaviors through social ability in the child, when educational attainment is considered as one of the important variables for indicating SES (as cited in Kwon et al., 2005). Furthermore, Lee (1997) stated that the higher the parents' education level, the higher the children's score on adaptation (as cited in Kwon et al., 2005). A child's school enrollment and completion could also be related to a mother's education level. Hernandez and Napierala (2014) stated that there exist disparities dividing children whose mothers had a bachelor degree, compared to those whose mothers had not graduated from high school, respectively; 36 percent for not being enrolled in Pre-Kindergarten at ages 3-4 vs. 63 percent for not being enrolled; 2 percent for not graduating from high school on time vs. 40 percent for not graduating from high school on time (by age 19). In addition to academic outcomes in children, a mother's educational attainments have a major impact on cognitive functioning and socio-emotional functioning in children, as those whose mothers have limited educational attainment are more likely to experience both lower levels of cognitive functioning and lower levels of socio-emotional functioning (Hernandez & Napierala, 2014).

2.4 Factors to Affect Child Developmental Outcomes

In the causal relationship between parental neglect and developmental problems in a child, neglected child is also affected by other factors such as individual characteristics (age), household characteristics (parental employment/education level, household income, and the total number of siblings). Lee and Kim (2014) stated that child developmental outcomes are affected by various factors such as a child, family, and parental characteristics except for child maltreatment.

First of all, developmental outcomes depend on a child's age. According to Kwon et al. (2005), the sixth graders had more problem behaviors in all areas than the fifth graders. In the sixth graders, the emotional growth is not harmonized with the physical growth, and it seems that the sixth graders enter adolescence experiencing a lot of emotional changes and conflicts (Kwon et al., 2005).

Many kinds of literature show that SES indicators such as household income, parental education levels, and occupation are widely associated with child developmental outcomes. According to reviewed studies on mechanisms between SES indicators and child development by Bradley and Corwyn (2002), each SES indicator is associated with cognitive development and academic attainment in a child. According to Bradley and Corwyn (2002), Brooks-Gunn and Duncan (1997) and Brown, Cohen, Johnson, and Salzinger (1998), parental employment factors or poverty not only directly affect child behavioral development, but they also affect the parents' economic and mental stress which could lower the quality of child support (as cited in Yoo & Chung, 2014). Currie and Tekin (2006) figured out that children who are in low SES are both highly likely to suffer more damaging effects and be maltreated. Furthermore, according to several studies, low SES children suffer more often from symptoms of mental disorders and maladaptive social functioning than children who are from more affluent environments (Bolger et al., 1995; Brooks-Gunn & Duncan, 1997; Lahey et al., 1995; McCoy et al., 1999; McLeod & Shanahan, 1993; Moore et al., 1994; Patterson et al., 1989; Sameroff et al., 1987; Starfield, 1989; Takeuchi et al., 1991, cited in Bradley & Corwyn, 2002).

Siblings can also directly affect child developmental outcomes. According to McHale, Kim, and Whiteman (2006), when siblings serve as social partners, role models, and foils, they can have

direct effects on each other's development (as cited in McHale, Updegraff, & Whiteman, 2012). On the other hand, Brown et al. (1998); Huang and Lee (2008) stated that the greater the number of siblings, the less resources parents can invest to their children, which negatively affects children's behavioral development (as cited in Yoo & Chung, 2014).

As discussed above, this study will examine the causal effects of parental neglect on behavioral and emotional problems while controlling relevant factors such as the individual, family, and SES indicators that are known as variables affecting developmental outcomes in a child.

Ⅲ. Background, Data, and Measurement

3.1 Background on Parental Neglect

In Korea, child maltreatment has been a serious social issue. According to the Korean Statistical Information Service, the total number of cases regarding child maltreatment had sharply increased from 2014 to 2016. <Table 1> presents the statistical results on the type of child maltreatment in all of the regions in Korea.

<Table 1> Korean Child Maltreatment Case

(unit: number of cases)

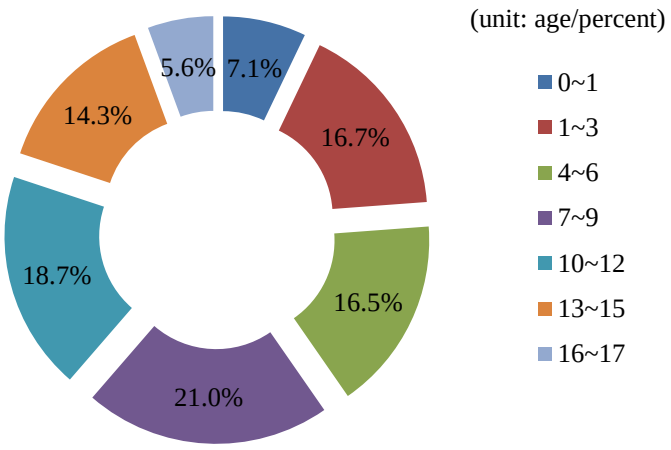
Types of Child Maltreatment	2016	2015	2014
Physical Violence	2,715	1,884	1,453
Emotional Violence	3,588	2,046	1,582
Sexual Abuse	493	428	308
Neglect	2,924	2,010	1,870
Overlap Abuse	8,980	5,347	4,814
Total	18,700	11,715	10,027

Source: Korean Statistical Information Service (2018).

Among types of child maltreatment, parental neglect is the particular type of child maltreatment, which had frequently occurred until 2008 and it was found to be the most common type of child maltreatment following overlap abuse from 2009 to 2014 (Lee, 2017). Based on cases of neglect reported to the National Child Protection Agency, Lee (2017) presented that most of the actors of neglect were parents (87.6%) and surrogate caregivers (8.2%), regarding family characteristics of

neglected children. In this case, the rate at which the characteristics of parents become characteristics of neglect actors is higher than any other types of maltreatment. National Child Protection Agency (2016) examined individual characteristics of a victim child by neglect; the distribution by age of the victim child (as cited in Lee, 2017). Lee (2017) interpreted that in infants' group under the age of 1 (0 years old alone), the discovery rate of neglect was found to be the highest at 7.1%; the age of 7-9 was 21.0%, which was 7.0% on average in each of age group; the discovery rate of neglected victims of junior students (below age of 15) was evenly distributed (5.0 - 7.0% on average in each of age group). Based on the report, neglect damage was the highest among infants under 1-year-old (Lee, 2017).

[Figure 1] Individual Characteristics of a Victim Child by Neglect (Distribution by Age)



Note: The above figure referred to the recitation of Lee (2017), and was reorganized by the author in this paper.
Source: National Child Protection Agency (2016). 2015 National Child Abuse Status Report, pp. 124-126 (as cited in Lee, 2017).

There exist various interpretations of the cause of child neglect. Child neglect also results from various factors such as parents' or caregivers' serious mental problems, stress resulted from work, lack of education, unemployment, alcoholism, and household poverty. Nowadays, one of the representative reasons is the increase in the social activities of women or the increase of double-income households. It can lead the parents to have the burden of child-rearing at the home, which could increase the number of neglected children and children who are in the blind spot of care, after child schooling (Kim et al., 2018). Except for ill-intentioned parents, unintentional parents' absence

could make a child recognizes that him/herself is being neglected. The number of neglected children is on an upward tendency, which means that parental neglect is a serious social problem in Korea.

3.2 Data[2]

This paper used observed data; Korean Children & Youth Panel Survey 2010 (KCYPS 2010) from Korea National Youth Policy Institute (NYPI). Started from 2010, Korean Children & Youth Panel Survey 2010 (KCYPS 2010) selected the samples of children and adolescents representing 1st graders, 4th graders in elementary schools and 1st graders in middle schools (about 2,342 in each cohort) through a stratified multi-stage cluster sampling, and also collected the samples of their parents or caregivers. It is a longitudinal survey that repeats and tracks the growth, development, and environment of the individual over 7 years. Based on the data availability, this paper was analyzed based on the strongly balanced panel data set using the sample of the 1st graders for 5 years (2011, 2012, 2013, 2015 and 2016). The initial 1st graders' sample was 2,342 and the retention rate of the sample was 85.5% which had the lowest attrition rate among those three cohorts. <Table 2> presents the baseline statistics and detailed measurement on the variables will be explained in the following next section.

[2] Data section referred to Korean Children & Youth Panel Survey 2010 user guide book provided by Korea National Youth Policy Institute (2017). The author in the present study reorganized and summarized the explanation provided by Korea National Youth Policy Institute (2017).

<Table 2> Baseline Statistics

VARIABLES	Average (standard deviation)			
	Female	Male	Total	Range
Panel A: Independent Variable				
Neglect	6.402	6.487	6.445	4 - 16
	(2.038)	(2.052)	(2.045)	
Abuse	6.830	7.567	7.203	4 - 16
	(2.328)	(2.611)	(2.502)	
Absent Hours per Week	8.558	8.414	8.485	0.75 - 28
	(8.088)	(7.989)	(8.037)	
Observations			3711	
Panel B: Dependent Variable				
Lack of Concentration	13.93	15.07	14.52	7 - 28
	(3.736)	(3.893)	(3.860)	
Aggression	10.80	10.88	10.84	6 - 24
	(3.242)	(3.204)	(3.222)	
Physical Symptom	13.25	12.98	13.11	8 - 32
	(4.440)	(4.383)	(4.413)	
Social Withdrawal	10.52	10.17	10.34	5 - 20
	(3.628)	(3.503)	(3.568)	
Depression	15.58	15.14	15.36	10 - 40
	(5.085)	(4.882)	(4.986)	
Observations			10565	
Panel C: Control Variable				
Grade (school grade)	4.315	4.317	4.316	2 - 7
	(1.851)	(1.854)	(1.853)	
Father Education (1=university graduation)	0.608	0.623	0.616	0 / 1
	(0.488)	(0.485)	(0.486)	
Mother Education (1=university graduation)	0.547	0.570	0.559	0 / 1
	(0.498)	(0.495)	(0.497)	
Father Work (1=work)	0.989	0.989	0.989	0 / 1
	(0.102)	(0.104)	(0.103)	
Mother Work (1=work)	0.605	0.581	0.593	0 / 1
	(0.489)	(0.493)	(0.491)	
Household Income (log)	8.418	8.410	8.414	4.4 - 10.6
	(0.477)	(0.481)	(0.479)	
Siblings (total number)	1.210	1.130	1.169	0 - 7
	(0.661)	(0.632)	(0.648)	
Observations			9641	

Notes: The average of each independent and dependent variable is based on the aggregated score after conducting reverse scaling. Responses are based on the Likert scale (1 – Never. 2 – Rarely. 3 – Sometimes. 4 – Often), and each response is calculated as the score. Absent hours per week are calculated by the author: (absent hours per day*absent days per week). Grade 7 refers to 1st graders in middle school. The variables of parental education level are measured as dummy variables (less than 2 years or 4 years university graduation=0; more than 2 years or 4 years university graduation=1). The variables of parental work are measured as dummy variables (have a job=1; do not have a job=0). Household income is measured as a log of household income. Siblings are measured as the number of total siblings that a child has.

3.3 Measurement

3.3.1 Independent Variable

Child Maltreatment is classified into two categories: (1) Neglect and (2) Abuse. A variable of neglect consists of 4 questions (alpha= .66)[3], and representative examples are ‘Parents focus more on their work rather than me’ or ‘Parents do not care me when I am in sickness’. Abuse variable also consists of 4 questions (alpha= .67), and representative examples are ‘If I am doing wrong, parents always try to beat me’ or ‘Parents often curse at me’. Each response on both neglect and abuse is based on the Likert scale (1 – Never. 2 – Rarely. 3 – Sometimes. 4 – Often). In this study, reverse-scaling is conducted for the analysis, which means that the higher the score, the higher the degree of neglect and abuse by parents. Furthermore, to figure out the correlation between parents’ absence at home related to neglect and child behavioral/emotional problems, absent hours per week is calculated by the author; (absent hours per day*absent days per week). Responses of neglect and abuse are based on a child's self-reported and absent hours per week are based on parents’ self-reported.

3.3.2 Dependent Variable

The behavioral and emotional problem in a child is classified into 5 categories: (1) Lack of Concentration, (2) Aggression, (3) Physical Symptom, (4) Social Withdrawal, and (5) Depression. Lack of concentration consists of 7 questions (alpha= .82) and representative examples are ‘It is hard to sit calmly when studying’, or ‘I often make mistakes because of the lack of concentration’. Aggression consists of 6 questions (alpha= .82) and representative examples are ‘I always angry every day’ or ‘I sometimes interfere with what others do’. Physical Symptom consists of 8 questions (alpha= .86), and representative examples are ‘I often have a headache’, ‘It is hard to breathe’, or ‘I cannot fall asleep’. Social withdrawal consists of 5 questions (alpha= .88), and representative examples are ‘It is awkward if there are a lot of people around me’ or ‘It is difficult to tell my opinion clearly to others’. Depression consists of 10 questions (alpha= .89) and representative examples are

[3] Cronbach’s alpha is a measure of internal consistency which means that how closely related a set of items (questions) are as a group. In other words, it is considered to be a measure of scale reliability (UCLA, 2019). According to a generally accepted rule, alpha of 0.6-0.7 indicates an acceptable level of reliability, and 0.8 or greater refers to a very good level (Ursachi, Horodnic, & Zait, 2015).

'Everything is hard to me', 'I want to die', or 'I have lots of worries'. Responses on all of the dependent variables are also based on the Likert scale. Along the same lines as the independent variables, reverse-scaling is applied to analyze the responses clearly, that is, the higher the score, the higher the degree of behavioral and emotional problems in a child. All of the responses regarding questions on behavioral/emotional problems are derived from a child self-reported.

3.3.3 Control Variable

This paper controls the individual socioeconomic (demographic) status (SES) to capture the causal effect of neglect by parents on behavioral and emotional problems in a child. Control variables include grade (age) in school, parents' education level, whether parents work, household income, and total number of siblings. A grade of a child in school ranges from 2nd grade in elementary school to 7th grade (1st grade in middle school) except 5th grade in elementary school. A child's gender is automatically omitted because of panel fixed effects. Parents' education level is measured as dummy variables (less than 2 years or 4 years university graduation=0; more than 2 years or 4 years university graduation=1). Also, parents' work is measured as dummy variables (have a job=1; do not have a job=0). Household income is measured as a log of household income. Siblings are measured as the number of total siblings that a child has. In sum, individual characteristics of the child and household environment are included as control variables.

Ⅳ. Empirical Strategy

To measure the overall effect of parental neglect on behavioral and emotional problems in a child, the estimation of panel fixed effects regression model is formed as below:

$$Y_{it} = \beta_1 Neglect_{it} + \beta_2 Abuse_{it} + \beta_3 Absent\ Hours_{it} + X_{it}\gamma + \alpha_i + \theta_t + \varepsilon_{it} \quad (1)$$

The variable Y_{it} is the outcomes for the child i in time t. The variable $Neglect_{it}$ is an indicator for the degree of neglect that the child i recognizes at the time t. β_1 captures the effect of neglect. The variable $Abuse_{it}$ is an indicator for the degree of abuse that the child i recognizes at the time t. β_2 captures the effect of abuse. The variable $Absent\ Hours_{it}$ is an indicator for the parents'

absent hours per week at home on the child i at the time t. X_{it} is a vector that includes the socio-demographic controls such as grade, father's education, father's work, mother's education, mother's work, household income, and the total number of siblings to deal with the factors that might affect independent variables or outcome variables. α_i is the panel fixed effects, θ_t is a set of year fixed effects, and ε_{it} is the idiosyncratic error term.

To identify potential differential effects for a child by gender, this paper also runs:

$$Y_{it} = \beta_1 Neglect_{it} + \beta_2 Abuse_{it} + \beta_3 Absent\ Hours_{it} + \delta Neglect_{it} * Female + X_{it}\gamma + \alpha_i + \theta_t + \varepsilon_{it} \quad (2)$$

The coefficient of interaction term δ captures the differential effects of neglect by gender. As $Female$ is a dummy variable, the estimated coefficient of neglect for a female child could be ($\beta_1 + \delta$); the estimated coefficient of neglect for a male child would be β_1 derived from $Female$=0. The variable of $Female$ is automatically omitted because of the panel fixed effects.

Furthermore, to measure the potential differential effects of neglect by a mother's education level, the additional panel fixed effects regression model is followed as:

$$Y_{it} = \beta_1 Neglect_{it} + \beta_2 Abuse_{it} + \beta_3 Absent\ Hours_{it} + \rho Neglect_{it} * ME_{it} + X_{it}\gamma + \alpha_i + \theta_t + \varepsilon_{it} \quad (3)$$

ME_{it} is a dummy variable that indicates a mother's education level; if the mother has less than 2 years or 4 years of university graduation, ME_{it}=0; more than 2 years or 4 years of university graduation, ME_{it}=1 (ME_{it} is also included in X_{it}). The coefficient of interaction term ρ estimates the differential effects of neglect by the mother's education level. As ME_{it} is a dummy variable, the estimated coefficient of neglect for the child who has the mother with a relatively higher education level is ($\beta_1 + \rho$); β_1 captures the estimated coefficient of neglect for the child who has the mother with a relatively lower education level.

To expand the empirical analysis, additional predictor variables (Abuse and Absent Hours per Week) are included in the main model. Among independent variables (Neglect, Abuse and Absent Hours per Week), the multicollinearity issue does not matter in this empirical analysis. The results on VIF (Variance Inflation Factor) are presented as below:

<Table 3> Collinearity Diagnostics

Variables	VIF	1/VIF
Neglect	1.02	0.984
Abuse	1.02	0.982
Absent Hours per Week	1.00	0.995
Mean VIF	1.01	-

Note: All of the independent variables are standardized to have a mean of zero and a standard deviation of one. Each value of VIF is less than 10 that there is no multicollinearity issue among independent variables.

Ⅴ. Empirical Results

5.1 Behavioral and Emotional Problems: Standardized Outcomes

<Table 4> presents the effects of parental neglect on behavioral and emotional problems in a child (Columns 1 to 15). All of the independent and dependent variables are standardized to have a mean of zero and a standard deviation of one.

<Table 4> provides evidence that neglect has negative effects on all behavioral and emotional developments in a child. First of all, columns (1) to (3) describe the results on a lack of concentration. In column (3), for interpretation, if neglect increases by one standard deviation, lack of concentration in the child is expected to change by .079 standard deviations, holding other things constant. The estimate is significant at a 1% significance level. Compared to column (1) and (2), the estimate of neglect in column (3) has decreased, which indicates that the estimates of neglect could be partially correlated to abuse and absent hours. Considering the VIF results mentioned above, the correlations among independent variables are very low, so the estimate of neglect is still unbiased after including abuse and absent hours (Column 3). Regarding this, all of the estimates of neglect on different outcomes in a child are likely to be unbiased and consistent (Columns 3, 6, 9, 12, and 15). When neglect increases by one standard deviation, aggression increases by .089 standard deviations (Column 6), physical symptom increases by .086 (Column 9), and social withdrawal increases by .053 (Column 12). All the estimates are statistically significant at reasonable significance levels. Analyzed results are in line with what Kim (2009) found; neglect negatively affects overall internalizing and

externalizing development problems in a child such as self-esteem, depression, anxiety, aggression, and delinquent behaviors. Furthermore, these negative outcomes affect school life, academic performance and even lead to social crime in the child (Kim, 2009). In other words, the analyzed behavioral and emotional problems could be mediating role that influences to school life, academic performance in a negative way and even leads to social crime in a long-term.

<Table 4> presents that the estimates of neglect on each outcome in a child have similar magnitude, but it has a somewhat larger magnitude especially in depression outcome. In column (15), if neglect increases by one standard deviation, depression in a child is expected to change by .121 standard deviations, holding other things constant. The estimated effect is quite larger relatively rather than any other estimated coefficients on outcomes in a child. This result is also consistent with the paper of Kim (2009) presented that neglect has a considerable and significant effect on depression and its magnitude is similar to the effect of physical abuse.

Neglect and even abuse have a statistically significant effect on all the outcomes in a child, except absent hours. In contrast to the above results, all the estimates of absent hours per week are not statistically significant. That is, absent hours per week have no direct and significant effect on behavioral and emotional problems in a child, but the matter is whether the child recognizes that him/herself has been neglected by the parents. According to the results in <Table 4>, it is speculated that a child’s self-recognition on parental attitude or role in terms of neglect is the main factor to affect behavioral and emotional problems in the child rather than only parents' absent hours per week itself. This interpretation is consistent with what Webster-Stratton and Herbert (1994) found; parenting attitude is the main cause of a child's behavioral problem (as cited in Kwon et al., 2005). Furthermore, this interpretation could be supported by the Yoo (1993) who suggested that a mother's parenting attitude perceived by children is the most important and direct impact on the psychological adaptation of children (as cited in Kwon et al., 2005).

<Table 4> Effects of Parental Neglect on Behavioral and Emotional Problems in a Child

VARIABLES	Lack of Concentration			Aggression			Physical Symptom			Social Withdrawal			Depression		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Neglect	0.101***	0.090***	0.079***	0.105***	0.088***	0.089***	0.110***	0.094***	0.086***	0.083***	0.077***	0.053**	0.158***	0.139***	0.121***
	(0.013)	(0.013)	(0.023)	(0.013)	(0.013)	(0.025)	(0.013)	(0.013)	(0.023)	(0.012)	(0.012)	(0.023)	(0.013)	(0.013)	(0.023)
Abuse		0.111***	0.098***		0.167***	0.168***		0.157***	0.172***		0.062***	0.067***		0.191***	0.208***
		(0.014)	(0.026)		(0.015)	(0.030)		(0.015)	(0.028)		(0.014)	(0.026)		(0.015)	(0.029)
Absent Hours			-0.029			-0.021			0.037			0.003			-0.000
			(0.021)			(0.023)			(0.024)			(0.021)			(0.022)
Grade	-0.029***	-0.008	-0.022*	-0.002	0.031***	0.008	0.111***	0.141***	0.128***	-0.006	0.006	0.004	0.085***	0.122***	0.112***
	(0.006)	(0.007)	(0.012)	(0.006)	(0.007)	(0.014)	(0.006)	(0.007)	(0.014)	(0.006)	(0.007)	(0.012)	(0.006)	(0.007)	(0.014)
Father Education	0.138*	0.141*	0.099	0.075	0.079	0.140	0.040	0.044	0.193	0.005	0.007	0.162	-0.029	-0.024	0.068
	(0.075)	(0.073)	(0.151)	(0.083)	(0.081)	(0.134)	(0.080)	(0.077)	(0.145)	(0.076)	(0.076)	(0.126)	(0.083)	(0.079)	(0.158)
Mother Education	-0.004	-0.007	-0.082	0.091	0.087	0.099	0.072	0.068	0.075	0.086	0.085	0.268**	0.112	0.108	0.225*
	(0.062)	(0.061)	(0.109)	(0.069)	(0.069)	(0.121)	(0.074)	(0.073)	(0.121)	(0.066)	(0.066)	(0.135)	(0.069)	(0.067)	(0.124)
Father Work	0.211*	0.212*	0.018	0.052	0.054	0.424	-0.170	-0.169	-0.186	-0.043	-0.043	-0.080	-0.039	-0.037	-0.067
	(0.123)	(0.124)	(0.248)	(0.145)	(0.144)	(0.265)	(0.165)	(0.165)	(0.373)	(0.137)	(0.137)	(0.236)	(0.133)	(0.134)	(0.245)
Mother Work	0.033	0.038	0.178**	0.047	0.052	0.072	0.041	0.047	0.136	0.036	0.037	-0.058	-0.021	-0.015	0.035
	(0.037)	(0.036)	(0.085)	(0.040)	(0.040)	(0.086)	(0.038)	(0.038)	(0.090)	(0.038)	(0.039)	(0.081)	(0.040)	(0.040)	(0.082)
HH Income	-0.027	-0.031	0.072	0.006	0.001	-0.044	0.015	0.011	0.009	0.052	0.050	0.101	-0.017	-0.021	0.003
	(0.044)	(0.044)	(0.083)	(0.042)	(0.041)	(0.096)	(0.043)	(0.042)	(0.081)	(0.045)	(0.045)	(0.082)	(0.041)	(0.042)	(0.096)
Siblings	-0.096	-0.104	-0.249**	-0.030	-0.041	-0.015	-0.095	-0.106	-0.021	-0.070	-0.075	-0.099	-0.117	-0.130*	-0.063
	(0.073)	(0.072)	(0.125)	(0.084)	(0.084)	(0.133)	(0.090)	(0.091)	(0.146)	(0.076)	(0.076)	(0.150)	(0.076)	(0.077)	(0.171)
Constant	0.267	0.197	-0.282	-0.151	-0.264	-0.222	-0.464	-0.571	-0.738	-0.273	-0.312	-0.797	-0.056	-0.193	-0.552
	(0.387)	(0.386)	(0.750)	(0.386)	(0.383)	(0.844)	(0.397)	(0.393)	(0.775)	(0.398)	(0.399)	(0.746)	(0.370)	(0.372)	(0.844)
Observations	9,630	9,622	3,421	9,629	9,621	3,421	9,633	9,625	3,423	9,633	9,625	3,423	9,631	9,624	3,422
R-squared	0.086	0.097	0.090	0.039	0.061	0.064	0.117	0.135	0.119	0.031	0.034	0.028	0.086	0.113	0.106
Number of id	2,182	2,182	1,486	2,182	2,182	1,484	2,181	2,181	1,485	2,182	2,182	1,486	2,182	2,182	1,486
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Columns (1) to (3) show the coefficients for lack of concentration. Columns (4) to (6) are aggression. Columns (7) to (9) are physical symptom related to health problems. Columns (10) to (12) are social withdrawal related to the problems of having communication with others. Columns (13) to (15) are depression. All of the independent and dependent variables are standardized to have a mean of zero and a standard deviation of one. Regressions are panel fixed estimation models with year fixed effects. Robust standard errors are reported in parentheses. Baseline variables indicating socioeconomic status are included as controls: grade, father's education, mother's education, father's work, mother's work, household income and the number of siblings. Absent hours are measured as per week. Income indicates a log of household income. All of the variables are measured based on a self-reported survey.
*** p<0.01, ** p<0.05, * p<0.1

5.2 Heterogeneous Outcomes: Gender and Mother Education Level

<Table 5> presents the heterogeneous effects of neglect by gender. The interaction term of Neglect*Female indicates the differences between male and female children regarding the effect of neglect. The results show that there exist no significant and different effects of neglect by gender. The analyzed outcomes are partly consistent with several kinds of literature. Gallo, Munhoz, de Mola, and Murray (2018) investigated whether there are gender differences in the effects of child maltreatment on an adult's depression and anxiety based on reviewing related literature. According to Widom, DuMont, and Czaja (2007), they presented that the correlation between overall parental maltreatment and the diagnosis of depression was higher in women compared to men, although the difference was not statistically significant (as cited in Gallo et al., 2018). Hagborg, Tidefors, and Fahlke (2017) presented that for both girls and boys, emotional mistreatment had significant impacts on both mental health and mental well-being; there were also significant interaction effects between levels of emotional mistreatment and gender. The results by Hagborg et al. (2017) are not consistent with the results derived from this paper. Those different results might result from the different sample size, age of a child, method of data collection and identification strategy. This speculation is based on the suggestion of Hagborg et al. (2017) that these divergent results could be depended upon such as sample size, age of the participants, how data were collected and the use of self-rating scales.

The coefficients on the variable of neglect indicate the outcomes of the male child group. Overall, <Table 5> shows that there are larger effect sizes of neglect on all behavioral and emotional problems among the male child group compared to the female child group; the effects of the female child group could be derived from the sum of coefficients of neglect and interaction term. In both internalizing symptoms (emotional problems: physical symptom, social withdrawal, and depression) and externalizing behavior (behavioral problems: lack of concentration and aggression), the effect size of neglect is much larger among in the male child group; neglect has significant effect on lack of concentration (.088 standard deviations in Column 1), aggression (.112 standard deviations in Column 2), physical symptom (.090 standard deviations in Column 3), social withdrawal (.076 standard deviations in Column 4), and depression (.126 standard deviations in Column 5) at a reasonable

significance level. The estimate of aggression (Column 2) and depression (Column 5) is relatively larger than estimates of other outcome variables in the male child group. The results are in line with the studies of Crittenden, Claussen, and Sugarman (1994) and Spinazzola et al. (2014) presenting a larger increase in externalizing behaviors as an effect of emotional maltreatment in a male child rather than a female child (as cited in Hagborg et al., 2017). Furthermore, Han (2007) also stated that boys are experiencing more problem behavior than girls (as cited in Choi & Ryu, 2012). However, this result contradicts with the studies of both Ge, Conger, and Elder (2001) and Paul and Eckenrode (2015), who presented that as an effect of emotional maltreatment, internalizing symptoms for girls increase more than boys (as cited in Hagborg et al., 2017). The studies of Ge et al. (2001) and Paul and Eckenrode (2015) are partly consistent with the analysis of Yoo and Chung (2014); the higher the degree of neglect, the more the girls' depression and aggression problems appeared, but it did not have the significant effect on depression and aggression problems in boys. However, their samples only include lower graders which are contrasted with the samples covering lower and higher graders in this paper. That is, the sample sizes could be the factor resulting in divergent outcomes.

The results of this paper are consistent with the following literature. Nauert (2018) presented that boys tend to respond to chronic neglect with more aggressive or delinquent behavior than girls. Nauert (2018) suggested that boys historically have been more likely to engage in aggressive behavior than girls, but the margin of difference has been decreasing over the past 20 years. That is, aggression of a female child is also significantly affected by neglect or abuse as much as a male child. Furthermore, this study is consistent with the comments by Hagborg et al. (2017); emotional maltreatment such as neglect or abuse had significant effects on all developmental outcomes (i.e. internalizing/externalizing symptoms, psychosomatic symptoms, and mental well-being) among boys and girls.

Regarding the heterogeneous effects of neglect by gender, previous literature has divergent interpretations of results. Further studies are required to clarify the gender differences in terms of child neglect, and the interpretation of the present study could contribute to further research dealing with outcomes of neglect by gender.

<Table 5> Heterogeneous Outcomes by Gender

VARIABLES	Lack of Concentration	Aggression	Physical Symptom	Social Withdrawal	Depression
	(1)	(2)	(3)	(4)	(5)
Neglect	0.088***	0.112***	0.090***	0.076**	0.126***
	(0.032)	(0.034)	(0.031)	(0.031)	(0.030)
Abuse	0.098***	0.169***	0.172***	0.068***	0.209***
	(0.026)	(0.030)	(0.028)	(0.025)	(0.029)
Absent Hours per Week	-0.029	-0.020	0.037	0.004	-0.000
	(0.021)	(0.023)	(0.024)	(0.020)	(0.022)
Neglect*Female	-0.021	-0.051	-0.010	-0.050	-0.011
	(0.043)	(0.047)	(0.045)	(0.044)	(0.045)
Grade	-0.022*	0.009	0.129***	0.004	0.112***
	(0.012)	(0.014)	(0.014)	(0.012)	(0.014)
Father Education	0.102	0.146	0.195	0.168	0.069
	(0.150)	(0.133)	(0.145)	(0.126)	(0.158)
Mother Education	-0.080	0.104	0.076	0.273**	0.226*
	(0.110)	(0.122)	(0.122)	(0.136)	(0.125)
Father Work	0.024	0.439	-0.183	-0.065	-0.064
	(0.250)	(0.270)	(0.374)	(0.232)	(0.245)
Mother Work	0.179**	0.075	0.136	-0.056	0.036
	(0.085)	(0.086)	(0.090)	(0.081)	(0.082)
Household Income	0.074	-0.040	0.010	0.106	0.003
	(0.083)	(0.096)	(0.081)	(0.082)	(0.096)
Siblings	-0.245**	-0.005	-0.019	-0.089	-0.061
	(0.124)	(0.132)	(0.146)	(0.152)	(0.171)
Constant	-0.315	-0.299	-0.754	-0.874	-0.568
	(0.749)	(0.847)	(0.776)	(0.746)	(0.845)
Observations	3,421	3,421	3,423	3,423	3,422
R-squared	0.090	0.064	0.119	0.029	0.106
Number of id	1,486	1,484	1,485	1,486	1,486
Controls	YES	YES	YES	YES	YES
Panel FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

Notes: Column (1) shows the coefficients for lack of concentration. Column (2) indicates aggression. Column (3) is physical symptom related to health problems. Column (4) is social withdrawal related to the problems of having communication with others. Column (5) is depression. The interaction term of Neglect*Female presents the different effects of neglect by gender. The coefficient of neglect indicates the effect of the only a male child. Sum on the coefficient of neglect and Neglect*Female indicates the effect of the female. All of the independent and dependent variables are standardized to have a mean of zero and a standard deviation of one. Regressions are panel fixed estimation models with year fixed effects. A variable of gender is automatically dropped by fixed effects analysis which eliminates the time-invariant individual characteristics. Robust standard errors are reported in parentheses. Baseline variables indicating socioeconomic status are included as controls: grade, father's education, mother's education, father's work, mother's work, household income and the number of siblings. Absent hours are measured as per week. Income indicates a log of household income. All of the variables are measured based on a self-reported survey.

*** p<0.01, ** p<0.05, * p<0.1

<Table 6> Heterogeneous Outcomes by Mother's Education Level

VARIABLES	Lack of Concentration	Aggression	Physical Symptom	Social Withdrawal	Depression
	(1)	(2)	(3)	(4)	(5)
Neglect	0.057*	0.085**	0.057	0.005	0.091***
	(0.034)	(0.038)	(0.036)	(0.032)	(0.034)
Abuse	0.098***	0.168***	0.172***	0.068***	0.209***
	(0.026)	(0.030)	(0.028)	(0.025)	(0.029)
Absent Hours per Week	-0.029	-0.021	0.037	0.003	-0.000
	(0.021)	(0.023)	(0.023)	(0.020)	(0.022)
Mother Education*Neglect	0.042	0.009	0.056	0.095**	0.059
	(0.043)	(0.046)	(0.044)	(0.042)	(0.043)
Grade	-0.022*	0.008	0.129***	0.004	0.112***
	(0.012)	(0.014)	(0.014)	(0.012)	(0.014)
Father Education	0.098	0.140	0.192	0.159	0.066
	(0.151)	(0.134)	(0.145)	(0.126)	(0.159)
Mother Education	-0.084	0.099	0.072	0.262*	0.221*
	(0.110)	(0.121)	(0.121)	(0.135)	(0.124)
Father Work	0.026	0.426	-0.174	-0.060	-0.055
	(0.250)	(0.266)	(0.375)	(0.232)	(0.247)
Mother Work	0.182**	0.073	0.141	-0.050	0.040
	(0.086)	(0.086)	(0.090)	(0.082)	(0.082)
Household Income	0.073	-0.044	0.011	0.103	0.004
	(0.083)	(0.096)	(0.081)	(0.082)	(0.096)
Siblings	-0.244*	-0.014	-0.015	-0.089	-0.057
	(0.126)	(0.133)	(0.146)	(0.149)	(0.169)
Constant	-0.304	-0.227	-0.767	-0.847	-0.583
	(0.753)	(0.844)	(0.777)	(0.748)	(0.844)
Observations	3,421	3,421	3,423	3,423	3,422
R-squared	0.091	0.064	0.120	0.031	0.107
Number of id	1,486	1,484	1,485	1,486	1,486
Controls	YES	YES	YES	YES	YES
Panel FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

Notes: All of the independent and dependent variables are standardized to have a mean of zero and a standard deviation of one. The coefficients of interaction term; Mother Education*Neglect present the heterogeneous effects by maternal education level. The variable of mother education is a dummy variable, which means that 1=more than 2 years of college graduation, and 0=below high school graduation. Regressions are panel fixed estimation models with year fixed effects. Robust standard errors are reported in parentheses. Baseline variables indicating socioeconomic status are included as controls: grade, father's education, mother's education, father's work, mother's work, household income and the number of siblings. All the variables are measured based on a self-reported survey.
*** p<0.01, ** p<0.05, * p<0.1

<Table 6> shows the heterogeneous effects of neglect by a mother's education level. As a dummy variable, the variable of mother education is sorted by 1=more than 2 years of college/4 years of university graduation; 0=below high school graduation. The interaction term of Mother Education*Neglect indicates the differences in the effect of neglect in terms of a mother's education level. The results present that there exists a significantly different effect of neglect by a mother's education level only on social withdrawal outcome. That is, there is a significant difference in social withdrawal in a child between a mother's education levels by .095 standard deviations (Column 4) when neglect increases by one standard deviation. It means that the effect of neglect is much larger on social withdrawal in the state that a mother has a higher education level, compared to a mother who has a below high school education level.

Generally, it is known that a mother's education level and SES of household significantly affect social skills in a child (Arroyo, Renart, Saurina, & Saez, 2017; Ölçer & Aytar, 2014; Doh, Shin, Kim, Park, & Na, 2012). In other words, the mother's higher education level and higher SES positively and directly affect social skills in the child. However, on the one hand, maternal expectations resulted from higher SES can cause children to feel social burden or achievement pressure. This interpretation could be reasonable given that the effect of a mother's education level on social withdrawal in a child is .262 standard deviations and significant (Column 4). According to Stull (2013), parents with high SES were inclined to hold higher academic expectations for their children compared to those with low SES, which means that the percentage of parents who expect their children to receive a bachelor's degree increases with family SES. The problem is that these parental expectations derived from SES are often in discord with the child's objective achievements. The percentage of parents with low-and middle-SES of higher-achieving students expecting their child to earn at least a bachelor's degree is lower than that for higher SES parents of lower-achieving students (Stull, 2013). From a child's point of view, the child from higher SES may have relatively higher expectations on themselves than the child of lower SES. Given the same degree of neglect, if a child from the household of higher SES thinks that his or her achievements have fallen short of his or her parents' tacit expectations, or if a child with lower SES has a relatively higher achievement, the child

with higher SES might feel more social withdrawal and lose social confidence caused by comparison.

On the one hand, only the variable of neglect indicates the effects derived from a mother who has below high school graduation level. Neglect has a significant effect on lack of concentration (.057 standard deviations in Column 1), aggression (.085 standard deviations in Column 2), and depression (.091 standard deviations in Column 5) at a reasonable significance level, except physical symptom (Column 3) and social withdrawal (Column 4).

Sum on coefficients of neglect and Mother Education*Neglect indicates the effects of neglect by a mother who has a higher education level. Above the significantly different effects on social withdrawal, it is speculated that the overall effect of neglect is much larger in a child whose mother has higher education level, compared to a mother with below high school education level. These results indicate that the magnitude of the coefficient is larger in a child whose mother has a higher education level than whose mother has a relatively lower education level in terms of total developmental problems.

To sum up, although the possibility that other factors are combined cannot be excluded in this case, the results for now can be concluded with the following implications: It is commonly believed that mothers with higher level of education have a positive effect on the developmental outcomes of children, and this statement is reasonable based on what Arroyo et al. (2017) found; when a mother has attained a higher level of education, this leads to significant decreases of the likelihood of a child having mental health problems, however, low SES in household increases the risk of a child exhibiting behavioral problems such as being hyperactive or antisocial. However, when neglect is combined, the mother's SES may no longer have a positive effect on child developmental outcomes. Above results on total developmental problems in a child are also partly supported by the findings of Doh et al. (2012); the direct path between SES of household and sociality in a child is no longer significant when maternal abuse and neglect were considered together, that is maternal abuse and neglect completely mediate the relationship between SES of household and the child's sociality. These findings have implications in that maternal abuse and neglect have a greater impact on young children's pro-sociality than the household's socioeconomic level (Doh et al., 2012). From this point

of view, the interpretation of overall results in <Table 6> could be expanded that neglect has a more significant and direct effect on child developmental outcomes when it is combined to a mother's education level, even though a mother has a higher level of education.

Very little literature focuses on the heterogeneous outcomes of neglect by a mother's education level, but the above interpretations would be one of the potential factors to contribute to further research dealing with the heterogeneous outcomes of neglect by a mother's education level.

VI. Robustness Check

<Table 7> presents the results for robustness check in unbalanced panel data after dropping the missing values of each variable. The estimates are robust and consistent even based on unbalanced panel data. All the estimates are also derived from the standardized analysis method.

<Table 7> shows that all of the estimates of neglect are still positive and statistically significant at the reasonable significance levels, holding other things constant. When neglect increases by one standard deviation, lack of concentration increases by .079 standard deviations (Column 3), aggression increases by .090 standard deviations (Column 6), physical symptom increases by .086 standard deviations (Column 9), social withdrawal increases by .053 standard deviations (Column 12), and depression increases by .12 standard deviations (Column 15). The coefficients of neglect are still close to the estimates of <Table 4> using strongly balanced panel data. Also, depression still has a larger effect size compared to other developmental problems in a child (.12 standard deviations in Column 15). Furthermore, even abuse has still a positive and significant effect on all of the outcomes in a child. In contrast to the above results, all the estimates of absent hours per week are still not statistically significant. Even after removing missing values on each variable, absent hours per week still does not have a direct or significant effect on behavioral and emotional problems in a child.

Thus, whether the analysis is based on strongly balanced panel data (including missing values) or unbalanced panel data (excluding missing values), presented results regarding the effect of parental neglect on behavioral and emotional problems in a child are consistent and robust.

<Table 7> Robustness Check (unbalanced panel)

VARIABLES	Lack of Concentration			Aggression			Physical Symptom			Social Withdrawal			Depression		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Neglect	0.088***	0.078***	0.079***	0.105***	0.089***	0.090***	0.104***	0.087***	0.086***	0.060***	0.053**	0.053**	0.141***	0.120***	0.120***
	(0.022)	(0.023)	(0.023)	(0.024)	(0.025)	(0.025)	(0.023)	(0.024)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Abuse		0.097***	0.098***		0.167***	0.167***		0.173***	0.172***		0.068***	0.068***		0.209***	0.209***
		(0.026)	(0.026)		(0.030)	(0.030)		(0.029)	(0.028)		(0.026)	(0.026)		(0.029)	(0.029)
Absent Hours			-0.029			-0.022			0.036			0.003			-0.003
			(0.021)			(0.023)			(0.024)			(0.021)			(0.022)
grade	-0.039***	-0.020*	-0.022*	-0.024*	0.009	0.008	0.093***	0.126***	0.128***	-0.009	0.004	0.004	0.071***	0.111***	0.111***
	(0.011)	(0.012)	(0.012)	(0.012)	(0.014)	(0.014)	(0.013)	(0.014)	(0.014)	(0.012)	(0.012)	(0.012)	(0.012)	(0.014)	(0.014)
Father Education	0.116	0.118	0.103	0.149	0.152	0.141	0.173	0.175	0.193	0.164	0.165	0.166	0.082	0.085	0.084
	(0.155)	(0.153)	(0.153)	(0.139)	(0.136)	(0.136)	(0.149)	(0.146)	(0.145)	(0.128)	(0.128)	(0.128)	(0.163)	(0.159)	(0.160)
Mother Education	-0.071	-0.082	-0.083	0.118	0.100	0.099	0.092	0.074	0.075	0.274**	0.266**	0.267**	0.243*	0.220*	0.220*
	(0.109)	(0.110)	(0.109)	(0.123)	(0.121)	(0.122)	(0.120)	(0.122)	(0.121)	(0.134)	(0.135)	(0.135)	(0.125)	(0.125)	(0.125)
Father Work	0.045	0.028	0.017	0.459*	0.431	0.423	-0.171	-0.200	-0.187	-0.070	-0.081	-0.080	-0.034	-0.069	-0.070
	(0.241)	(0.250)	(0.248)	(0.252)	(0.267)	(0.265)	(0.364)	(0.376)	(0.373)	(0.234)	(0.236)	(0.236)	(0.212)	(0.244)	(0.245)
Mother Work	0.168*	0.168**	0.179**	0.065	0.065	0.073	0.148	0.149*	0.136	-0.057	-0.057	-0.058	0.035	0.036	0.037
	(0.087)	(0.085)	(0.085)	(0.086)	(0.085)	(0.086)	(0.092)	(0.089)	(0.090)	(0.081)	(0.081)	(0.081)	(0.084)	(0.082)	(0.082)
HH Income	0.074	0.071	0.071	-0.039	-0.044	-0.044	0.013	0.008	0.007	0.102	0.100	0.100	0.005	-0.001	-0.001
	(0.083)	(0.083)	(0.083)	(0.096)	(0.096)	(0.096)	(0.082)	(0.081)	(0.081)	(0.082)	(0.082)	(0.082)	(0.095)	(0.096)	(0.096)
Siblings	-0.246**	-0.243*	-0.249**	0.005	0.011	0.007	-0.036	-0.030	-0.023	-0.102	-0.100	-0.099	-0.051	-0.044	-0.044
	(0.125)	(0.126)	(0.125)	(0.136)	(0.134)	(0.133)	(0.149)	(0.148)	(0.149)	(0.154)	(0.153)	(0.154)	(0.174)	(0.174)	(0.174)
Constant	-0.247	-0.297	-0.275	-0.178	-0.263	-0.247	-0.601	-0.689	-0.717	-0.750	-0.785	-0.787	-0.443	-0.550	-0.548
	(0.744)	(0.752)	(0.751)	(0.834)	(0.842)	(0.845)	(0.775)	(0.780)	(0.776)	(0.742)	(0.749)	(0.748)	(0.824)	(0.844)	(0.845)
Observations	3,413	3,413	3,413	3,413	3,413	3,413	3,413	3,413	3,413	3,413	3,413	3,413	3,413	3,413	3,413
R-squared	0.081	0.089	0.090	0.042	0.063	0.064	0.096	0.118	0.119	0.024	0.028	0.028	0.074	0.107	0.107
Number of id	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: All of the results are derived from unbalanced panel data after dropping missing values. All of the independent and dependent variables are standardized to have a mean of zero and a standard deviation of one. Regressions are panel fixed estimation models with year fixed effects. Robust standard errors are reported in parentheses. Baseline variables indicating socioeconomic status are included as controls: grade, father's education, mother's education, father's work, mother's work, household income and the number of siblings. Absent hours are measured as per week. Income indicates a log of household income. All the variables are measured based on a self-reported survey.

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

Ⅶ. Limitation of the Study

Even though the empirical analysis of this paper is based on using panel fixed effects to capture the causal effect; reverse causality, endogeneity issue, and measurement error are still concerning issues.

Kim and Doh (2017) stated that there exist reciprocal effects between neglect on the one hand and an adolescent's depression and delinquent behavior on the other hand. In other words, not only that parental neglect affects depression and delinquent behavior in the adolescent, but depression and delinquent behavior in the adolescent could lead to parental neglect which means reverse causality. If a child is severely aggressive, parents could leave the child alone or do not sincerely care for the child anymore. This case could make the child feel being neglected. Potential reverse causality could be observed.

Regarding endogeneity issue, panel fixed effects estimation assumes that time-invariant unobservable individual characteristics are controlled. However, it is hard to control time-variant unobservable individual characteristics such as parental stress, school/household environmental transition, sense of accomplishment within school or other time-variant omitted variables. Furthermore, the initial differences in terms of child developmental outcomes could lead to overestimate bias. A child who has an initially higher degree of depression could sensitively or excessively recognize parental neglect than a child who does not have any depression. These initial differences could also be derived by gender. Lee and Kim (2014) presented that a level of depression or anxiety in a female adolescent was much higher rather than a male adolescent even if we take account of child maltreatment.

All of the responses to construct the panel data set are based on a self-reported survey. The self-reported survey could lead to measurement errors. One of the potential measurement errors is that children who have been neglected for a long time could not recognize that they are being neglected because of wontedness or being tamed on their situation. Then the child could misreport their problematic surroundings. Chung (2012) stated that in general, children are chronically exposed to routine neglect rather than dramatic abuse. In particular, the perpetrators or outsiders do not perceive

neglect as a problem, so neglect is easy to be accumulated and observed continuously, even though children grow up (Chung, 2012). As a "silent assault," neglect slowly and continuously encroaches on the soul of a child, so that he or she will no longer be willing to engage with others or explore the world around him or her (Chung, 2012).

Among the econometric tools to capture the causal impact, strong instrumental variables (IV) could be the possible solution to deal with the above issues. However, finding a good IV is difficult and requires more time especially in this micro-level dataset. Regarding this, further research is needed to find a good IV having exogenous variation.

Ⅷ. Conclusion & Policy Implications

The process of behavioral and emotional development in a child is highly likely influenced by parental attitude or role, which is the most important factor for the child development stages. The negative aspects of parental roles are representatively measured as child neglect and abuse. As considering the current socio-structural changes, this research paper mainly focuses on parental neglect and investigates the effects of parental neglect on behavioral and emotional problems in a child. Behavioral and emotional problems which is the outcome variables are specified as follows: Lack of Concentration, Aggression, Physical Symptom, Social Withdrawal, and Depression. These outcomes are representative variables to measure the externalizing (behavioral) and internalizing (emotional) problems in a child developmental process.

Based on using a 5-years long-term follow-up survey (panel data) in Korea, a neglected child had a higher degree of- lack of concentration, aggression, physical symptom, social withdrawal, and depression. Only parental absent hours did not have significant or direct effects on a child's development. Regarding the heterogeneous analysis of gender and a mother's education level, no heterogeneous effects of neglect by gender were detected on a child's outcomes. Furthermore, a significantly different effect of neglect by a mother's education level was found only on social withdrawal outcome.

Considering the developmental problems experienced in childhood or adolescence could

continuously affect adulthood and may cause social problems in the longer term, it is required to properly perceive the severity of parental neglect. Furthermore, given that children who are in low SES are more highly likely to be exposed to neglect and have much more serious developmental problems, child welfare policy should be flexibly applied to children or parents considering the different environments or characteristics of the household.

In a state-level, to protect the neglected children and prevent children from negligence in advance, policy suggestions regarding child welfare system could be presented as follows:

First of all, active school intervention is crucial. School is the place where direct access to children is possible. School is an important and familiar social environment for children and the most accessible place to teachers, counselors, other school staffs and parents who know the child well; social services provided through the school can be delivered without giving a big stigma to a child (Kim & Yang, 2007). To increase an attachment to school in terms of a child, help-seeking skills training or problem-solving skills training should be taught, and regular personal counseling is required to be implemented in school. In regards to this, the central government; especially the Ministry of Education should establish the course to educate teachers on the way of training children and protecting or dealing with the neglected children. In terms of prevention, teachers and consultants should regularly survey a child's environment and carefully check whether the child is in a state of parental neglect.

Given that the neglected children are highly likely discovered in poor families, detailed policy support such as welfare benefits is needed for them. Reducing poverty child could be the fundamental precautionary measure to decrease the possibility of neglect in the future. Kim and Yang (2007) stated that general welfare policy such as income security policy or childcare services can contribute to decreasing the child poverty, and in this welfare policy cash benefits such as public assistance, child allowances and tax credits; or a wage in kind such as childcare, education, health care, and housing are included. In other words, to construct safe environment infrastructure for both parents and children who are in a vulnerable condition, various welfare benefits are needed such as basic income and universal child endowment. These benefits could partly contribute to reduce the

child poverty rate and even to decrease the burden of parents, especially in poor SES.

Furthermore, the infrastructure of family visit services should be expanded for prevention and after treatment (monitoring). The domestic family visit service called ‘e-Child Happiness Support System’ using big data could be effective to prevent child maltreatment through preemptively anticipating and discovering families in need of protection, and visiting them directly to examine their parenting environment (Kyung & Oak, 2018). Domestic family visit service currently focuses on high-risk households, and the first visit service is mainly conducted by the local public official, but adequate resource supply is still required to strategically implement family visit service and to provide sufficient welfare service packages called “Dream Start” to parents and children afterward. Regarding this, Lee (2017) also brought up the problems of the lack of resources and manpower which are required to link and support services for high-risk households. First of all, domestic family visit services in terms of prevention should be conducted not only for the high-risk household but also for general families so that there are no households in a blind spot. For smooth implementation, the task force (TF) in terms of the first visitors needs to be constructed including various experts, social workers, psychologists or local citizens. Depending on the situation of each household, separate service contents should be followed as considering different household environment including parents’ and the child’s characteristics. Additionally, in the case of children with disabilities, a separate detailed plan should be prepared to prevent alienation, and a support system for them should be established including expansion and supply of special teachers to properly care children with disabilities. Given that there exists a well-organized family visit service program abroad; the “Early Home Visitation” program in the U.S.[4] could be one of the abroad cases to refer, representatively.

To the families with child neglect, regular monitoring by child protection institutions is crucial. It is required for a child protection institution to continuously have interaction with a victim

[4] Followings on “Early Home Visitation” referred to Noh, Chung, and Jeon (2012) and was organized by the author in the present paper. Representative family visit service in abroad is "Early Home Visitation" in the U.S. targeted early childhood (age of 0 to 5). “Early Home Visitation” consists of two types of programs; selective home visit program and universal home visit program. Selective home visit program targets poor families or high-risk households, universal home visit program targets on general households and multicultural families. These two programs provide different service contents as considering each divergent household environment. A multidisciplinary team (family visitors) consists of various experts, nurses, social workers, or psychologists depending on household characteristics.

child and also cooperate with the school to check whether the victim child is constantly exposed to neglect even after protective measures. Regular follow-up monitoring should be systematically implemented by the local child protection institution. In regards to this, it is necessary to secure budgets, human resources, and investments including support by the local governments or related organizations.

Fundamentally, parental recognition or attitude on neglect is the most important factor to prevent child neglect. According to Lee (2017), in some regions, neglect has also occurred in children who use local childcare centers that provide care services for vulnerable children, and its ratio was 21%. In other words, even though the government provides various types of social care programs[5] including the 'All-day Care System' which is currently expanding its infrastructure, there is a possibility that the parents might maliciously use those policies. Child neglect may occur even though such a policy exists if the parents or caregivers have a high degree of tolerance or intentionality on neglect (Lee, 2017). As a part of preventive policy on neglect, parental education should be systematically organized and regularly conducted by each of the local child protection agencies. On the one hand, the above statement does not mean the meaninglessness of the government's social care policy. Given that the current social structural changes, this policy suggestion implies that the expansion of social care policy and the strengthening of systematic parental education should be mutually accompanied.

To sum up, active intervention by school, providing various welfare benefits to poor families or low SES households, providing strategic policies/services on the purpose of preventing neglect, expanding linkage and support with related organizations, strengthening monitoring system and parental education on recognition of neglect by child protection institution is required in terms of improving overall child welfare system. Moreover, sufficient investments and strategic expansion on welfare expenditure by the government should be combined.

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[5] Based on the recognition of the importance of the social care services, the government has established and operated several care systems such as after school care for children who stay alone at home after schooling. In relation to after-school care, several ministries are carrying out various types of projects; Representative projects are: 1) Local Children's Centers by Ministry of Health and Welfare, 2) After-school and Elementary Care Classes by Ministry of Education, and 3) Youth After-school Academy by Ministry of Gender Equality and Family (Kim et al., 2018).

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