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Classifying Korean children's behavioral problems and their influencing factors: a latent profile analysis

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Abstract

The purpose of this study is to find patterns in the latent profiles of behavioral problems of children aged 4, 5, and 6, in the child and caregiver variables that affected the composition of the latent profile group, and in the differences in children's social skills by latent profile groups. The study relies on a sample of 1461 children enrolled in the Panel Study on Korean Children. Fostering children's social abilities has been stressed in recent policy documents in Korea, including the Character Education Promotion Act and the recently introduced Nuri curriculum. Therefore, the current paper investigates factors influencing children's behavior problems via a longitudinal analysis. A latent profile analysis was performed and resulted in three profile models. Our findings are as follows: First, according to the latent profile of children's behavior problems, we came up with three group models that best fit the data. Group 1, named the non-problem group, had at all ages below standard scores for behavioral problems. Group 2, named the normal group, had average or slightly above average scores for behavioral problems, though such problems decreased as the child got older. Group 3, named the in-danger group, had average or above standard scores for externalizing behavioral problems, while the scores for internalizing behavioral problems were above the subclinical standard point at age 4 and at the clinical standard point at ages 5 and 6. Second, after exploring the influencing factors (at child and parent levels) for children belonging to the in-danger group, the study found that the child was more likely to belong to the in-danger group if female, if the level of activity and sociality was low, if the mother's parenting stress was high, and if the family income was low. Lastly, the study looked into whether there were any group differences in young children's social skills. The findings show that regarding capacity for cooperation and self-control, the scores of the non-problem group were higher than those for the in-danger group. Regarding capacity for exhibiting assertiveness and responsibility, the lowest scores among the three groups belonged to the in-danger group.

Keywords: Depression, Panel study on Korean children, Child's behavioral problem, Internal–external problem, Temperament, Parenting distress

Background

Taking a lifespan view on human development, early childhood can be considered as the essential period in which the basic foundation is laid for a child to grow up and become a productive member of society. In early childhood, the physical ability of a child is rapidly

developed along with skills for communication and recognition. A child starts to autonomously broaden his or her scope of behavior and to interact with others based on social needs. In the process of realizing developmental tasks, a child may experience a developmental crisis that can manifest itself in different forms depending on how the child deals with the particular crisis. Developmental problems can result in maladjusted behavior. Becoming a desirable social member means being well-adjusted.

When one's development is delayed or disabled, researchers often use the terms 'normal' and 'abnormal' interchangeably with 'well-adjusted' and 'maladjusted' (Hyun 2003). However, when we examine those terms more closely, the terms 'normal' and 'abnormal' are usually used in the context of statistical analysis. In this context, 'normal' refers to average scores and 'abnormal' refers to above average ones. The terms sometimes reflect a socio-cultural perspective. As a result, the terms could be used differently depending on the society and era. On the other hand, the terms of adjustment and maladjustment are used within an ecological perspective. Thus, adjustment is often used to define behavior that is appropriate and adaptive for one's survival, and maladjustment is used to define behavior patterns that do not comply with social needs (Kim and Lee 2002). This study aims to classify Korean children's behavioral problems by using the latent profile analysis technique.

Problems of maladjustment that appear in early childhood are generally part of the normal process of development and, after peaking at 2-year old, tend to gradually decrease (Tremblay 2000). However, factors that determine whether the problems persist (Stormont et al. 2005) or lead to juvenile delinquency (Sourander and Helstelä 2005), include individual characteristics, circumstances, and apparent aspects of the behavioral problem. There is a need to discover factors that make the occurrence of behavioral problems persist or even promote behavioral problems and to study mediating factors. For this purpose, the specific characteristics of children who frequently display behavioral problems with regard to building relationships with others needs to be understood in an objective way.

Many previous studies have argued that to prevent juvenile delinquency and school bullying educators need to provide young children with appropriate and effective character education (Kim et al. 2013). In 2005, the Korean government passed the Character Education Promotion Act to establish a formal foundation for activating character education. The purpose of character education is to promote sound and upright personalities and the ability to get along well with others, communities, and nature. The government expects all students in the education system (including kindergarteners) to develop, through character education, empathetic communication, and problem-solving skills. The Nuri curriculum, recently introduced as Korea's national curriculum, also emphasizes character education. The Korean government recognizes the importance of character education and has tried to overcome the weakness of character education in early childhood services. This study aims to contribute to discovering how young children's social and emotional skills can be supported. Specifically, this paper aims to point out what factors should be considered when trying to reduce a child's behavioral problems.

A child's behavioral problems are not clearly divided and tend to appear as interrelated behavior patterns depending on the developmental stage (Kang 2009). Given this, it is

common to use an extensive axis of internalizing behavioral problems and externalizing behavioral problems (Achenbach and Edelbrock 1983). CBCL 1.5–5 (Oh and Kim 2009), a standardized version of Child Behavior Checklist being widely used internationally, is divided into the two axes describing internalizing and externalizing behavioral problems. Externalizing behavioral problems include external behavior such as aggressiveness, lying and bullying, mainly or partly caused by a child's inability to control his or her behavior. As externalizing behavioral problems can be easily detected in early childhood, numerous studies have examined external behavioral problems as well as related factors. Internalizing behavioral problems, on the other hand, are less covered in academic research because they involve internal characteristics including loneliness, depression, anxiety, and fear—characteristics that are, in other words, more difficult to detect. Both externalizing and internalizing behavioral problems are intertwined as they usually occur together (Masten et al. 2006) or influence each other (Gillom and Shaw 2004). Externalizing and internalizing behavioral problems should be considered together because children showing both types of behavioral problems simultaneously are likely to keep experiencing those problems or suffer from mental illness or social maladjustment (Basten et al. 2016; Sourander et al. 2007).

The article is largely organized into six parts. They are as follows: The "Background" section offers an overview of the study. The second part presents a review of the literature. The third part details the "Research method"; section the fourth section describes the "Results", section followed by the fifth section, which "Discussion" section discusses the findings. Finally, the paper ends with our "Conclusion" section. In the literature review that follows, first we describe the independent variable, then the dependent variables, and then explain the link between the previous studies and the present study.

A cultural perspective on children's behavioral problems in Korea

Most cultures consider aggressiveness, delinquency, or excessive activity to be explicit problematic behavior. When it comes to perceiving internal problematic behavior, however, such as anxiety or depression, cultures seem to differ in what they describe as problematic. Korean adults, like adults in other cultures, seem to consider explicit problematic behavior of a child as a more serious problem than internal problematic behavior and believe that a child with such behavior will more likely develop in a less positive way. They think that internal and explicit problematic behaviors are both caused by environmental stresses on a child. That is, Korean adults do not perceive personality traits as causing internal and explicit problematic behaviors. Instead, they perceive them to be caused by environmental stresses. Hence, they believe that when environmental factors such as economic circumstances change to the advantage of a family, a child's problematic behavior will improve (Kim et al. 1996; Oh and Lee 1990). Also, according to a study by Han (2002), who assessed children's social behavior with the help of the Child Behavior Check List (CBCL), Korean children made more "physical appeals" (e.g., headache, stomachache etc.) than American children, whereas American children showed an "aggressive" type of problematic behavior more frequently than their Korean counterparts. This result indicated that Korean children tend to express discontent or stress via physical appeals, which is an indirect expression, rather than via aggressive behavior, which is a direct expression. Thus, Han (2002) concluded that such a result is due to

the fact that Korean children have limited means to constructively deal with anxiety and stress. Therefore, they suggest that more efforts should be made to provide spaces for playing and recreation, and after-school programs should be expanded and diversified.

Factors influencing behavioral problems

Factors affecting behavioral problems during early childhood can be divided into children's individual variables and environmental variables regarding parents and family background. Among children's individual characteristics, representative variables are gender, age, and temperament (Cho et al. 2010; Crawford et al. 2011; Hong and Moon 2013; Kim et al. 2009; Kong and Lim 2013; Leve et al. 2005; Woo 2007). Household environmental variables mainly include a family's economic standard, parents' educational background, mother's employment (Kim et al. 2009; Qi and Kaiser 2003), and mother's depression, parenting distress and attitude, marital conflict, attachment (Cho et al. 2010; Park and Kang 2012).

Child temperament

Temperament is an individual characteristic that manifests itself in the capacity for self-control (Rothbart and Bates 2006). Temperament is defined as a stable characteristic based on heredity which becomes apparent early in life. Also temperament can be explained as an internal vulnerable characteristic affecting behavioral problems (Park and Kang 2012). To predict internalizing behavioral problems, the main variables are a child's negative emotions or fear and shyness, adaptability and approach—avoidance temperament (Crawford et al. 2011; Kong and Lim 2013; Leve et al. 2005). To predict externalizing behavioral problems, the variables are adaptability and reaction, risk aversion, and stimulation inquiring (Kang and Oh 2010, Kong and Lim 2013; Woo 2007). Ghassabian and her colleagues (citing Caspi and Shiner's study (2010) explain that since mental illnesses or behavioral problems are associated with temperament characteristics, negative characteristics develop into behavioral problems or correlate highly with temperament (Ghassabian et al. 2014).

Depression in mothers and parenting distress

Mothers' depression or parenting distress is factors that negatively affect the quality of parenting (Abidin 1992) and have been regarded as risk factors for children's development (Costa et al. 2006; Nelson et al. 2007). After evaluating 193 meta-analyses on mental illness during childhood, Goodman et al. (2011) reported that a mother's depression leads to an increase in her child's negative behavior and was highly related not only with internalizing behavioral problems but also with externalizing behavioral problem. Also, van der Molen et al. (2011) suggested that the depression of a mother affects "a young girl's disruptive behavior." In contrast, a child's behavioral problems can frequently aggravate a mother's depression or increase parenting distress (Vaughan et al. 2012). This is also explained via the transactional model (Mackler et al. 2015; Neece et al. 2012). Recent studies, including Mackler et al. (2015), divided the relation between parenting distress and child's behavioral problem as the parenting distress direct effects model, indirect effect model through child direct effects model, and parental reaction, and transactional model. These studies have shown that such relations are best explained by

the transactional model. Some studies, including Neece et al. (2012), also described how parenting distress and child's behavioral problem influence each other, showing mutual cross-lagged effects.

Furthermore, previous studies have shown that the depression of a mother or unhappy marital life affects a mother's ability to recognize problematic behavior in her child (Briggs-Gowan et al. 1996; Sawyer et al. 1998). Although Sawyer et al. (1998) reported in their study that parents' distress only negligibly affects parents' ability to recognize problematic behavior in a child, Briggs-Gowan et al. (1996) revealed that there is a significant connection between distress in mothers distress and their ability to report a child's problematic behaviors. These results imply that recognizing children's internalizing and externalizing problems may depend on how distressed the parents are.

Child gender and parents' socioeconomic status

Studies on gender differences in behavioral problems conducted in Korea have generally reported that girls show internalizing behavioral problems (e.g., sadness, anxiety, and withering) to a greater degree than boys. Boys showed more externalizing behavioral problems including attention deficit, hyperactivity, and offensive behaviors (Kim and Doh 2001; Kim et al. 2009). Western studies, however, indicated that the relation between gender and behavioral problem can also be different as behavioral problems appeared equally in both genders (Campbell 1995), or there was no gender difference regarding externalizing behavioral problem with children under the age of four (Hill et al. 2006). Also, studies on behavioral problems have frequently discussed child's gender as a moderator, and risk factors such as socioeconomic status, depression in mothers, or undesirable parenting behavior affected children differently depending on their gender.

For example, according to a study examining the influence of parents' socioeconomic status on children's behavioral problems, lower socioeconomic status of a parent was a direct factor in provoking behavioral problems in the case of boys but not for girls (Shaw et al. 1998). Also, regarding the relation between depression in mothers and externalizing behavioral problems, behavioral problems in boys were more easily predicted at 2-year old, and in girls at 1-year old (Blatt-Eisengart et al. 2009).

Parents' socioeconomic status including their educational background or household income is the known factor to affect a child's development because these factors have an impact on both the human and material resources available to parents and their children. A lower socioeconomic status increases the probability of externalizing behavioral problems including the display of aggressive behavior (Hong and Moon 2013; Kim et al. 2009), and is operated as factors that increase boy's externalizing behavioral problems (Hill et al. 2006) and to sustain girl's internalizing behavioral problems (Leve et al. 2005).

In this context, Dodge et al. (1994) explained that lower socioeconomic status was closely related to parents who exercised harsh discipline or displayed an aggressive attitude as well as to stressful life events or an environment with less opportunity for a mother to establish a social network. The study also explained how socioeconomic status had an impact of children's behavioral problems, finding that exposure to a family environment as described above ultimately increased the likelihood that a child will develop externalizing behavioral problems.

The studies discussed above are significant as they hint at possible causes of behavioral problems. By examining various influencing factors of children's behavioral problems, meaningful interventions can be developed. However, there are some research limitations since the samples were limited and only particular aspects of behavioral problems were targeted in the investigation of interrelations, and a cross-sectional design was used. It is difficult to trace developmental trajectories with a cross-sectional study. For example, the characteristics of the children belonging to each group are linked to children's behavioral problems across time. To promote character education in Korea, the (early) education system needs different data which provides insight into the trajectories of children's behavioral problems. In addition, it would be fruitful to figure out what factors influence the persistence of behavioral problems. For this, we need to include more variables regarding the child and parents in the analyses. Therefore, in order to deeply examine the occurrence of externalizing and internalizing problems and the developmental process, longitudinal studies with various variables and national samples are required (Bongers et al. 2003; Kong and Lim 2013).

The Panel Study on Korean Children—established in Korea Institute of Child Care and Education—is producing nationwide data representing the development of Korean young children. The Panel Study on Korean Children was randomly sampled by using a stratified multi-stage sampling method. Therefore, the sample represents the population of young Korean children in an unbiased way. Along with it, the Panel Study on Korean Children enables us to explore young children's development at specific time points, as well as to explore the developmental process over time. Furthermore, based on the data gained through the Panel Study on Korean Children, policy makers can develop appropriate programs that stimulate positive development and prevent negative development of Korean young children throughout their life. Using the Panel Study on Korean Children, data to explore influences of child gender, temperament, of the characteristics of the mother and socioeconomic status on behavioral problems will enable researchers and policy makers to collaborate and develop methods to prevent behavioral problems.

Considering the aforementioned arguments and research, the current study sets the following objectives: (1) Perform a latent profile analysis to classify Korean children's behavioral problems. (2) Investigate the influencing factors at child and parent level. (3) Identify group differences regarding young children's social skills (cooperation, assertion, self-control, and responsibility).

Research method

Sampling

The Panel Study on Korean Children employed a stratified multi-stage sampling strategy. In Stage 1, sampling was carried out in medical institutes where babies were born. Medical institutes were sampled using a list of medical institutes that in 2006 delivered 500 or more babies. In Stage 2, pilot sampling was extracted from households with newborns in the sampled medical institutes, giving rise to a list of 2562 pilot sample households. In Stage 3, among the households with newborns included in the pilot sample list, 2150 that actually responded to the main study were confirmed as participants in the study sample. The Panel Study on Korean Children sampled babies born in medical institutes

nationwide from April to July 2008 (http://panel.kicce.re.kr/eng). The study is conducted annually and will continue to run until 2027.

Research objective

The present study used research data from the Panel Study on Korean Children—from the first measurement point conducted in 2008 to the seventh one conducted in 2014, collected by the Korea Institute of Child Care and Education (KICCE). This study made use of data from only 1461 household's children who responded to the temperament scale for 3-year olds and child behavioral problem scales for 5- to 7-year olds. Regarding the 3-year olds, the respondents were 51.3% ($n = 749$) boys and 48.7% ($n = 712$) girls. The share of children who were born first was 46.2% ($n = 675$), who were born second 42.7% ($n = 624$), and who were born as a third child or more was 11.1% ($n = 162$). The average age was 25.70 months (SD $= 1.32$). As for the household type, 'parents and child' was the most common with 88.5% ($n = 1293$), grandparents, parents, and child was at 8.0% ($n = 117$). 99.0% ($n = 1435$) of mothers were married for the first time and 32.6% ($n = 477$) were employed or students. Over half (54.8%, $n = 749$) of the mothers reported having an educational background beyond the graduate level (4 years).

Measurement

The data from the Panel Study on Korean Children were mainly collected from the sampled children and parents. Since the sampled babies were 3-year old, the data were also collected from their teachers at child care facilities and kindergartens. The data of the Panel Study on Korean Children were mainly collected by using the computer-assisted personal interview (CAPI) technique when interviewers visited the sampled household. During the household visit, the interviewers asked the caregivers questions, and administered developmental tests, as well as observed the sampled child. In addition, the study included an online survey for parents and a web-based survey for teachers in ECEC.

Information on the mother's level of depression and level of parenting distress was collected by an online survey. CBCL (Oh and Kim 2009) was filled out from the sampled caregiver during the interviewers' visit to the household. Information regarding the child's temperament and social skills, mother's educational background, and household income was collected via CAPI during the household visit.

Measuring tools

Children's behavioral problems (child behavior checklist 1.5–5: CBCL 1.5–5)

In order to measure children's behavioral problems, this study utilized the Child Behavior Checklist 1.5–5: CBCL 1.5–5, a standardized version of Child Behavior Checklist: Preschool 1.5–5 (Achenbach and Rescorla 2000) that was adapted to the Korean context by Oh and Kim (2009). CBCL 1.5–5 is composed of 100 questions; 36 internalizing problem scales reflecting controlled behaviors including passive and shrinking behaviors, physical symptoms of mental instability, 24 externalizing problem scales including behavioral problems with less control such as attention problems and aggressive behaviors, 7 questions on sleep problems and 33 questions on various other dimensions of problem behaviors. The three-point scale (0: not at all and 2: frequently or largely occur) was measured by the main caregiver (mother) depending on whether a child showed

such behavior within the last 6 months. This study utilized repeated measures data from the 5th (2012) to the 7th (2014) measurement point. The Cronbach's α of the internalizing scales for the 5th measurement point was .87, for the 6th .88, and for the 7th .87, while the Cronbach's α of externalizing scales for the 5th measurement point was .89, for the 6th .88, and for the 7th .88. Also, the Cronbach's α for all behavioral problem scales for the 5th measurement point was .95, for 6th .96, and 7th .95.

Temperament (the emotionality activity and sociability temperament survey for children: parental ratings: the EAS)

In order to measure children's temperament, the research team of the Panel Study on Korea Children used the EAS for parents (The Emotionality Activity and Sociability Temperament Survey for Children—Parental Ratings: The EAS) developed by Buss and Plomin (1984) and translated it into Korean. The EAS is composed of 20 questions covering three subcategories: 5 questions on emotionality, 5 questions on activity, and 10 questions on shyness/sociability. It is filled out by main caregiver (mother) using a 5-point Likert Scale (1: not at all and ~5: strongly agree). The Panel Study on Korean Children considered young children would not be suitable to be studied until 2nd year as for Sociability scale and conducted the survey since 3rd study. As temperament is considered as an individual and comparatively stable characteristic, this study used data from the 3rd measurement point (in the 3rd year of study), which covered all three lower measures of the temperament. Cronbach's α for the factor emotionality was .73, for the factor activity .77, and for sociability .84.

Maternal depression (K6)

For measuring depression in mothers, the Panel Study on Korean Children utilized the Kessler et al.'s (Kessler et al. 2002) scales of Psychological Distress (K6) that was translated into Korean. K6 consists of 5 questions with a 5-point Likert scale (1: not at all and ~5: always) and was filled out by the mothers themselves. This study utilized repeated measures data from 1st study (2008) to 7th (2015). Cronbach's α of each factor was comparatively high between .90 and .92.

Maternal parenting distress

Parenting distress of mothers was measured using the scale Factors of Pressure and Distress on Performing Parental Roles (Kim and Kang 1997). The scale assesses physiological pressure and distress that parents feel. The scale was developed based on Kim and Kang's (1997) scales of parenting distress. The scale consists of 12 questions with a 5-point Likert scale (1: not at all and ~5: strongly agree) and was filled out by the mothers themselves. The Panel Study on Korea Children used original tools excluding one question which description was not clear in the preliminary survey, and a total of 11 questions were utilized during 3–7th year surveys, while 10 questions were used in 1–2nd year surveys since one question not appropriate for age was deleted. This study utilized repeated measures data from 1st measurement point (2008) to the 7th measurement point (2014). Cronbach's α for each year was comparatively high between .84 and .88.

Mothers' educational background

Mother's educational background was assessed in the in 7th year of the Panel Study on Korean Children. Mothers had to indicate on a scale from no education to more than post-graduate degree. Considering response distribution, the categories 'no education' and 'elementary and middle school graduate' were reclassified as one category 'less-than-high-school education.'

Household income

Household income information was collected through an open response and categorical response survey in the 3rd year of the panel study. Based on the survey system of the Panel Study on Korean Children, respondents were asked to give a categorical response if they did not respond to the open question. If a categorical response was given, this study used the median. A household earning of less than a million Korean won per month was reclassified as a million Korean won as the minimum value and one over ten million Korean won as the maximum value.

Children's social skills (social skill rating system for preschool level: SSRS)

To measure children's social skills, this study used a Korean adaptation of the social skill rating system for preschool (Gresham and Elliott 1990). SSRS is composed of four subcategories with a total of 32 questions: 6 questions for cooperation, 12 questions for assertion, 6 questions for self-control, and 8 questions for responsibility. A 3-point Likert scale (1: not at all and ~3: very frequently) was filled out by the main caregiver (mother). The Cronbach's α for each factor in the 7th year of the panel study (children were aged 6-year old) was .82 for cooperation, .85 for assertion, .75 for self-control, and .78 for responsibility.

Procedures

About 2 or 3 weeks before the interviewers' visits, the questionnaires were mailed to the parents. On the visiting day, the interviewers used the CAPI system to ask the caregivers questions on the characteristics of the child, the parents, the family and household, child-rearing support services and child care institutions, on the community, national and local child-rearing support policies and more. After finishing CAPI, the caregiver filled out the Child Behavior Checklist. While the caregiver was filling out CBCL, the interviewer asked the sampled child questions and assessed its development via the CAPI system.

Data analysis

This analysis was based on the variables of all 7 measurement points of the Panel Study on Korean Children, and used information from the final year regarding the child's gender and the mother's educational background. Data from the 3rd measurement point were used for children's temperament and standardized household income on the assumption that they rarely change. For the analysis, the software programs PASW 20.0 and M-plus 6.0 were used applying specific methods. First, Cronbach's α was estimated to study internal consistency among the test variables. Second, under the assumption that children's internalizing and externalizing behavioral problems would constitute

a latency group by longitudinal flow, a Latent Profile Analysis (LPA) was conducted as the unconditional model. Third, a Multi-Nominal Logistics Regression Analysis was conducted for examining the influences of independent variables (at child and parental level) on the latent profile group according to the change in children's behavioral problems. Lastly, an ANOVA was conducted in order to find out how the groups differed with regard to children's social skills by latent profile group.

Results

Classifying young Korean children's behavioral problems

A latent profile analysis (LPA) was used to determine the longitudinal latent profiles of internalizing and externalizing behavioral problems. The model fit indices for each LPA are available in Table 1. As the number of groups increased, the AIC (Akaike Information Criterion), BIC (Bayesian Information Criterion), and A-BIC (sample-size Adjusted BIC) scores decreased and Ent (Entropy) scores approached 1. Compared to the LMR-LRT (Lo–Mendell–Rubin Likelihood Ration difference Test) and B-LRT (Bootstrapped Likelihood Ratio difference Test) scores, the three groups best described the data.

The descriptive statistics for each latent group are shown in Table 2 and Fig. 1. Group 1, which included 1136 participants (84% of the total number of participants), was named the "non-problem" group because the children's scores for internalizing [$M = 5.23$ (SD = .25)−7.22 (SD = .28)] and externalizing [$M = 4.08$ (SD = .21)−6.34 (SD = .22)] behavioral problems were the lowest over all age groups. Group 2, which included 262 participants (18% of the total number of participants), was named the "normal" group

Table 1 Comparison of the number of latent groups

Number of group	AIC	BIC	A-BIC	Ent	LMR-LRT	B-LRT	Group ratio (%)			
							1	2	3	4
1	50,164.50	50,307.24	50,221.47				100.0	–	–	–
2	49,863.67	50,043.43	49,935.42	.84	.01	.01	.84	.16	–	–
3	49,661.17	49,877.93	49,747.68	.86	.01	.01	.78	.18	.04	–
4	49,529.63	49,783.40	49,630.92	.87	.71	.71	.79	.05	.03	.13

Table 2 Estimated average and component ratio of latent groups

	Group 1: non-problem ($n = 1136$)		Group 2: normal ($n = 262$)		Group 3: in-danger ($n = 63$)	
	M	SD	*M*	SD	*M*	SD
Age 4						
Internalizing behavioral problems	7.22	.28	11.53	.72	17.01	2.03
Externalizing behavioral problems	6.34	.22	13.36	.72	12.03	1.24
Age 5						
Internalizing behavioral problems	5.59	.25	11.77	.56	21.83	3.20
Externalizing behavioral problems	4.10	.21	14.46	.48	12.79	1.88
Age 6						
Internalizing behavioral problems	5.23	.25	9.45	.62	22.37	1.99
Externalizing behavioral problems	4.08	.21	10.53	.72	13.48	2.27

Fig. 1 Estimated average and component ratio of latent groups
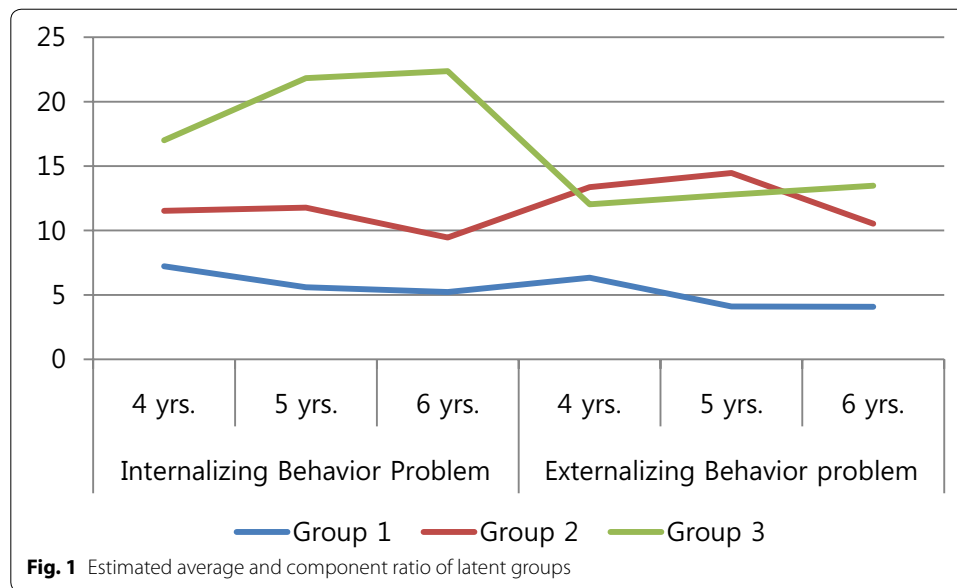
because the children's scores for internalizing [M = 9.45 (SD = .62)−11.77 (SD = .56)] and externalizing [M = 10.53 (SD = .72)−14.46 (SD = .22)] behavioral problems were slightly high to moderate over all age groups. Group 3, which included 63 participants (4% of the total number of participants), was named the "in-danger" group based on the clinical (18)/subclinical (15) standard point for the CBCL 1.5–5. The scores for internalizing behavioral problems [M = 17.01 (SD = 2.03)−22.37 (SD = 1.99)] were over the subclinical (15) point in all age groups and over the clinical standard point for ages 5 and 6. The scores for externalizing [M = 12.03 (SD = 1.24)−13.48 (SD = 2.27)] behavioral problems slightly increased over time.

Influencing factors when classifying Korean children according to their behavioral problems

Compared to a case of only the line concerned, the—2LL (−2Log Likelihood) significantly decreased, when the independent variable was applied to the model (−2LL line = 1518.99, −2LL model = 1298.96, χ^2 = 220.03(44), p < .001); thus, the model with independent variables was appropriated. The independent variables, gender (−2LL = 1320.35, χ^2 = 21.38(2), p < .001), activity (−2LL = 1306.38, χ^2 = 7.42(2), p < .05), and negative emotionality (−2LL = 1311.76, χ^2 = 12.79(2), p < .01) were the significant factors influencing children's behavioral problems. Only the following factors significantly influenced the mothers' depression (−2LL = 1312.44, χ^2 = 13.47(2), p < .01), parenting stress at the 6th measurement point (−2LL = 1318.48, χ^2 = 19.51(2), p < .001), and family income (−2LL = 1305.97, χ^2 = 7.01(2), p < .05).

According to the parameter estimate, compared to the in-danger group (Group 3), the non-problem group (Group 1) was significantly influenced by the following factors: activity (wald = 5.64, p < .05), parenting stress at the 6th measurement point (wald = 7.10, p < .01), and family income (wald = 5.04, p < .05). In other words, if the child is more active, its mother's parenting stress is lower, and family income is higher,

the likelihood of a child to be included in the non-problem group increases: 1.99, .30, and 2.40 times more, respectively. Compared to the in-danger group (Group 3), the normal group (Group 2) was significantly influenced by the following factors: gender (wald = 8.90, $p < .01$), activity (wald = 7.06, $p < .01$), sociality (wald = 4.13, $p < .05$), and family income (wald = 4.05, $p < .05$). In other words, if the child is male, more active, and sociable and the family's income is higher, the likelihood of a child being included in the non-problem group increases: .36, 2.26, and 2.23 times more, respectively. Overall, the child is more likely to belong to the in-danger group if the child is female, if the level of activity and sociality is low, if a mother's parenting stress is high, and if the family income is low (Table 3).

Group differences in young Korean children's social skills

Results of children's social skills by latent groups are presented in Table 4. The highest scores of collaboration and self-control were shown by Group 1 ($F = 24.03$, $p < .001$)

Table 3 Effects of child gender and temperament on the latent group

	Group 1 versus Group 3			Group 2 versus Group 3			−2LL	χ^2
	B	Walds	Exp (B)	B	Wald	Exp (B)		
Child variable								
Line	4.05	3.99	–	−2.80	2.16	–	1298.96	.00(0)
Gender dummy	−.28	.80	.75	−1.01	.34**	.36	1320.35	21.38(2)***
Activity	.69	5.64*	1.99	.82	.31**	2.26	1306.38	7.42(2)*
Sociality	.54	2.73	1.72	.71	.36*	2.03	1303.03	4.07(2)
Negative emotionality	−.30	1.04	.74	.23	.31	1.26	1311.76	12.79(2)**
Mother variable								
1st Depression	−.33	1.15	.72	.30	.39	1.35	1300.39	1.42(2)
2nd Depression	−.24	.67	.78	−.15	.41	.86	1312.44	13.47(2)**
3rd Depression	.02	.01	1.02	.09	.44	1.10	1300.49	1.52(2)
4th Depression	.12	.18	1.13	.46	.44	1.58	1300.53	1.56(2)
5th Depression	.15	.26	1.16	−.45	.43	.64	1299.30	.34(2)
6th Depression	−.01	.00	.99	−.28	.48	.76	1299.19	.22(2)
7th Depression	−.19	.49	.83	−.23	.42	.80	1300.18	1.21(2)
1st Parenting stress	.11	.09	1.12	−.39	.33	.68	1300.16	1.20(2)
2nd Parenting stress	.29	.56	1.33	.33	.31	1.39	1303.95	4.99(2)
3rd Parenting stress	.43	1.06	1.53	−.18	.33	.83	1301.99	3.03(2)
4th Parenting stress	.12	.09	1.13	.29	.30	1.33	1301.52	2.56(2)
5th Parenting stress	−.39	.94	.68	.17	.30	1.19	1300.08	1.12(2)
6th Parenting stress	−1.19	7.10**	.30	−.08	.31	.92	1318.48	19.51(2)***
7th Parenting stress	−.58	2.23	.56	−.31	.30	.73	1303.45	4.48(2)
Family income	.88	5.04*	2.40	.80	.40*	2.23	1305.97	7.01(2)*
Maternal education: high-school graduate	.32	.09	1.38	.07	1.15	1.07		
Maternal education: college graduate (2-year)	.42	.14	1.52	.06	1.16	1.07	1306.26	7.29(6)
Maternal education: college graduate (4-year)	−.47	.19	.63	−.60	1.12	.55		

Gender dummy: girl = 0, boy = 1, standard group = Group 3

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

Table 4 Children's social skills by latent group

	Group 1 (n = 1136)		Group 2 (n = 262)		Group 3 (n = 63)		F	Duncan
	M	SD	*M*	SD	*M*	SD		
Collaboration	2.05	.40	1.87	.39	1.90	.44	24.03***	1 > 2 = 3
Assertiveness	2.42	.34	2.31	.33	2.03	.34	44.11***	1 > 2 > 3
Self-control	2.56	.35	2.34	.32	2.33	.38	52.56***	1 > 2 = 3
Responsibility	2.29	.32	2.13	.31	2.03	.28	42.03***	1 > 2 > 3

*** $p < .001$

and ($F = 52.56$, $p < .001$). For assertiveness ($F = 24.03$, $p < .001$) and responsibility ($F = 52.56$, $p < .001$), Group 1 also showed the highest level, followed by Groups 2 and 3. Overall, Group 3 indicated the lowest level of social skills in all areas.

Discussion

Based on the longitudinal data from Panel Study on Korean Children (collected annually since 2008), this study examined the patterns of behavioral problems when children were 4, 5, and 6, and identified mother variables that determined whether the child belonged to one of the three latent profile groups (the non-problem group, the normal group, and the in-danger group). Further, differences in children's social skills were examined .

First, according to the latent profile of children's behavioral problems, the three-group model best described the data. Group 1 indicated the lowest scores for internalizing and externalizing behavioral problems at ages 4, 5, and 6, indicating that they most likely will move into later childhood without behavioral problems. For Group 2, internalizing behavioral problems existed at an intermediate level. Thus, this group was classified as the "normal" group. For the externalizing behavioral problems, the range of scores at ages 4 and 5 was between 13.36 and 14.46, which was close to the subclinical (15) standard point. However, the score at age 6 decreased to an average of 10.53. For the internalizing behavior problems, the scores were slightly lower than the scores for externalizing behavioral problems. Likewise, the average scores at age 6 decreased, compared to the scores at ages 4 and 5. This suggests that the behavioral problems of Group 2 are not likely to increase. Regarding Group 3, the scores for externalizing behavioral problems were average or above the standard, and the scores for internalizing behavioral problems were above the subclinical (15) standard point at age 4 and increased to above the clinical (18) standard point at ages 5 and 6. Hence, this age group was defined as the "in-danger" group. Both the scores for internalizing and externalizing behavior problems increased as the child got older. Specifically, the ranges of the changed scores for internalizing behavior problems were larger than those for externalizing ones. Probably, intervention programs for young children of the in-danger group should be provided to reduce problematic behaviors. Without early intervention young children of the in-danger group might have a higher possibility of developing juvenile delinquency. Next, the variables which predicted belonging to the in-danger group were as follows: child's gender, child's temperament, mother's parenting stress, and family income. More specifically, the probability to be included in the in-danger group became higher, if the child was female, less active, and not sociable, if the mother's parenting stress was higher, and

if the family income was low. Lastly, the level of social skills for the in-danger group was low in all areas. Especially, they exhibited a lack of responsibility and assertiveness.

Our findings suggest that society needs to pay more attention to the fact that girls tend to exhibit more behavioral problems than boys, especially regarding internalizing behavioral problems. Our results support the previous Korean studies that detected a gender issue concerning behavioral problems (Kim and Doh 2001; Kim et al. 2009). When a child shows externalizing problem behaviors at a child care center, kindergarten, or home, teachers or parents tend to pay more attention to the child. However, internalizing behavioral problems such as depression, insecurity, and fear are more likely to be ignored. In general, children's behavioral problems that are less obvious/less visible to the eye are more easily ignored so that internalizing behavioral problems such as depression and insecurity are more likely to increase.

In Korean society, a girl's calmness and shyness is more acceptable than a boy's. A girl's depression might be caused by loneliness, which could have been ignored, and thus lead to an intensification of internalizing problems. We need in-depth studies to clearly determine the factors causing young girls' internalizing problems in Korean society. As noted above, it is necessary to plan on how to prevent not only externalizing but also internalizing behavioral problems. Since depression in childhood can persist into adulthood, it should be prevented as early as possible. In order to prevent a child's internalizing behavioral problems, teachers or adults should help a less active or sociable child to express his or her opinions more comfortably by giving more opportunities to the child.

Furthermore, regarding the non-problem group maternal parenting stress is likely to influence 5-year-olds' (6th measurement point) internalizing behavioral problems, as children's internalizing behavioral problems generally increased considerably from the ages 4–5. There is also the possibility that a mother's parenting stress is increased by her child's behavioral problems. However, the results of this study suggest that children's internalizing behavioral problems are more likely to be influenced by maternal parenting stress. A study conducted by Briggs-Gowan et al. (1996) revealed that there is a connection between the distress of a mother and the reporting of problematic behavior of girls. The results of this study seem to support their findings and imply that the reporting of a child's internalizing problems may be affected by the distress of parents (Abidin 1992; Costa et al. 2006; Nelson et al. 2007).

These findings suggest that a caregiver's mental health is also an important factor in preventing children's behaviorial problems. With regard to low-income families, mothers might be more likely to be stressed by financial problems, increasing the probability that a child in such a family will develop higher levels of internalizing behavior problems such as insecurity, depression, and fear. Low social skills (regarding the dimensions responsibility and assertiveness) as exhibited by children in the in-danger group could escalate without intervention.

Conclusion

Based on the results of this study, the authors suggest the following policies. First, it is necessary to provide counseling programs at an early stage for children exhibiting problematic behaviors. Such programs could prevent these behaviors from developing into more serious behavioral problems. So far, not many character education programs for

young children have been provided by the government. The findings of this study imply that in order to reduce and prevent internalizing problems, policy makers need to implement policies (e.g., reduced working hours etc.) that enable teachers and early childhood professionals to create environments in early childhood settings and pedagogical methods that promote empathetic communication skills, i.e., environments where more shy children can easily express themselves Additionally, in order to prevent young children's externalizing problem behaviors, teachers and staff in early childhood settings need to show their children how to solve conflict situations with peers and how to deal with aggression.

Second, in the case of children in the 'in-danger' risk group who exhibit behavior that reflects an overall lack of social skills (within the dimensions self-control and self-assertion), it is necessary to develop programs in which children can learn to cooperate with peers and exercise self-control. Such programs should be available throughout child care and early childhood educational settings. Third, the results show that children of mothers under a great deal of parenting stress are more likely to exhibit problematic behaviors. Therefore, it is necessary to establish parenting programs that reduce the level of stress from parenting and to build a social infrastructure which provides advice to parents. This approach might include the dissemination of child-rearing information, and mental health to reduce parenting stress.

In conclusion, it is necessary to make a plan for preventing not only externalizing but also internalizing problem behaviors. We also suggest that it might be more effective to reduce young Korean children's behavioral problems when multi-level programs such as programs for mothers and caregivers, young children (boys and girls separately), and teachers are provided simultaneously. To prevent behavioral problems, we also argue that it is important for teachers working at child care and early childhood educational settings and kindergartens to encourage young children to make their choices. It is also necessary to provide young children enough outdoor play time to release their tension and surplus energy.

Our findings reveal patterns in the latent profiles of children's behavioral problems and caregiver variables that affect the composition of the latent profile group. Although we hypothesized that maternal parenting stress and depression would influence her child's behavioral problems, future studies should investigate in more detail (via the mutual model analyses) how the caregiver variables interact with the emergence of children's child's behavioral problems. Lastly, since this study used secondary data from the Panel Study on Korean Children, the time period differed for data collection. For instance, the characteristics or social skills that were assessed at age 2 (instead of data at age 0 or 1) were related to children's temperament assessed at age. Nonetheless, we presume that future analyses of data collected within the Panel Study on Korean Children are promising and will provide insight into the long-term effects of early behavioral problems and their influencing variables. Specifically, we could trace developmental trajectories regarding behavioral problems of young children through adolescence and into early adulthood. We also recommend exploring which factors increase, and respectively, decrease behavioral problems at specific time points. These results could help policy makers plan age-appropriate programs to prevent the emergence of problem behaviors.

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