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Empirical Analysis of Informative School Outreach on Home-based Parental Involvement

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【Abstract】Parental involvement is essential for children's education. Several studies have examined relationships between parental involvement and parents' socioeconomic status. However, less attention has been placed on school influences on parental involvement even though schools play an important role in children's education, and can also, in turn, affect the parents as well. This study addressed the question: how informative school outreach influence parents of children in different school levels to get involved in their children's education? The present study examined a nationally represented sample of elementary and middle school children in Japan (3,939 fourth grade students from 140 schools and 4,143 eighth grade students from 133 schools) from Trends International Mathematics and Science Study (TIMSS) 2011. Findings revealed that different types of informative school outreach have different effects depending on the school level.

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1 Introduction

Parents play important roles in their children's education. A number of researchers have observed the importance of child-parents relationship in this matter. For example, Coleman and his colleague argue that the child-parents relationship has a great importance as social capital for a child's intellectual development and education (Coleman, 1987, 1988, 1991; Coleman and Hoffer, 1987). When there is a strong social capital in the family, parents devote their resources, such as time and efforts, toward their children's education. In fact, various studies conclude that parental involvement in children's education has positive impacts on school achievement (e.g., Sui-Chu and Willms, 1996; Englund et al., 2004; Galindo and Sheldon, 2012), attitude (e.g., Fantuzzo et al., 2004; Shumow et al, 2011), and behavior(e.g., Hill et al., 2004). As a result, many reports and studies encourage parental involvement to increase academic performance (e.g., Hoover-Dempsey et al., 2005; Blazer, 2009; Galindo and Sheldon, 2012).

However, not all parents are involved to the same degree in their children's education and schooling. Studies have been conducted to understand its mechanism. A common approach has been to examine the relationship between parental involvement and socioeconomic status (SES). Although, researchers claim that status variables do not explain parents' decision of involvement and that it is not the most important measures to understand it either (Hoover-Dempsey and Sandler, 1995; Epstein, 1990). Then what would prompt parents to get involved in their children's education?

It is assumed that schools have an influence on not only children but also their parents. From ecological perspectives, Bronfenbrenner (1977, 1979) stresses that environmental factors and their interactions have an influence on human development and behaviour. From this point of view, since parents interact with the school through their children's school years, the school can be one of the factors that influence them. Besides, when parents and school have a shared common goal, children are more likely to succeed in education (Epstein, 1992; Epstein and Sanders, 2000). It is because students are influenced not only by their parents but also by the school concurrently (Epstein, 1992; Epstein and Sanders, 2000). A number of studies address the importance of school-family partnerships (Epstein, 1992; Epstein and Sanders, 2000; Eccles and Harold, 1996: Shimizu, 2012; Ochanomizu University, 2015). However, few studies have tried to analyse its effects on parental involvement so far, and, seemingly no studies have compared the effects of informative school outreach among different school levels (e.g., elementary and middle schools).

The present study examines the effects of informative school outreach on parental involvement using data from Trends International Mathematics and Science Study (TIMSS) 2011. The unique contribution of the study is the comparison of effects of informative school outreach between elementary and middle schools. Also, the study advanced the understanding of the effects in two ways: firstly, it controls not only students characteristics but also school characteristics that many previous studies examining parental involvement fail to control; secondly, utilizing both

multidimensional and separate measures of home-based parental involvement as dependent variables to examine the robust effects of informative school outreach. The findings reveal that different types of informative school outreach have different effects depending on the age of the children. It indicates the importance of taking into account the school level.

2 Definition

2.1 Parental Involvement

Parental involvement includes a range of practices by the parent toward their children that are intended to promote the latter's motivation and educational achievement. However, since parental involvement is multidimensional it has made it difficult to define it (Hill and Taylor, 2004), several different researchers make different categorizations. For example, Epstein (2001) suggests six categories of involvement: parenting, communicating, volunteering, learning at home, decision making, and collaborating within the community. Grolnick and Sowiaczek (1994) describe three categories of involvement: behaviour, cognitive-intellectual, and personal.

Most commonly, parental involvement is categorized in home-based and school-based involvement (e.g. Hoover-Dempsey and Sandler, 1997; Galindo and Sheldon, 2012; Deslandes and Bertrad, 2005; Green and Walker, 2007; Pomerantz et al., 2007; Anderson and Minke, 2007; Dauber and Epstein, 1989; Shumow and Miller, 2001). School-based involvement includes practices taking place at school; for example, attending school events, conference, and volunteering. Home-based involvement is related to practices taking place outside of school such as learning activities at home, reviewing the child's work, monitoring their progress, helping them with homework, and discussions about school events (Hoover-Dempsey and Sandler, 1997;0 Pomerantz et al., 2007).

The present study adopts the home-based versus school-based categorization. However, since school-based involvement can be more affected by external reasons which cannot be controlled by this study (e.g. nonflexible work schedule of parents), I refrain from using it as a measure of parental involvement. Since home-based involvement is less likely to be affected by such problems and should be a better indicator of the actual outcomes. In this study, home-based involvement includes communication with children about schoolwork (communicating) and monitoring their homework (monitoring).

Communicating and monitoring are commonly used as measures of parental involvement (e.g., McNeal, 2014; Sui-Chi and Willms, 1996). These measures reflect the level of social capital within the family, which in turn promotes the child's intellectual development (Coleman, 1987, 1988, 1991; Coleman and Hoffer, 1987). Parent-child communication regarding education conveys the importance of schooling to the child (McNeal, 1999, 2014). Monitoring is the regulation of activities that children engage in (e.g. watching TV or playing video games) and the supervision of homework. It protects children from harmful influences and helps to construct habits that are associated with

desirable behaviour and educational performance (McNeal, 1999). Empirical studies show that these parental involvement prevent problematic behaviour and positively influence on achievement (e.g., Sui-Chi and Willms, 1996; Pong, 1997; McNeal, 1999, 2014)

The present study examines parental involvement both as multidimensional and separate measures. It is because even though parental involvement is a multidimensional construct, the inclusion of too many measures could mislead its intention. Therefore, to understand robust effects of school outreach, multidirectional analyses are conducted.

2.2. School Outreach

There is no concrete definition of school outreach. As a measure of school outreach, prior studies include various approaches and practices: informing parents about children's grades and behavior, informing them about school activities, asking parents about volunteering, arranging meetings and conferences, and providing workshop sessions. The present study examines school outreach that informs the parents about their children as students and the school.

3. Literature Review about Determination of Parental Involvement

3.1. Hoover-Dempsey and Sandler's Model

Hoover-Dempsey and Sandler (1995, 1997) presented a theoretical model of parental involvement process to understand why parents choose to become involved. According to the Hoover-Dempsey and Sandler's Model (the HDS model), parents' decision to become involved in their children's education is based on three factors: (a) parental role construction: parents' beliefs about what they are supposed to do in relation to their children's education, (b) parents' self-efficacy for helping children succeed in school, (c) parents' perception of invitations/demands and opportunities for involvement. Hoover-Dempsey and Sandler (1997) contend that parental role construction is the most important factor, and when it is significant, positive involvement decision would be likely to occur. Parental role construction is described in part by general role theory: expectations held by groups are the major generator of roles, and it is learned through experiences (Hoover-Dempsey and Sandler, 1997; Biddle, 1986). It indicates that parental role construction is shaped by the interactions between schools and parents and by the expectation that schools hold about parents' responsibilities toward their child's schooling (Hoover-Dempsey and Sandler, 1997).

Tests of the model have been conducted, and its utility among parents of elementary school children (Green et al., 2007; Anderson and Minke, 2007), middle school students (Deslandes and Bertrand, 2005), and high school adolescents (Park and Holloway, 2013) was confirmed. Additionally, Green et al. (2007) analysed parents of children in elementary through middle school and revealed that the model predicted parental involvement even when controlling for SES. The theory was also tested in the Japanese context. Yamamoto et al. (2006) examined mothers of children in preschool and showed that their self-efficacy and role construction were associated with strategies

for selecting preschools and frequency of engaging in home reading.

The predictions of this study are based on the HDS model. Given parental role construction is shaped by the interactions between schools and parents, informing parents about school and children would prompt parental role construction through enhancing their sense of responsibility for their child's education and, in turn, it would increase parental involvement (see Figure1).

3.2. School Outreach

Even though relatively few studies examined effects of school outreach on parental involvement, studies have mostly shown positive influences of school outreach. Dauber and Epstein (1989) found that elementary and middle school outreach influenced parental involvement positively regardless of the parents' education, family size, student ability, and school level (elementary or middle school). Stacer and Perrucci (2013) investigated parents of children from kindergarten to the fifth grade, and the results revealed that school outreach efforts increased home-based involvement. Sheldon et al. (2011) analysed from elementary to high schools and found a positive association between the effectiveness of math-focused school outreach and school level of parental involvement. Park and Holloway (2013) found that informative high school outreach (e.g., sending information about children, how to help homework, and college planning) is strongly associated with both school- and home- based parental involvement.

Some of the prior studies, however, did find negative or no association at all. Simon (2004) found most informative high school outreach, including information about academic programs, volunteering, how to help out with homework, positively predicted school- and home-based parental involvement. Meanwhile, high frequency of school contact to parents about their children's attendance and behaviour is negatively associated with most types of the parental involvement. Galindo and Sheldon (2012) did not find any association between school outreach (kindergarten) and home-based involvement. Likewise, Feuerstein (2000) did not find associations between most of the school outreach and parental involvement among eighth grade.

These discrepant results are likely reflecting the varying definitions of school outreach and parental involvement. Studies using a single index that includes various types of practices from providing workshops to informing about volunteering to measure school outreach (e.g., Galindo and Sheldon, 2012; Stacer and Perrucci, 2013) could lead to less precise results and fail to examine effects of different types of outreach. Additionally, studies that utilized combined data of school levels (kindergarten, elementary, middle, and high school) (Dauber and Epstein, 1989; Stacer and Perrucci, 2013; Sheldon et al., 2011) failed to examine the effects of school outreach on parental involvement at different stages of children's development. Since relatively few studies investigated the relationship between school outreach and parental involvement, more research is needed to understand the relationships between these two factors.

3.3. Socioeconomic Status

Prior studies largely show a positive association between parental involvement and socioeconomic status (SES); namely, parent's level of education and family income (e.g., Kohl and McMahon, 2000; Waanders et al., 2007; Simon, 2004). Contradicting results, however, do exist (Galindo and Sheldon, 2012; Stacer, and Perrucci, 2013; Bhargava and Witherspoon, 2015; Anderson and Minke, 2007; Shumow et al., 2011, Yamamoto et al., 2006). For example, when focusing on home-based parental involvement, Galindo and Sheldon (2012) found a positive sign for parent's education but a non-significant value for income against home-based involvement. Also, some studies did not find any significant association between parents' SES and home-based involvement (Shumow et al., 2011; Holloway et al., 2008). When the components of home-based involvement are disentangled, results have shown to be mixed too (Lee and Bowen, 2006; Shumow and Miller, 2001; Park and Holloway, 2013; Grolnick et al., 1997). Shumow and Miller (2001), for instance, found that high school graduates parents helped their children's homework more than college graduate parents.

Other studies find different family-school relationships and parenting style according to SES (e.g., Lareau, 1987; Yamamoto, 2015; Honda, 2008; Matsuoka, 2015). Lareau (1987) examined parents in working-class and middle-class communities and found that, in both communities, parents valued educational success but the ways in which they promoted it differed. Parents in working-class communities believe that teachers are responsible for education, while, parents in middle-class communities have more interdependent relationships with schools and teachers, and they attended school events more often (Lareau, 1987). Yamamoto (2015) also found the similar result that working-class mothers are less likely to know how to intervene effectively to improve their children's academic performance and tend to rely on teachers for their child's academic direction. In addition to this, higher SES parents are more likely to have strict parenting style compared to lower SES parents (Yamamoto, 2015; Honda, 2008; Matsuoka, 2015). For instance, Yamamoto (2015) found that middle-class mothers tend to create routines to develop learning habits such as setting aside time for their children to complete homework compared to working-class mothers.

Even though the precise direction of the association is still unclear, it is important to take into account the effects of SES on parental involvement. Therefore, family SES is used as control variables to examine the true effects of informative school outreach.

3.4. Environmental Factors

From ecological perspectives, Bronfenbrenner (1977, 1979) stresses the importance of taking into account environmental factors and their interactions to understand human development and behaviour. Therefore, addition to individual-level factors like parents' SES, environment factors such as neighbourhood and school characteristics (e.g., class size and school SES) can influence parental involvement. Previous studies show the influence of these factors on parental involvement

(Waanders et al., 2007: Smith et al., 1997; Bhargava and Witherspoon, 2015; Datar and Mason, 2008; Bonesrønning, 2004) and parental role construction (Whitaker and Hoover-Dempsey, 2015). For example, Datar and Mason (2008) analysed panel data from the kindergarten and first grade waves and found that increases in class size are associated with a decrease in home-based parental involvement.

Many studies that examine parental involvement fail to control school characteristics variables, however, since they have the influence on parental involvement, it is necessary to control these factors.

4. Pursues of the Present Study

The aim of the study is to examine the effects of informative school outreach on home-based parental involvement for elementary and middle school separately. As described above, previous studies mainly show positive relations between school outreach and parental involvement. However, these analyses fail to find precise effects because they use pooled data including different school levels altogether (e.g., Stacer and Perrucci, 2013; Dauber and Epstein, 1989; Sheldon et al., 2011).

It is important to take into consideration children's school levels since it may affect parents' decision and types of involvement. For example, studies show that parental involvement tends to decrease for upper levels because of the level of difficulty of schoolwork and a more complicated structure of middle school system (e.g., students have several teachers) (Eccles and Harold, 1996; Hill and Tyson, 2009). Also, elementary school children and middle school children have fairly different needs and parents seem to respond to them in different ways. According to a survey, while parents of elementary school children tend to care more about their behaviour and relationships; parents of middle school children are more concerned about educational achievement (Benesse Educational Research and Development Institute, 2011). These beliefs can affect the parents' decision of involvement. In addition to this, Hill and Taylor (2004) mention that studies may have failed to capture types of parental involvement that appear only for upper school levels: a middle schooler who is in the process of choosing his or her future high school would receive particular involvement types that are not available for elementary school. Therefore, taking into consideration, developmental changes is recommended (Hill and Taylor, 2004).

In this way, the effects of school outreach on parental involvement are also expected to vary according to the school level. Given the policy relevance of school outreach, the estimates of its effects should be as accurate as possible. Therefore, it is necessary to take the school level into account. However, some previous studies have utilized data that combined school levels, and as far as the author is concerned, no studies have compared the effects of school outreach between different school levels.

The present study intends to address this gap by investigating the following research question:

how informative school outreach influence parents of children in different school levels (elementary and middle schools) to get involved in their education at home? It is hypothesized that school outreach will present positive effects. It would prompt parental role construction, which in turn affects parental involvement positively (see Figure 1). As it was mentioned previously, parental role construction happens when schools transmit the expectations that they hold toward how parents should participate in children's education. I assume that school outreach would convey these expectations and create parental role construction as shown by the empirical evidence in Whitaker and Hoover-Dempsey (2013). In addition to this, different patterns of association between informative school outreach and parental involvement according to school level are expected to emerge.

5. Method

5.1. Data

This study uses the Japanese sub-sample from Trends International Mathematics and Science Study (TIMSS) 2011. The survey was conducted by the International Association for the Evaluation of Educational Achievement (IEA). TIMSS is an international assessment of student achievement in mathematics and science in the fourth and eighth grades. It also collects a wide range of information from students, teachers and school principals. This study uses the Student and the School questionnaires. A two-stage random sample design was employed to collect the sample. Schools were drawn as a first stage and, in Japan, one class of students were selected from each of the sampled schools as a second stage. After deleting missing data, this study involves 3,939 fourth grade students from 140 schools and 4,143 eighth grade students from 133 schools.

5.2. Variables

Dependent Variables (Home-Based Parental Involvement)

As measures of home-based parental involvement, four questions from the Student questionnaires that asked students to rate their perception of their parents' home-based involvement are used. The questions were asked and labelled as follow: *How often do your parents ask you what you learned in school? (Ask); How often do you talk about your schoolwork with your parents? (Talk); How often do your parents make sure that you set aside time for your homework? (Time)*and *How often do your parents check if you do your homework? (Check)*. Answer categories were coded as follows: 1= *Never or almost never*, 2= o*nce or twice a month*, 3= *once or twice a week*, 4= *every day or almost every day*.

Based on this, three component variables and a binary variable were also created. The simple correlations between four measures are positive in the range from 0.28 to 0.54 for fourth and 0.34 to 0.70 for eighth grade. Among the four questions, *Ask* and *Talk* are strongly correlated (0.54 for

fourth and 0.62 for eighth grade), as well as *Time* and *Check* (0.45 for fourth and 0.70 for eighth grade). Therefore, two composite measures were created by principal component analysis: *Communicating* (*Ask* and *Talk*) and *Monitoring* (*Time* and *Check*). Factor analysis was also performed (promax rotation) with *Ask, Talk, Time*, and *Check* for each grade. Factors with an eigenvalue greater than 1 were retained, and it yielded one factor for both grade and labelled as *Pi4*. Finally, one binary variable was created and labelled as *Pi0* that measures if parents engage in at least one type of the home-based practices. The variables are coded as follows: 1= *more than once a month*, 0= *Never or almost never*.

Independent Variables (Informative school outreach)

Informative outreach measures include six questions from the School questionnaires. School principals were asked the questions regarding frequency of informative outreach. All of the questions began with "How often does your school inform parents about …?" The questions were: *their child's learning progress? The behaviour and well-being of their children at school? The overall academic achievement of the school? School accomplishments, the educational goals and pedagogic principles of the school? The rules of the school?* Answer categories were coded as follows: 1= *never,* 2= *once a year,* 3=*2-3 times a year,* 4=*more than three times a year*. Factor analyses were performed (promax rotation) separately for elementary and middle school (see Table 3). Factors with an eigenvalue greater than 1were retained and it yielded a two-factor solution. Two composites were created for fourth grade: *informing about students* and *informing about school*. However, as for eighth grade, the result indicated a Haywood case. Hence, a factor analysis was conducted again with the same questions that composed informing about school for fourth grade. It yielded one factor and composed as *informing about school*. The two questions that were relevant to informing about school were used independently for eighth grade.

Control Variables

Several student and school level variables were included in the models to control statistically for important background factors (see Table 1 for fourth grade and 2 for eighth grade).

Student level control variable

Students' gender is dummy coded, 1=female 0=male. The measure of SES used in this study includes a number of books and materials related to educational well-being at home and the highest level of education completed by parents. The questions were answered by students. The number of books at home was coded as follows: 1= 0-10 books, 2=11-25 books, 3=26-100 books, 4=101-200 books, 5=more than 200. Index of possessions at home was created through adding eleven questions that ask if students have a specific item that is relevant to educational well-being (e.g. a computer and a desk for him/her own etc.). Since the distribution of addition of the eleven questions is not

normal but truncated, a dummy variable was created to capture the effect of external value. The highest level of education completed by mother and father was asked but only to eighth grade students. Binary variables were created for each educational level both mother and father. More than 30% of students in the sample did not know one of their parents' highest levels of education. Since it is too large to drop from the data, a dummy variable was created as unknown instead of dropping them from the data. It enables to control effects of parents' educational level while keeping the students that do not know it in the sample.

School level control variables

The total enrolment of students was divided into hundreds. A Percentage of students from economically disadvantaged home was coded as follows: 1= *0 to 10%*, 2= *11 to 25%*, 3= *26 to 50%*, 4= *more than 50%*. The immediate area in which the school was located was coded as follows: 1= *small town*, 2= *medium size city*, 3= *suburban*, 4= *urban*. The income level of school's immediate area was coded as follows: 1= *low*, 2= *middle*, 3= *high*. Class size is the number of students in the class. Different types of schools (only for eighth grade) were coded as follows: 1=p*rivate/national*, 0=*public*. All the questions were answered by a school principal.

5.3. Data analysis

Due to the sampling procedure used in TIMSS 2011, *weighted multilevel model* and *weighted multilevel ordered logit model*, and *weighted multilevel logit model* analysis was conducted according to each independent variable. The analysis was conducted with students representing the level-1 units and schools representing level-2 units. Multilevel model is also known as a hierarchical linear model. Eight models are estimated to analyse whether informative school outreach is associated with home-based parental involvement. These models are statistically controlled student and school background variables.

5.4. Descriptive Statistics

Table 1 provides weighted descriptive statistics for each grade. The proportion of parents that do not engage in any types of involvement is not negligible. For fourth grade, about 4 percent and for eighth grade, about 10 percent of parents do not engage in any types of home-based involvement. Parents' highest levels of education were measured only for the eighth grade. Among mothers, 3% completed elementary school or did not graduate from any school, 33% completed junior high school, 22% completed junior college, 16% graduated from university, college, or graduate school, and 26% lists as unknown. As for to fathers, 4%completed elementary school or did not graduate from any school, 26%completed junior high school, 8% completed junior college, 28% graduated from university, college, or graduate school, and 33% lists as unknown.

6. Results

6.1. Fourth grade

Table 3 shows the eight models that estimate effects of informative school outreach on each variable that measures home-based parental involvement. Model 1 to 4 are estimated with weighted multilevel ordered logit model, model 5 to 7 are estimated with a weighted multilevel model, and finally model 8 is estimated with weighted multilevel binary logit model. Informing about school is positively associated with all the variables of parental involvement. That is when parents tend to get more involved as they receive school information. On the other hand, informing about students is not significantly associated with most variables and is negatively associated with *Monitoring* and*Pi0*.

As for the student level variables, parents tend to communicate with their children about school more and are more likely to engage in at least one type of involvement when their child is female (*Ask*, *Talk*, *Communicating*, and *PI0*). SES variables are largely related to parental involvement. The number of possessions at home is positively associated with all home-based parental involvements. Likewise, the numbers of books at home are also positively associated with most variables except for *Pi0*.

On the school level variable, the income level of school area and class size is largely associated with parental involvement. The Higher income level of school area is negatively associated with *Ask*, *Check*, *Communicating*, *Pi4* and *Pi0*. Larger class size is negatively associated with most variables except *Ask* and *Time*. Other variables do not show significant association largely. The total enrolment of students in hundreds is positively associated with *Talk* and *Pi0*. A higher percentage of students from economically disadvantaged homes is negatively associated with *Pi0*. When schools locate in bigger cities, parents tend to *Ask* more.

6.2. Eighth grade

Table 4 shows the results of the estimation for eighth grade. The same as for fourth grade, model 1 to 4 are estimated with the weighted multilevel ordered logit model, model 5 to 7 are estimated with weighted multilevel model, and finally model 8 is estimated with a weighted multilevel binary logit model. School outreach about learning progress is positively associated with all the types of home-based parental involvement. However, a frequency of informing about behaviour and well-being of children is negatively associated with *Ask*, *Talk*, *Communicating*, and *Pi4*. Lastly, the results did not show any significant association between informing about school and home-based parental involvement.

As student level variables, as with the fourth grade, parents are more likely to get involved and communicate when their child is female. The number of books is positively associated with most of the parental involvement except for variables that measure monitoring related. The number of possessions at home is positively associated with all the types of home-based parental involvement.

A higher level of parents' education is positively associated with home-based parental involvement in large. However, the tendency is relatively weak for mothers' educational level. While a higher level of education is positively associated with *Ask*, *Time*, *Monitoring*, and *Pi4*, there are no significant associations between *Talk*, *Check*, *Communicating*, and*Pi0*. When children do not know their mothers' educational level, it is negatively associated with *Talk* but positively related to *Time* and *Monitoring*.

As for school level variables, the percentage of students from economically disadvantaged homes shows the strongest association with parental involvement. The higher percentage of economically disadvantaged students in the school is negatively associated with all the types of involvement. As other variables, total enrolment of students is positively associated with *Ask, Talk, Time*, and *Communicating*. Larger area of school location is negatively associated with *Ask*, *Communicating*, and *Pi0*. Higher income level of school area is negatively associated with *Communicating* and *Pi4*. Larger class size is negatively associated with *Talk* and *Communicating*. However, a private or national school does not have any influence on parental involvement.

7. Discussion

The present study investigates effects of informative school outreach on home-based parental involvement elementary and middle school separately. Results reveal that different types of informative school outreach have different effects depending on whether the student is in the fourth or eighth grade. Association of home-based parental involvement with informative school outreach, students and school level variables are discussed.

Home-based parental involvement and its association with informative school outreach

For fourth grade, informing about school is positively associated with home-based parental involvement. For eighth grade, informing about the learning progress had the similar effect. These factors also positively influence parents who do not engage in any involvement. The effects of informative school outreach are robust as they are significant on both multidimensional and separate measures of home-based parental involvement.

However, for elementary school, informing about students and, for middle school, informing about behaviour and well-being of students are negatively associated with some variables. The results are consistent with Simon (2004). She refers that parents of children with attendance or behaviour problems reported more school contacts about children's attendance and behaviour. Likewise, the same reason is considered for the negative result, and schools tend to inform parents about behavior and well-being of students more frequently especially when there are more children that have problems.

The differences in results between elementary and middles school may reflect the parents' focus

of concern at different school levels of their children. Parents of elementary school children tend to concern more about their children's relationships with other friends, and behaviour of everyday life rather than their academic achievement (Benesse Educational Research and Development Institute, 2011). If the parents still do not place importance on their children's academic achievement, the school can play an important role to convey the importance of education and developing learning habits. Information about the school such as rules or educational goals would make them aware of what they are supposed to do in relation to their children's schooling and prompt them to engage more in their education.

On the other hand, parents of middle school children tend to care more about their children's education (Benesse Educational Research and Development Institute, 2011). In Japan, competitive entrance exams are not used until it is time to enter high school. Hence, information about their children's educational progress becomes imperative to parents of middle school children. Even if parents are less concerned about their education, frequent information about the learning progress can make them aware of the importance of education and the high school entrance examinations. Since working-class mothers tend to rely more on teachers for their children's education (Lareau, 1987; Yamamoto, 2015), some parents might not consider the necessity to get involved in their children's education if they do not receive the information at all. Therefore, receiving information about the learning progress prompt parents to get involved and try to lend their support.

Home-based parental involvement and its association with students level variables

On individual levels, results show that regardless of school level, when children are female, parents tend to get involved more, especially in the communicating type of involvement. Parents' SES, especially economic resources, is largely associated with home-based parental involvement. However, parents' educational level, which is examined only for the eighth grade because of the limited data, show different tendencies between mothers' and fathers' educational level.

In large, a higher level of fathers' education is associated with more parental involvement, while the mother's educational level is not significantly associated with some types of involvement. A higher level of mothers' education is relatively associated with stricter parenting style such as enforcing discipline and routines (*Monitoring* and *Time*), which is consistent with previous studies (Yamamoto, 2015; Honda, 2008). However, it is not significantly associated with *Check*. It is likely that, in general, mothers hope that their children finish their homework regardless of their educational level. In addition to this, as it was also pointed out by Yamamoto (2015), mothers with a higher level of education would expect their children to develop learning habits through making sure if their children set aside time for their homework or not. As for communicating types of involvement, *Talk* is not significantly associated with mothers' educational level, but *Ask* is associated with a higher level of it. Yamamoto (2015) argues that the working-class mother is less

likely to know how to intervene effectively to improve their children's academic performance. It is assumed that mothers with lower educational level may hesitate to initiate to ask or do not know how they should ask about those topics because they feel they lack knowledge or self-efficacy to understand what their children learn at school.

Home-based parental involvement and its association with school level variables

School level characteristics that influence parental involvement have somewhat different impacts on elementary and middle school. A higher percentage of economically disadvantaged students is negatively associated with all the measures for middle school but only with *Pi0* for elementary school. It is possible that information is less likely to be accessible for the parents whose children go to schools with a higher concentration of economically disadvantaged students and it affects to the parents of children in middle school more than in elementary school.

Lareau (1987) points out that parents whose children attend school in middle-class communities tend to socialize with other parents in school environments, such as school events, much more than those in working-class communities. The former receives more information compared to the latter, and which affects the level of parental involvement positively.Therefore, it is considered that parents whose children go to schools with a higher concentration of middle-class students receive more information from the school and other parents than those with a large percentage of students from economically disadvantaged homes.

In addition to the difficulty of keeping up with the more advanced level of studies, parents of children in middle school need specific information regarding high school selection to be able to get involved in their children's education; for example, information about entrance examinations and how to choose the appropriate high school. The information differs depending on the high school they would like to attend, and its located area that is usually within a commuting distance of the area the family lives in. If there are more parents who socialize with each other in or around school, it establishes information exchange networks and especially when the information varies by locality, the parents are more likely to get useful information there. On the other hand, educational information related to elementary school children is more general, and parents can still get it from different sources. Therefore, the percentage of economically disadvantaged students can be more influential for middle school since it changes the amount of the specific information that the parents can get.

In addition to this, it is also possible that when a school consists of a large percentage of students from economically disadvantaged homes, it may not give as much information as other schools with a higher concentration of middle-class students. Usually, higher SES parents tend to have higher educational expectations (how far in school parents expect their children to advance) (e.g., Park and Holloway, 2013; Galindo and Sheldon, 2012). Accordingly, they are prone to demand more from the

schools than their lower counterparts. Schools would respond to this and offer more information. As a result, it prompts parents to get more involved.

A higher income level in the school area and larger class size are more negatively associated with parental involvement for fourth grade than eighth grade. One possible reason for stronger school neighbourhood influence for fourth grade is that elementary schools have smaller school districts compared to middle schools, hence elementary school neighbourhoods more overlaps with the family neighbourhood. Taking this into account, the result is consistent with Bhargava and Witherspoon (2015). They found that parents engage in more home-based involvement if they live in more disadvantaged neighbourhoods to protect their children from negative influences.

The negative influence of larger class size is in line with previous studies (Datar and Mason, 2008; Bonesrønning, 2004). One of some plausible explanations for this is that when children are still young, school-child-parent communication would be smoother in smaller classes. For example, Blatchford and his colleagues (1997) examined effects of class size on a teaching of pupils aged 7 – 11 years and found that pupils in smaller classes got more individual attention and better quality of teaching. Usually, pupils play a role to convey information from schools such as handing letters or a communication notebook to their parents. Since children in smaller classes get more attention from teachers compared to those in a larger one, they are less likely to misunderstand information that they are supposed to tell their parents. As a result, school-child-parent communication becomes smoother in smaller classes and the parents would get more frequent or more accurate information that, in turn, prompts involvement.

Limitations

Because of lack of data, the present study is unable to control the education level of parents of fourth grade students. To see how the results can change without controlling it, the models of eighth grade without controlling parents' educational level were also estimated. The results were very similar to Table 4 and informing about the learning progress is positively associated with all the variables of involvement. Additionally, concerning the explanation presented by Simon (2004) for the negative results, it is impossible to analyse whether it applies to this case or not since cross-section data is used in the study. Further study using panel data is needed in order to test that explanation.

8. Conclusion

The study investigated the effects of school outreach on parental involvement. Samples of elementary and middle school children were analysed separately using a weighted multilevel model. The results show that the associations are different according to the levels of school among the children. For the sample of elementary school children, informing about school is positively

associated with home-based parental involvement. On the other hand, informing about children's learning progress is positively associated with it for eighth grade.

This study addressed gaps in the literature on parental involvement making an important contribution by showing the effects of informative school outreach and the importance of taking into account the school levels. The results of the study suggest that schools and educators can increase the frequency of parental involvement through implementing the practices according to the school level.

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Appendix

Figure 1

A model of influences of informative school outreach on parental involvement

Table 1

Weighted Descriptive Statistics
(Eighth grade:N= 4,143 students and 133 schools, Forth grade: N= 3,939 students and 140 schools)

	Eighth Grade				Fourth Grade			
Variable	Mean or %	Std. Dev.	Min	Max	Mean or %	Std. Dev.	Min	Max
Dependent variables								
(1= Never or almost never, 2= once or twice a month, 3= once or twice a week, 4= every day or almost every day.)								
(Ask)Parents ask a student what you learned in school	2.31	0.98	1	4	2.59	1.03	1	4
(Talk)A student talks about schoolwork with parents	2.49	0.97	1	4	2.80	1.03	1	4
(Time)Parents make sure that a student set aside time for homework	1.97	1.10	1	4	2.23	1.25	1	4
(Check)Parents check if a student does homework	2.13	1.15	1	4	2.99	1.18	1	4
(Pi0)Parents who engage in at least one type of home-based involvement	0.90		0	1	0.96		0	1
(1= More than once or twice a month, 0= Never or almost never)								
Control variables								
Student level								
Female (Female= 1, Male= 0)	0.50		0	1	0.50		0	1
Number of books at home (1= 0-10 books, 2= 11-25 books, 3= 26-100 books, 4= 101-200 books, 5= more than 200)	2.94	1.26	1	5	2.76	1.07	1	5
Possessions at home (a computer, a desk etc.)	7.78	1.66	0	11	7.95	1.81	1	11
Possessions at home11	0.04		0	1	0.06		0	1
Highest level of education completed by mother								
Lower-secondary school, Elementary school or did not complete a school	0.03		0	1				
Upper-secondary school	0.33		0	1				
Junior college	0.22		0	1				
University, college, or Graduate school	0.16		0	1				
Unknown	0.26		0	1				
Highest level of education completed by father								
Lower-secondary school, Elementary school or did not complete a school	0.04		0	1				
Upper-secondary school	0.26		0	1				
Junior college	0.08		0	1				
University, college, or Graduate school	0.28		0	1				
Unknown	0.33		0	1				
School level								
Total enrollment of students (in hundreds)	3.28	2.25	0.45	11.1	3.53	2.39	0.17	11.1
Percentage of students from economically disadvantaged home (1= 0 to 10%, 2= 11 to 25%, 3= 26 to 50%, 4= more than 50%)	1.84	0.87	1	4	1.62	0.72	1	4
Location (1= small town, 2= medium size city, 3= suburban, 4= urban)	2.20	0.95	1	4	2.24	1.08	1	5
Income level of school's immediate area (1= low, 2= middle, 3= high)	1.81	0.56	1	3	1.88	0.45	1	3
Class size	28.93	5.75	16	46	24.42	8.52	4	39
Private or national school (1= Yes, 0=No)	0.07		0	1				
Independent variables								
(1= never, 2= once a year, 3= 2-3 times a year, 4= more than 3 times a year)								
Inform parents about their child's learning progress	3.21	0.69	1	4	3.56	0.57	1	4
Inform parents about the behavior and well-being of their child at school	3.36	0.55	2	4	3.56	0.55	1	4
Inform parents about the overall academic achievement of the school	2.87	0.89	1	4	2.37	0.68	1	4
Inform parents about school accomplishments	3.55	0.67	1	4	3.37	0.74	1	4
Inform parents about the educational goals and pedagogic principles of the school	2.88	0.82	1	4	3.05	0.70	2	4
Inform parents about the rules of the school	2.88	0.79	2	4	2.73	0.71	2	4

Table 2

Factor Analysis Results for Informative School Outreach

	Factor 1: informing about school	Factor 2: informing about students
Forth grade		
Inform parents about their child's learning progress	-0.063	0.810
Inform parents about the behavior and well-being of their child at school	0.080	0.849
Inform parents about the overall academic achievement of the school	0.437	0.071
Inform parents about school accomplishments	0.444	0.254
Inform parents about the educational goals and pedagogic principles of the school	0.739	0.058
Inform parents about the rules of the school	0.570	-0.186
Eigjth grade		
Inform parents about the overall academic achievement of the school	0.494	
Inform parents about school accomplishments	0.438	
Inform parents about the educational goals and pedagogic principles of the school	0.754	
Inform parents about the rules of the school	0.806	

Table 3

Weighted Multilevel Analysis Results for Fourth Grade

	1	2	3	4	5	6	7	8
VARIABLES	Ask	Talk	Time	Check	Communicating	Monitoring	Pi4	Pi0
Female	0.329***	0.481***	0.0643	-0.0247	0.247***	0.00270	0.131***	0.547***
	(0.0625)	(0.0605)	(0.0619)	(0.0636)	(0.0503)	(0.0439)	(0.0322)	(0.169)
Number of books at home	0.131***	0.119***	0.119***	0.131***	0.0942***	0.0788***	0.0712***	0.162
	(0.0329)	(0.0359)	(0.0321)	(0.0314)	(0.0270)	(0.0223)	(0.0184)	(0.124)
Possessions at home	0.200***	0.150***	0.138***	0.0854***	0.122***	0.0676***	0.0845***	0.226***
	(0.0195)	(0.0204)	(0.0195)	(0.0192)	(0.0144)	(0.0130)	(0.00981)	(0.0556)
Possessions at home11	0.0951	0.273*	0.123	0.0466	0.0705	0.126	0.0718	-0.222
	(0.138)	(0.140)	(0.158)	(0.155)	(0.102)	(0.109)	(0.0632)	(0.465)
(School level)								
Total enrollment of students(100)	0.00163	0.0403**	0.0110	0.0173	0.0176	0.0122	0.0121	0.116*
	(0.0202)	(0.0200)	(0.0204)	(0.0244)	(0.0139)	(0.0134)	(0.00961)	(0.0680)
% of economically dsadvantaged students	-0.0775	0.0338	-0.0514	-0.0549	-0.0106	-0.0414	-0.0173	-0.318*
	(0.0556)	(0.0630)	(0.0752)	(0.0693)	(0.0414)	(0.0454)	(0.0285)	(0.177)
Location of school	0.104**	0.0250	0.00171	0.0789	0.0432	0.0322	0.0316	0.175
	(0.0425)	(0.0431)	(0.0627)	(0.0572)	(0.0295)	(0.0395)	(0.0213)	(0.128)
Income level of school area	-0.203**	-0.0929	-0.0821	-0.249**	-0.108*	-0.112	-0.0870*	-0.482*
	(0.0806)	(0.0956)	(0.113)	(0.110)	(0.0624)	(0.0699)	(0.0460)	(0.277)
Class size	-0.00506	-0.0243***	-0.0147	-0.0132*	-0.0113*	-0.0126**	-0.00930**	-0.0904***
	(0.00677)	(0.00857)	(0.0102)	(0.00777)	(0.00595)	(0.00593)	(0.00421)	(0.0248)
School informative outreach								
Informing about student	-0.0214	-0.0620	-0.0898	-0.0741	-0.0426	-0.0746*	-0.0430	-0.295*
	(0.0385)	(0.0571)	(0.0848)	(0.0560)	(0.0340)	(0.0449)	(0.0283)	(0.174)
Informing about school	0.103*	0.0972*	0.160**	0.133**	0.0848**	0.118***	0.0782***	0.336*
	(0.0534)	(0.0567)	(0.0704)	(0.0654)	(0.0388)	(0.0433)	(0.0288)	(0.187)
Constant					-1.006***	-0.258	-0.615***	4.390***
					(0.254)	(0.254)	(0.176)	(0.994)
cut1	0.231	-0.686*	0.606	-1.151***				
	(0.347)	(0.358)	(0.370)	(0.365)				
cut2	1.364***	0.598*	1.215***	-0.458				
	(0.345)	(0.357)	(0.369)	(0.367)				
cut3	3.139***	2.098***	2.006***	0.370				
	(0.346)	(0.357)	(0.367)	(0.367)				
Level-2 variance (schools)	0.136***	0.116***	0.168***	0.171***				1.090***
	(0.0230)	(0.0201)	(0.0320)	(0.0295)				(0.305)
Log of level-2 variance (schools)					-1.759***	-1.654***	-2.019***	
					(0.161)	(0.164)	(0.148)	
Log of level-1 variance (students)					0.172***	0.160***	-0.205***	
					(0.0107)	(0.0139)	(0.0140)	

Robust standard errors in parentheses

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

Table 4

Weighted Multilevel Analysis Results for Eighth Grade

VARIABLES	1 Ask	2 Talk	3 Time	4 Check	5 Communicating	6 Monitoring	7 Pi4	8 Pi0
Female	0.150**	0.561***	0.0567	-0.0249	0.312***	0.0274	0.0662	0.495***
	(0.0623)	(0.0634)	(0.0708)	(0.0611)	(0.0418)	(0.0641)	(0.0439)	(0.118)
Number of books at home	0.118***	0.111***	0.0399	0.0653**	0.0740***	0.0365	0.0334**	0.122**
	(0.0271)	(0.0255)	(0.0279)	(0.0254)	(0.0189)	(0.0222)	(0.0135)	(0.0539)
Possessions at home	0.171***	0.165***	0.157***	0.0647***	0.130***	0.0778***	0.0729***	0.123***
	(0.0236)	(0.0218)	(0.0224)	(0.0238)	(0.0184)	(0.0150)	(0.0102)	(0.0417)
Possessions at home11	-0.0473	-0.103	-0.0103	0.309*	0.0168	0.211	0.120	-0.130
	(0.175)	(0.171)	(0.173)	(0.188)	(0.144)	(0.189)	(0.134)	(0.389)
Ref: Lower than lower-secondary								
Mother:Upper-secondary school	0.243	0.0491	0.331	0.126	0.0675	0.139	0.103	-0.200
	(0.208)	(0.165)	(0.246)	(0.229)	(0.167)	(0.141)	(0.0967)	(0.324)
Mother: Junior college	0.398*	0.122	0.422*	0.319	0.128	0.251*	0.181*	0.196
	(0.212)	(0.182)	(0.247)	(0.241)	(0.178)	(0.152)	(0.103)	(0.335)
Mother: Higher then University	0.508**	0.225	0.507**	0.388	0.248	0.306**	0.233**	0.255
	(0.226)	(0.195)	(0.245)	(0.249)	(0.188)	(0.155)	(0.110)	(0.367)
Mother: Unknown	-0.0108	-0.357*	0.464*	0.367	-0.219	0.273*	0.129	-0.439
	(0.218)	(0.183)	(0.243)	(0.237)	(0.190)	(0.152)	(0.0973)	(0.349)
Father: Upper-secondary school	0.405**	0.493***	0.640***	0.551***	0.375***	0.382***	0.297***	0.555**
	(0.161)	(0.166)	(0.185)	(0.157)	(0.127)	(0.0990)	(0.0653)	(0.275)
Father: Junior college	0.496***	0.521**	0.593***	0.630***	0.316	0.328**	0.241**	0.525
	(0.192)	(0.217)	(0.207)	(0.192)	(0.214)	(0.142)	(0.107)	(0.341)
Father: Higher then University	0.509***	0.601***	0.592***	0.474***	0.484***	0.278**	0.246***	0.812**
	(0.175)	(0.179)	(0.188)	(0.167)	(0.162)	(0.117)	(0.0880)	(0.324)
Father: Unknown	0.268	0.281	0.260	0.251	0.306**	0.123	0.124*	0.316
	(0.165)	(0.173)	(0.178)	(0.153)	(0.151)	(0.0910)	(0.0640)	(0.298)
(School level)								
Total enrollment of students(100)	0.0406*	0.0523**	0.0405*	0.0161	0.0343**	0.0179	0.0174	0.0602
	(0.0216)	(0.0215)	(0.0233)	(0.0237)	(0.0144)	(0.0164)	(0.0115)	(0.0391)
% of economically dsadvantaged students	-0.120*	-0.214***	-0.199***	-0.226***	-0.129***	-0.156***	-0.114***	-0.322***
	(0.0634)	(0.0576)	(0.0630)	(0.0702)	(0.0393)	(0.0421)	(0.0284)	(0.103)
Location of school	-0.129**	-0.0715	-0.0200	0.0188	-0.0691*	0.0130	-0.00551	-0.189**
	(0.0559)	(0.0484)	(0.0569)	(0.0693)	(0.0355)	(0.0441)	(0.0305)	(0.0750)
Private or national school	0.0325	0.131	-0.223	-0.170	0.0327	-0.131	-0.0749	-0.00529
	(0.155)	(0.148)	(0.198)	(0.144)	(0.106)	(0.125)	(0.0895)	(0.322)
Income level of school area	-0.137	-0.182	-0.130	-0.174	-0.154*	-0.126	-0.0996*	-0.154
	(0.126)	(0.111)	(0.0993)	(0.139)	(0.0855)	(0.0846)	(0.0603)	(0.211)
Class size	0.00309	-0.0274***	0.00271	-0.0132	-0.00987*	-0.00563	-0.00446	-0.00999
	(0.00993)	(0.00806)	(0.0128)	(0.00905)	(0.00573)	(0.00706)	(0.00469)	(0.0168)
School informative outreach								
Informing about learning progress	0.126*	0.163***	0.215***	0.166**	0.109***	0.143***	0.107***	0.179*
	(0.0731)	(0.0611)	(0.0715)	(0.0765)	(0.0423)	(0.0490)	(0.0345)	(0.0916)
Informing about behavior and well-being	-0.182**	-0.197***	-0.109	-0.105	-0.145***	-0.0773	-0.0704*	-0.0742
	(0.0846)	(0.0755)	(0.0820)	(0.0843)	(0.0533)	(0.0564)	(0.0399)	(0.122)
Informing sbout school	-0.0668	0.00231	0.00184	0.0127	-0.0210	0.00980	0.00127	-0.0417
	(0.0427)	(0.0495)	(0.0550)	(0.0520)	(0.0288)	(0.0370)	(0.0254)	(0.0817)
Constant					-0.809**	-0.821**	-0.699***	1.556*
					(0.320)	(0.408)	(0.266)	(0.862)
cut1	0.541	-0.951*	2.133***	0.222				
	(0.578)	(0.518)	(0.646)	(0.596)				
cut2	1.883***	0.605	3.012***	1.032*				
	(0.575)	(0.518)	(0.640)	(0.597)				
cut3	3.865***	2.485***	4.161***	2.134***				
	(0.582)	(0.533)	(0.639)	(0.607)				
Level-2 variance (schools)	0.125***	0.141***	0.175***	0.165***				0.359***
	(0.0239)	(0.0202)	(0.0245)	(0.0258)				(0.0766)
Log of level-2 variance (schools)					-1.912***	-1.576***	-1.942***	
					(0.221)	(0.145)	(0.146)	
Log of level-1 variance (students)					0.180***	0.221***	-0.148***	
					(0.0104)	(0.0132)	(0.0129)	

Robust standard errors in parentheses

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