



# Parent involvement in elementary school and educational attainment

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## Abstract

While educational success in high school can be linked to elementary school achievement, there is little evidence that parent involvement in elementary school provides lasting benefits to children through high school. Using data from the Chicago Longitudinal Study, this study investigated the association between parent involvement in elementary school and success in high school. Parent involvement in school (based on teacher and parent reports) and parent reports of home involvement were used to determine if greater reported parent involvement was associated with indicators of school success. Results indicated that even after controlling for background characteristics and risk factors, parent involvement in school was significantly associated with lower rates of high school dropout, increased on-time high school completion, and highest grade completed. This study suggests that parent involvement in school is an important component in early childhood education to help promote long-term effects.  
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## 1. Introduction

For children growing up in poverty, high school completion is a crucial step toward economic success. High school graduates earn, on average, approximately \$7000 more per year and 20% more over their lifetime than high school dropouts (U.S. Census Bureau, 2002). In addition, for each year a student remains in school because of retention, the costs reach close to \$9000 per year (U.S. Department of Education, 2001). Unfortunately, in many urban neighborhoods with high concen-

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trations of poverty, it is estimated that high school dropout rates often exceed 40% (Alexander, Entwisle & Dauber, 2003; U.S. Department of Education, 1996). This paper examines whether parent involvement in school and in the home is associated with indicators of educational attainment. Since parent involvement is alterable and may be enhanced by early school interventions, policies that attempt to increase parent involvement may be a cost-effective way to improve school success for children.

Although some studies have linked participation in early intervention to greater elementary school success which leads to higher school attainment for at-risk children (e.g. Schweinhart, Barnes, Weikart, Barnett & Epstein, 1993; Barnett, Young & Schweinhart, 1998), there is little consistent evidence that parent involvement in early intervention leads to greater school attainment for children (White, 1985; White, Taylor & Moss, 1992; Barnett et al., 1998). Inconsistencies in the parent involvement literature continue to plague researchers. Even a recent meta-analysis by Fan and Chen (2001) conclude that while overall it appears as though parent involvement in school is significantly associated with academic achievement, there is still a great amount of variation among individual studies. The researchers also assert that it may be parental expectations and parental desires for their children's school success that actually lead to school success. In addition, Fan and Chen (2001) found that parent involvement in the home (as measured by parental supervision) is not significantly associated with academic achievement.

Using data from the Chicago Longitudinal Study, this study examines the relation between parent involvement in elementary school and children's high-school success. The majority of the sample participated in an early intervention program (Child-Parent Centers) which attempts to increase cognitive readiness for school and which encourages parent involvement in school. Thus, this study attempts to determine if parent involvement in elementary school, which is expected to increase with participation in the program, is associated with indicators of school success for children in high school. The following questions are addressed:

1. What is the association among parent ratings of home involvement, parent ratings of school involvement, and teacher ratings of school involvement?
2. Are teacher and parent-reported measures of parent involvement in school and at home associated with educational attainment? Are these associations robust after family background characteristics are taken into account?
3. Are the relations between measures of parent involvement and school success robust above and beyond socio-emotional maturity and cognitive ability (other goals of the Child-Parent Centers)?

### *1.1. Parent involvement at school and home*

While early intervention research continues to struggle with whether parent involvement is associated with child educational outcomes, research on the effects of parent involvement within regular education has moved beyond this onto determining the process in which parent involvement exudes its effects (Keith, Reimers, Fehrmann, Pottebaum & Aubey, 1986; Keith, 1991; Christenson, Rounds

& Gorney, 1992). Thus, parent involvement is often conceptualized within a broad framework, that incorporates not only the traditional measure of parent involvement within school, but also other components of parent involvement (e.g. Keith, 1991; Christenson et al., 1992; Epstein, 1992; Keith et al., 1993). Most research follows Epstein (1992) six-level framework of parent involvement that includes: parenting, learning at home, communicating with the school, volunteering at school, decision making in the school, and collaborating with the community.

Even with the different levels of Epstein's model, most research focuses on parent involvement within the school and parent involvement at home. While the direct effects of parent involvement within school and child achievement has been established, the importance of home involvement is often not evaluated. There is evidence to suggest that parent involvement at home (i.e. monitoring of school activities and encouraging learning activities) is associated with child's achievement (e.g. Henderson, 1987; Christenson et al., 1992); however, parent involvement at home is often found to be indirectly associated with child achievement through other variables (Fehrmann, Keith & Reimers, 1987; Keith, 1991; Keith et al., 1993).

### *1.2. Raters of parent involvement*

An important issue to consider in parent involvement research is the reporter of parent involvement. Teacher ratings, parent ratings, and student ratings have all been used. Some have argued that student ratings are most appropriate because it is not the actual parent participation but the child's perception of the participation that is most influential on later child outcomes (e.g. Keith, 1991). However, one study found that student ratings of parent involvement in school were actually negatively correlated with both parent and teacher ratings of parent involvement (Reynolds, 1992). Reynolds (1992) hypothesizes that children may perceive their parents coming to school as a negative reflection upon them—they are in trouble so their parent *needs* to come to school.

Therefore, student ratings of parent involvement are not included in this study. However, both parent and teacher ratings of parent involvement are examined. Although, they are both measuring parent involvement in elementary school, it is still unclear which measure yields the most reliable results. A study by Reynolds (1992) found that teacher and parent ratings of school involvement although only modestly correlated with each other, both still were significantly associated with child's achievement in early elementary school.

### *1.3. Chicago Child-Parent Centers*

The majority of the families participating in this study were involved in the Child-Parent Centers. The Child-Parent Centers (CPC) offer services to 3–9 year-old children and their families. Participation in the program is reserved for children living in Title I neighborhoods. The programs, offered within the Chicago Public Schools, provide both educational and family support activities. Children can receive

up to 6 years of a comprehensive language-based intervention; 1–2 years of preschool, kindergarten, and up to 3 years extended services in elementary school.

The CPCs also offer a variety of programs for parents that include a parent resource room in each center and a parent-resource teacher who oversees parent activities. Parents learn developmentally appropriate activities for their children, learn ways to enhance their relationship with their child, learn about available community resources, attend educational courses, and can get their GED. Parents are also given the opportunity to be on the School Advisory Council, assisting in the design and implementation of educational planning. In addition, an outreach specialist works with in the neighborhoods to coordinate home visitations, resource distribution, and the recruitment of children in need for early educational services (Reynolds, 2000).

#### *1.4. This study*

While the positive effects of participation in the Child-Parent Centers and child achievement have been well documented (e.g. Reynolds, 1989, 1992; Reynolds, Mavrogenes, Bezruczko & Hagemann, 1996; Reynolds & Temple, 1998; Reynolds, 2000), the direct effects of parent involvement on child's school success has received less attention (Miedel & Reynolds, 1998). However, a major component of the CPCs is to promote parent involvement in both the CPC and also to encourage parent involvement throughout elementary school. By encouraging parent involvement in preschool, the CPCs attempt to enhance the family-school connection and thus increase parent involvement in elementary school, which is expected to be associated with higher school performance. The CPCs also encourage parents to enhance the parent-child relationship and to provide developmentally stimulating activities for their child. Home involvement was measured in elementary school to determine if this aspect of parent involvement is also associated with long-term school success.

## **2. Methods**

### *2.1. Sample*

The study sample participates in the Chicago Longitudinal Study (CLS), an ongoing study investigating the influence of an early intervention, the Chicago Child-Parent Center Program. The CLS is a federally funded study that has examined the academic and social development of children in inner-city Chicago since 1986. As of January 2000, the end point for the present study, children were approximately 20 years of age. Of the 1539 children in the original sample, 1165 (76%) are included in this study sample. Youth included in this study had information regarding their school status (dropout and high school completion) as well as having either:

Table 1  
Descriptive statistics for child and family characteristics

Variable	<i>N</i>	Mean	S.D.
Child characteristics			
Sex (1 = girl)	1165	0.51	0.50
Race (1 = African–American; 0 = Latino)	1164	0.94	0.24
Any CPC preschool	1165	0.66	0.48
Any CPC follow-on	1165	0.59	0.49
Extensive CPC participation	1165	0.41	0.49
Number of years of CPC preschool	1165	1.02	0.84
Number of years of CPC follow-on	1165	1.27	1.18
Socio-emotional maturity in grade 1	1012	19.56	5.81
Missing on socio-emotional maturity	1165	0.13	0.34
Word analysis in kindergarten	1165	63.74	13.51
Family characteristics			
Eligibility for subsidized lunch (1 = eligible)	1165	0.88	0.32
Parent education (1 = high school degree)	853	0.61	0.49
Employment status (1 = FT or PT employment)	937	0.37	0.48
Marital status (1 = ever been married)	935	0.46	0.50
Any missing parent variables	1165	0.32	0.47
Outcome variables			
School dropout (percentage)	1165	0.49	0.50
High school completion (percentage)	1129	0.46	0.50
Highest grade completed (7–12)	1123	10.45	1.67

(a) parent ratings of their involvement in any elementary school survey, or (b) at least three out of six teacher ratings on parent involvement in grades 1–6.<sup>1</sup>

Table 1 shows descriptive statistics on child and family characteristics of the study sample. For example, 51% of the sample was girls, 66% of the sample had CPC preschool services, 61% of the sample had a parent who graduated high school, and 88% of the sample was eligible for a subsidized lunch. In addition, 49% of the sample dropped out of high school, 46% completed high school, and the average highest grade completed was 10.45 (out of a possible 12).

## 2.2. Independent variables

Parent involvement at school and at home were kept separate for examination in this study. Another study attempted to combine differing components of parent involvement (parents' educational aspirations for their child, parent-child communication, the amount of home structure provided by parents, and parents participation

<sup>1</sup> The study sample and the attrition sample were similar on many background characteristics. The groups were significantly different on some expected variables. Since most of the attrition sample group left the Chicago Public Schools in elementary school, accounting for the lack of surveys in elementary school, it was not surprising that the group had less years of CPC Program participation, were less likely to have follow-on participation, and were less likely to have extensive participation. Because of the lack of surveys from parents and teachers, there were not enough surveys to determine if the parents were employed or were ever married.

in school activities), but concluded that the items were exclusive of one another and therefore should be kept separate in an analysis (Keith et al., 1993). The following are the parent involvement variables.

### *2.3. Parent ratings of home involvement*

Parent ratings (over 90% were mother reports) of their home involvement with their child during second, fourth-sixth grade were collected. Parents were asked how often they: (1) read to their child, (2) cooked with their child, (3) discussed school progress with their child, and (4) went on outings with their child [or took their child to a museum, zoo, planetarium, or aquarium]. All ratings were converted to a 3-point scale (1=never; 2=sometimes and 3=often). Scores from families who completed the survey in fourth-sixth grade were used first, if ratings were missing, scores from the second grade survey were used. If the majority of items were answered and only one missing item occurred, then the median score – 1 was given. Reliability for this scale was 0.50.

### *2.4. Parent ratings of school involvement*

Parent ratings of their amount of participation in school were collected during second, fourth-sixth grade. Parents were asked how often they did the following activities: (1) participate in school activities; (2) talk with the teacher about their child; and (3) help in the child's classroom. All ratings were converted to a 3-point scale (1=never; 2=sometimes and 3=often). Ratings from the fourth-sixth grade survey were used first, if parents did not complete a fourth grade survey, information from the second grade survey were used. If the majority of items were answered and only one missing item was present, the item score was imputed to increase sample size. Children with missing items were given the median score – 1. Scores for each individual item were summed to create a school involvement scale. Reliability for this scale was 0.63.

### *2.5. Teacher ratings of school involvement*

Teacher ratings of parent involvement are based on teacher reports from first through sixth grade. Each year, the student's teacher was asked to rate 'parent's participation in school activities.' Teachers answered on a five point scale (5=excellent/much; 4=above average; 3=satisfactory/average; 2=fair/some; 1=poor/not at all). To determine the number of years a parent was rated as participating in school average or better, this measure was calculated by counting ratings of average to excellent (score of 3, 4, or 5) over all 6 years. The range for this measure is 0 to 6.

### *2.6. Dependent variables*

This study concentrated on variables that are educationally meaningful: school dropout at age 20, high school completion at age 20, and highest grade completed

by age 20. Taken together, these measures are key indicators of long-term educational success. High school completion is a key indicator of economic success with high school graduates earning between 31% (for males) and 36% (for females) more than high school dropouts (U.S. Department of Education, 1996).

### *2.7. High school dropout by age 20*

Dropout rates are based on Chicago school information or tracking information as of January 2000 when students were approximately 19 years 9 months old. Students who left school for any reason (with the exception of school transfer or death) without earning a high school diploma were considered to be a dropout. Students who were enrolled in a GED program or Job Corps were also considered to be a dropout for the purpose of this study. If a student was still active in school or graduated from high school they were not considered a dropout. For this study, 1165 students had a status determined by school records. Of these students, 49% were considered dropouts.

### *2.8. High school completion*

Chicago school records or school records from schools students had transferred were used to determine if participants had graduated from high school. If the student graduated from an accredited GED program they were considered to have completed high school. This measure also determines if students completed high school either on-time or within a year of anticipated graduation since all students should have completed high school May of 1999. Of the participants in this study, 1129 students had a known high school completion status as of January 2000. Of these, 46% graduated from high school ( $n=520$ ) or received their GED ( $n=3$ ) from an accredited program. The rest of the sample was considered non-completers.

### *2.9. Highest grade completed by age 20*

Using Chicago school information and information gathered from other schools as of January 2000, the students' highest grade completed was determined. For example, if the student graduated from high school, the highest grade would be 12. The highest grade completed was the last known grade that the student actually completed. Therefore, if a student was enrolled in the eleventh grade, highest grade completed would be grade 10. This number does not adjust for retention rates, but rather indicates the highest grade successfully completed by the student. This sample had information on the highest grade completed for 1123 students. The mean grade completed was 10.45 with a standard deviation of 1.7.

### *2.10. Control variables*

Because of the potential of a bi-directional influence between parent involvement and student achievement (Keith et al., 1993) it is important to control for past

cognitive ability in the analysis. In the final model, both cognitive ability in kindergarten as well as first grade socio-emotional maturity are controlled for. By doing this, the model can determine if parent involvement has an effect on later achievement beyond that which would be expected based on cognitive and social ability. The following were used as control variables:

### *2.11. Participation in the child-parent center program*

Participation in the Child-Parent Center Program was included in the model as a dichotomous variable. Children involved in the CPC Program could have preschool services, follow-on services, or both. Students with *any preschool*, 1 or 2 years, were coded with a one, if they did not participate in preschool they were coded a zero. Some students also participated in *follow-on participation*. Students that received follow-on services continued to receive additional resources from the Child-Parent Center from first through third grade. Students in a school that provided follow-on services received a one, and others received a zero. *Extensive participation* was also included. Children were coded with a 1 if they had extensive participation (preschool, kindergarten, and some follow-on services—4 or more years of intervention); all other children were given a 0. Previous studies have found that these indicators tap the effects of the program well (Reynolds, 1994).

### *2.12. Race*

Race of the student was coded dichotomously. African-American students were coded with a 1 and Latino Students were coded with a 0. Ninety-four percent of the sample was African-American.

### *2.13. Gender*

Gender was coded 0 if the child is a boy and a 1 if the child is a girl. Of the sample, 51% were girls.

### *2.14. Eligibility for subsidized school lunch*

Eligibility for subsidized school lunch was coded one if children were eligible for a free or reduced lunch and zero if children were not eligible by age 12. This variable is a proxy for family income. Children are eligible for a free lunch subsidy if their family income is 130% of the poverty level. Children are eligible for a reduced lunch subsidy if their family income is 185% of the poverty level. The majority (88%) of this sample were eligible for free or reduced lunch.

### *2.15. Parent education*

Parent education was coded as a dichotomous variable (1=parent graduated high school, 0=otherwise or missing data). Parents were asked in children's second,



fourth, and eleventh grade if they had a high school degree or a GED. These parent reports were used to determine parent education. Data from fourth grade was used first, if information was missing data from second then eleventh grade was used (since fourth grade surveys were used the most, the average age of students was 9). Of this sample, 61% reported that they graduated from high school or received a GED.

### *2.16. Employment status*

Employment status was determined by using parent questionnaires in fourth and eleventh grade. Parents were asked in the fourth grade questionnaire to report their current employment status. The eleventh grade survey asked parents what their employment status was when their child with in preschool. If parents reported being employed at either time period they were coded as having been employed. Thirty-seven percent of parents reported being employed full or part time when their children were in elementary school.

### *2.17. Marital status*

Marital status was determined by parent responses in fourth and eleventh grade questionnaires. In fourth grade parents were asked their present marital status—never married, married, divorced, separated, or widowed. In eleventh grade parents were asked retrospectively if their child lived with both parents when their child was in preschool. If parents reported being married in the fourth grade survey or they reported that their child lived with both parents when their child was in preschool, they were coded as having been married (or co-habiting with their partner). Forty-six percent of parents reported either being married at some time or co-habiting with their child's parent.

### *2.18. Missing on any parent variables*

Missing on parent variables was coded a 1 if a parent did not answer a parent education question, a lunch subsidy question, a question about their employment status, or a question about their marital status. Parents who did not answer these questions were assumed to have less than a high-school degree, to be eligible for subsidized lunch, to be unemployed, or to be unmarried. A parent who answered all background questions received a 0. This variable was included to determine if there was a difference between groups when a score was imputed for the parent. Thirty-two percent of parents did not answer questions in one of the above listed categories, and were given a code of 1 for missing data. By estimating the influence of missing data, the sample size does not decrease; thus increasing statistical power while at the same time taking into account the influence of imputed data (Cohen & Cohen, 1983).

### 2.19. *Index of socio-emotional maturity*

Socio-emotional maturity is a scale including questions such as: child works and plays well with others, came to school ready to learn, and child complies with classroom rules ( $\alpha=0.94$ ). Of the sample of 1165, 1012 students had socio-emotional maturity ratings in grade 1 (mean=19.56, S.D.=5.81). For the study sample, however, if students were missing on socio-emotional maturity they were given an imputed score (the median  $-1=18$ ). If a student was *missing on socio-emotional maturity* they were also given a 1 for missing on socio-emotional maturity to control for differences in the imputed scores given.

### 2.20. *Kindergarten word analysis score*

Kindergarten word analysis score was entered into the model for elementary school parent involvement variables to control for early cognitive development. This was included in the model to determine if the influence of parent involvement was independent of the expected trend of achievement on the outcome measures. The kindergarten word score is a sub-test of the reading section of the Iowa Test of Basic Skills (ITBS) Early Primary Battery (Level 5: Hieronymus, Lindquist & Hoover, 1980). There are 35 items in the word analysis section assessing pre-literacy skills. Internal consistency for this sub-test is 0.87. Students completed this test at the end of kindergarten, spring of 1986.

### 2.21. *Data analysis*

Both logistic regression and hierarchical linear regression analysis were used in this study. Because logistic regression does not assume linearity, it was used to examine the association among independent and control variables on high school dropout and high school completion. Hierarchical regression was used to examine the association among independent and control variables on highest grade attained. For both analyses, covariates included: years of intervention, eligibility for subsidized lunch, parent education, parent employment status and parental marital status, any missing parent information, student race, and student gender. The final model included social and cognitive indicators (socio-emotional maturity in grade 1 and kindergarten word analysis score).

Univariate analysis was used to compare the means of each outcome variable by varying levels of teacher ratings of parent involvement. Univariate analysis allowed for means to be estimated both before and after control variables are considered. For this study, child and family background variables and early social and cognitive measures of the child were used as covariates. Post hoc multiple comparison tests then determine if there are significant differences between the means. Bonferroni significant difference test was used to indicate which means were significantly different from other means after adjusting for the covariates.

Table 2  
Correlations among key outcome and explanatory variables

Variable	1	2	3	4	5	6
1. Parent involvement at home	–					
2. Parent involvement at school	0.28***	–				
3. Teacher ratings of school involvement (1–6 grade)	0.04	0.24***	–			
4. Any preschool participation	0.04	0.05	0.14***	–		
5. Any follow-on participation	0.04	0.10**	0.17***	0.41***	–	
6. Extensive participation	0.05	0.12***	0.25***	0.60***	0.68***	–
7. Dropout	–0.03	–0.03	–0.23***	–0.06	–0.01	–0.07*
8. High school completion	0.03	0.02	0.27***	0.08**	0.03	0.08**
9. Highest grade attained	0.03	0.05	0.27***	0.09**	0.04	0.09**

### 3. Results

#### 3.1. Parent and teacher ratings of parent involvement

As indicated in Table 2, teacher ratings of school involvement were significantly correlated with parent ratings of school involvement ( $r=0.24$ ), but were not significantly associated with parent ratings of home involvement. Teacher ratings in elementary school (grades 1 through 6) were significantly associated with teacher ratings in early elementary school and later elementary school ( $r=0.82$  and  $0.76$ , respectively). In addition, there were significant correlations between parent ratings of school involvement and CPC participation but not between school participation and school attainment. However, teacher ratings of parent involvement were significantly associated with both CPC participation and school attainment.

#### 3.2. Parent ratings of home involvement

Overall, there was little variation among parent ratings of home involvement with most parents rating their involvement in their children's education as high. Parent ratings of their overall home involvement during the elementary grades was 9.79 on a scale from 4 to 12. Interestingly, the average score of the home involvement individual items was over a 2 out of a possible 3. In other words, on average, parents reported either cooking with their child, reading to their child, going on

outings with their child, or discussing school progress with their child at least once a month or sometimes, and most parents reported doing these activities weekly or often.

### *3.3. Parent ratings of school involvement*

There was more variation among parent ratings of their school involvement. The average parent score for school involvement was 5.51 out of a possible 9. That is, on average, parents reported participating in school activities, helping in the classroom, and communicating with the school at least once a month or sometimes. With a range of 1 (never participating) to 3 (often participating), individual school involvement items ranged from 1.41 to 2.33. Parents were more likely to report helping in the classroom once a month or sometimes rather than often, and parents were more likely to report communicating with the school often or weekly.

### *3.4. Teacher ratings of parent's school involvement*

On an overall scale of 0 to 6, teachers' average score was 2.21 with a standard deviation of 1.28. That is, when teachers were asked to rate parents participation in school activities as average or better over a 6 year period, parents were only rated as participating average or better just over 2 years. Early elementary teacher ratings of parent involvement (grades 1 through 3) were higher, with teachers reporting that, on average, parents participated average or better just over 1 year out of 3 years ( $M=1.28$ ). For later grades (4 through 6) that number decreased, teachers reported that parents participated average or better just under 1 year out of 3 years ( $M=0.93$ ).

## **4. School dropout**

### *4.1. Parent ratings of home and school involvement*

Parent ratings of home involvement and school involvement were not associated with school dropout.

### *4.2. Teacher ratings of school involvement*

Table 3 indicates that teacher ratings of school involvement in grades 1 through 6 were significantly associated with school dropout. Even after controlling for background characteristics, teacher ratings of school involvement in elementary school were significantly associated with lower rates of school dropout ( $P<0.001$ ). This is indicated by the log odds ratio. The log odds ratio is the change in probability associated with a 1 unit probability of school dropout. For example, considering child and family characteristics and cognitive maturity, for each year that a teacher rated a parent as participating average or better, there was a 21% lower likelihood that the child would dropout from school (odds ratio=0.792;  $P<$

Table 3  
 Logistic regression analysis for variables predicting dropout rates ( $N=1079$ )

Variable	Model 1		Model 2		Model 3	
	Odds ratio	<i>P</i>	Odds ratio	<i>P</i>	Odds ratio	<i>P</i>
Teacher ratings of parent involvement (grades 1–6)	0.715	0.000	0.764	0.000	0.792	0.000
Any preschool participation			0.797	0.137	0.835	0.243
Any follow-on participation			1.280	0.096	1.290	0.092
Eligibility for free or reduced lunch			1.634	0.024	1.612	0.029
Parent education (1 = high school grad)			0.600	0.000	0.617	0.001
Employment status			0.743	0.052	0.753	0.064
Marital status (1 = married)			0.820	0.175	0.831	0.208
Any missing information (1 = missing)			0.914	0.602	0.912	0.597
Gender of student (1 = girl)			0.633	0.000	0.665	0.002
Race of student (1 = African–American)			1.716	0.050	1.728	0.048
Socio-emotional maturity in grade 1					0.976	0.066
Missing on socio-emotional maturity					0.992	0.971
Kindergarten word analysis score					0.995	0.360

0.001). Therefore, a child whose parent was rated as participating average or better for 3 years has a 63% lower likelihood of dropping out of school relative to a child whose parent did not participate.

Furthermore, there was a significant difference between dropout rates based on the number of years a teacher rated parent involvement as average or better. Even after adjusting for background characteristics and cognitive maturity, there was a 38% difference between dropout rates for children whose parents were never rated as participating average or better (dropout rate=69%) and children whose parents were rated as participating average or better 5 times (dropout rate=31%). Controlling for background characteristics, univariate analysis using multiple comparisons (Bonferroni) indicated that dropout rates for children whose parents who were never rated by a teacher as participating average or better were significantly higher than parents rated as participating average or better 2, 3, 4 and 5 years ( $P < 0.05$ ).

#### *4.3. Robustness of teacher ratings*

Due to the strong association between teacher ratings of parent involvement and dropout rates, additional teacher variables were included in a final model to test for robustness. When teacher ratings of parent expectations and parent interest in their child's progress were entered into the regression analysis, overall teacher ratings of parent involvement in grades 1 through 6 remained significantly associated with rates of dropout (odds ratio=0.827;  $P=0.002$ ). Teacher ratings of parent involvement in grades 1 through 3 also remained significantly associated with rates of dropout with the additional teacher ratings entered into the model (odds ratio=0.816;  $P=0.013$ ). With the additional variables, there was only a marginally significant association between teacher ratings of parent involvement in grades 4 through 6 and dropout rates (odds ratio=0.866;  $P=0.092$ ).

#### *4.4. High school completion*

The association between high school completion and ratings of parent involvement was also examined. This group differs from high school dropout because student's who received a GED are considered high school completers. In addition, students who completed high school did so either within the appropriate timeframe (never retained) or within a year of expected high school completion date.

#### *4.5. Parent ratings involvement*

Parent ratings of home involvement or school involvement were not significantly associated with high school completion, both by themselves and with background variables.

#### *4.6. Teacher ratings of parent involvement in school*

Teacher ratings of parent participation in school were significantly associated with a greater likelihood of high school completion. Again, this analysis used a log odds

ratio to determine the probability of high school completion. Similar to the associations between teacher ratings of parent involvement and dropout, Table 4 shows a positive association between overall elementary school teacher ratings of parent involvement even in the full model. When background and cognitive factors were taken into account, for each year a teacher rates a parent as participating in school average or better, the child has a 32% greater likelihood of graduating from high school. In educationally meaningful terms, if a child's parent is rated as participating average or better for 3 years that child has a 96% greater likelihood of graduating high school than a child whose parent was never rated as participating average or better.

In addition, there is a linear trend between the number of years a teacher rated parent involvement average or better and higher rates of high school completion. For example, there was a 22% point difference in high school completion rates between a child whose parent was rated as participating average or better for 0 years vs. a child whose parent was rated as participating average or better for 3 years ( $P < 0.01$ ) even after controlling for background characteristics. Controlling for background characteristics, univariate analysis using multiple comparisons (Bonferroni) indicated that high school completion rates for children whose parents were never rated by a teacher as participating average or better were significantly lower than parents rated as participating average or better 2, 3, 4 and 5 years ( $P < 0.01$ ).

#### 4.7. *Robustness of teacher ratings*

Confirmatory analysis was completed because of the significant association between teacher ratings of parent involvement and high school completion. In subsequent analysis, teacher ratings of parent expectations of their child, and teacher ratings of parent's interest in their child's progress were added to the regression analysis. Even with the additional variables, overall teacher ratings of parent involvement (odds ratio = 1.293;  $P = 0.000$ ) and early elementary ratings of parent involvement (odds ratio = 1.283;  $P = 0.003$ ) both remained significantly associated with rates of high school completion. Teacher ratings of parent involvement in later elementary school were also significantly associated with high school completion in the full model (odds ratio = 1.243;  $P = 0.013$ ).

#### 4.8. *Highest grade completed*

If students drop out of school, it is important to determine the number of years of school that are completed. Obviously, having 11 years of school is better than only having a ninth grade education. With additional learning opportunities, academic skills may be transferred to life or job skills. In addition, if a student does decide to get a GED rather than returning to high school, the learning experiences provided with more years of school may translate into a higher chance of passing the GED.

Table 4  
 Logistic regression analysis for variables predicting high school completion rates ( $N=1045$ )

Variable	Model 1		Model 2		Model 3	
	Odds ratio	<i>P</i>	Odds ratio	<i>P</i>	Odds ratio	<i>P</i>
Teacher ratings of parent involvement (grades 1–6)	1.489	0.000	1.384	0.000	1.322	0.000
Any preschool participation			1.369	0.048	1.269	0.140
Any follow-on participation			0.765	0.080	0.760	0.079
Eligibility for free or reduced lunch			0.598	0.021	0.610	0.027
Parent education (1 = high school grad)			1.613	0.001	1.548	0.004
Employment status			1.333	0.065	1.304	0.091
Marital status (1 = married)			1.243	0.147	1.221	0.186
Any missing information (1 = missing)			0.979	0.910	0.993	0.969
Gender of student (1 = girl)			1.672	0.000	1.572	0.001
Race of student (1 = African–American)			0.604	0.076	0.590	0.064
Socio-emotional maturity in grade 1					1.035	0.017
Missing on socio-emotional maturity					1.130	0.580
Kindergarten word analysis score					1.009	0.125



Table 5

Hierarchical regression analysis with metric coefficients for variables predicting highest grade completed ( $N=1041$ )

Variable	Model 1		Model 2		Model 3	
	<i>B</i>	<i>P</i>	<i>B</i>	<i>P</i>	<i>B</i>	<i>P</i>
Teacher ratings of parent involvement (grades 1–6)	0.315	0.000	0.245	0.000	0.207	0.000
Any preschool participation			0.222	0.054	0.154	0.183
Any follow-on participation			-0.120	0.279	-0.117	0.299
Eligibility for free or reduced lunch			-0.169	0.291	-0.144	0.366
Parent education (1 = high school grad)			0.273	0.014	0.237	0.033
Employment status			0.311	0.007	0.288	0.012
Marital status (1 = married)			0.186	0.094	0.170	0.122
Any missing information (1 = missing)			-0.102	0.441	-0.092	0.485
Gender of student (1 = girl)			0.335	0.001	0.284	0.005
Race of student (1 = African-American)			-0.174	0.394	-0.185	0.362
Socio-emotional maturity in grade 1					0.026	0.013
Missing on socio-emotional maturity					0.184	0.250
Kindergarten word analysis score					0.008	0.042

Note:  $R^2$  for Model 1 = 0.080 ( $P=0.000$ );  $R^2$  for Model 2 = 0.126 ( $P=0.000$ );  $R^2$  for Model 3 = 0.140 ( $P=0.000$ ).

#### 4.9. Parent ratings of home involvement

Parent ratings of home involvement or school involvement were not associated with student's highest grade completed. However, when individual school involvement items (communicate with school, help in the classroom, and participate in school activities) were entered into the equation, participating in school activities was significantly associated with highest grade completed. Considering child and family background, participating in school activities was positively associated with highest grade completed ( $B=0.189$ ;  $P=0.043$ ). After accounting for early social and cognitive measures, there continued to be a marginal association between participating in school activities and highest grade completed ( $B=0.165$ ;  $P=0.073$ ). In other words, for every point on the school involvement scale parents rated themselves, children stayed in school almost 2 months longer.

#### 4.10. Teacher ratings of parent involvement

Teacher ratings of parent involvement were significantly associated with student's highest grade completed. As indicated in Table 5, teacher ratings of parent involvement in grades 1 through 6 were significantly associated with a higher grade completed even when background and cognitive factors were considered in the model ( $B=0.207$ ;  $P<0.001$ ). In addition, teacher ratings of parent involvement in early elementary school (grades 1, 2 and 3) were also significantly associated with student's highest grade completed controlling for background and cognitive variables ( $B=0.231$ ;  $P<0.001$ ). This finding held true for teacher ratings of parent involvement in later elementary school. Teacher ratings of parent involvement in grades 4

through 6 were significantly associated with highest grade completed ( $B=0.246$ ;  $P<0.001$ ) even when taking into account background and social and cognitive factors. For every year a teacher rated a parent as participating average or better, the child stayed in school over 2 months longer.

Further, as the years a teacher rates a parent as participating average or better increases, the highest grade a student completed also increases. After adjusting for background and cognitive characteristics, the average highest grade completed for children whose parent was never rated as participating average or better was 9.84. Students whose parent was rated as participating average or better for 3 years completed almost 8 more months of school than students whose parents were never rated as participating average or better ( $P<0.01$ ). Students whose parents were rated as participating average or better for 5 or 6 years completed more than one full year of schooling than students whose parents were never rated as participating average or better ( $P<0.05$ ). Not only are these findings statistically significant, but these findings are also educationally meaningful.

#### *4.11. Robustness of teacher ratings*

Again, because of the strong association between teacher ratings of parent involvement and highest grade completed, additional analysis was completed to test for the robustness of the model. Teacher ratings of parent expectations of their child and teacher ratings of parent's interest in their child's progress were included in the final equation of the hierarchical regression analysis. Even with the additional control variables, overall teacher ratings of parent involvement remained significantly associated with highest grade completed ( $B=0.183$ ;  $P<0.001$ ). Early elementary school ratings also remained significantly associated with highest grade completed ( $B=0.157$ ;  $P<0.05$ ) as did later elementary school ratings ( $B=0.178$ ;  $P<0.01$ ).

### **5. Discussion and implications**

Teacher ratings of school involvement were significantly associated with all educational attainment variables. These findings held true even when child and family background characteristics and the child's expected social and cognitive development were taken into account. The more years a teacher rated a child's parent as participating average or better was also significantly associated with lower rates of school dropout, higher rates of high school completion, and more years of school completed.

Interestingly, although teacher ratings were associated with academic outcomes, when all background, social, and cognitive factors were taken into account, there were no significant associations between parent ratings of either home involvement or school involvement on any academic outcome. This may indicate low reliability between teacher ratings and parent ratings of involvement or be a function of the low variability in parent ratings. This discrepancy was not unexpected, however, since previous research by Reynolds (1992) found only a modest correlation between teacher ratings of parent involvement and parent ratings of parent involve-

ment. Parents and teachers seem to have different perceptions of the amount of involvement, they may be rating different kinds of involvement, or they may have different definitions of parent involvement (Reynolds, 1992).

The major contribution of this study is the examination of the long-term effects of parent involvement. No studies, to my knowledge, have examined the effects of parent involvement in elementary school on indicators of academic achievement nearly a decade later. This study not only examined the association between parent involvement in elementary school and indicators of school success at age 14 and age 20, but also found a significant association between parent involvement in early school and long-term school success. Therefore, efforts to involve parents in their child's education early in the educational process appear to have positive benefits lasting through age 20.

An important question raised with this study is why other studies have not found similar results. The longitudinal data available in this investigation is unique. Not many studies have such extensive data in which to examine parent involvement in elementary school and indicators of school success through age 20. In addition, the CPC Program has many resources available to encourage and support parent involvement activities, not all programs have that luxury. Many programs struggle with funding issues and may not have the resources, the time, or the personnel to incorporate a parent component into the program. Therefore, the results found in this study—that CPC Program participation is associated with parent involvement and that parent involvement in early schooling is associated with long-term academic success for children—may not be generalizable to every program or group of students. The families in this study lived in inner-city Chicago, were predominately African-American, and whom the majority of lived in poverty. These families lived in severe disadvantage with many risk factors. However, if parent involvement could make a significant difference in the educational success of these children, one would expect that differences would be evident in other families living in risk as well.

## **6. Strengths**

The results of this study are strengthened by four factors: the longitudinal design of the study, the large sample size, the quasi-experimental design, and the ability to control for possible confounding factors. The longitudinal design allowed for association between parent involvement and school success over a ten-year period to be examined. This design increased confidence in the validity of the findings. Another strength of the study was the large sample used. Having a large sample size by combining two waves of data collection allowed for more power to detect significant findings. In addition, this longitudinal design allowed for parents and teachers to prospectively report on involvement in various activities. Using both teacher and parent reports also allowed for multiple sources of data to be analyzed and compared.

Further, the quasi-experimental design of this study allowed for some control over the comparison group, this study was able to isolate the effect of parent

involvement by using multiple child and family background characteristics that were included in the models. Using a theory driven model, most of the characteristics that the literature suggests are associated with parent involvement ratings and also the outcome ratings were included in the analyses to control for their influence. Even past social and cognitive measures are used to control for the expected trend of development. This use of multiple control variables in the models allowed for the isolation of parent involvement as a predictor of academic success over and above other characteristics expected to also be associated with academic success. This model even took into account the potential bias in teacher ratings. Additional measures were included in the analysis to control for child's social and cognitive level as well as teacher reports of parent expectations and parent's interest in child's progress. Even after controlling for additional factors, the results remained significant. To control for so many factors that may have biased the ratings and to still find a significant association between teacher ratings of parent involvement and long-term outcomes cannot be underestimated.

### *6.1. Limitations*

Overall, there are three main limitations to this study. First, the parent involvement measures used may have limited validity. Next, model specification error must be considered. While there were significant associations between CPC participation and parent involvement and parent involved was associated with indicators of school success, these measures were correlated not necessarily causal. Lastly, there may be other aspects of parent involvement not measured that are associated with indicators school success.

The first main concern is the validity of parent involvement measures. While an earlier paper found an association between parents retrospective reports of involvement in preschool and reading achievement at age 14, rates of grade retention, and special education placement (Miedel & Reynolds, 1999), this study found no relation between parent reports of involvement in elementary school and indicators of school success. Parents tended to rate themselves as highly involved, so there was little variation among reports of parent involvement at home and at school. Since there were few parents who rated themselves as rarely involved, the lack of variation could be a reason no significant associations were found between parent reports of involvement and educational attainment. By combining parent reports of their involvement in grades 2 and 4 responses created even lower variance than originally existed. While social desirability probably played a role in parent responses, changing a 5-point scale to a 3-point scale reduced variation in reports.

The second limitation that must be considered is model specification. While, the results of this study found the added value of parent involvement above and beyond several child and family factors, interpretation of the results must be taken cautiously because of model specification. Parent involvement may not have a causal relationship with educational attainment, but rather be correlated with other indicators of family influence and school success, such as parent expectations and attitudes and student achievement. The evidence supporting the association between parent

involvement and educational outcomes is provisional, however. Because parent involvement is always confounded by other variables, the variables entered into the models may not adequately control for everything influencing parent involvement. There are certainly many mechanisms responsible for the long-term association between CPC Program participation and later school success. Isolating what mechanisms are at work is a complex process, and this study does not account for all the possible explanations. Therefore, the results indicate that there are significant predictors in the model, but that the variables do not necessarily have a causal association to the outcome variable.

The third area of concern is the complex nature of parent involvement. This study focuses on behavior—that is, the behavior, or act, of being involved in education. Further research may need to extend beyond parent involvement behavior and also examine parent attitudes. The attitudes that parents have regarding the educational system and the education of their children may be associated with both the act of participating in school and children's school success. Thus, parent involvement may be more complex than what is actually being measured in this study. For example, this study examines the quantity of parent involvement. While the quantity measures the behavior of participating, the quality is also an important component that should also be investigated. Parent ratings of their involvement at home and at school were simply parent reports of what they did, how they did activities was not measured. Interestingly, teacher reports that were significantly associated with long-term educational outcomes measured both the quantity and the quality. For example, a teacher who reported parent as participating often, actually checked a box indicating that the parent participated 'much/excellent.' This could be interpreted as quality or quantity. Perhaps that is one reason why teacher ratings seemed to tap into the influence of parent involvement better than parent ratings.

## 6.2. *Implications of the study*

If parent involvement is associated with higher educational attainment in children, as found in this study, it is certainly a cost-effective way to enhance existing school programs. By encouraging parents to become involved in their child's education early on can lead to lasting benefits for the child. This investigation is the first of its kind to find a significant association between parent involvement from elementary school and success into high school. One reason may be the use of longitudinal data. While it may seem a tedious task to some researchers, follow-up evaluations that include teachers should ask additional questions about parent involvement. Subsequently, questions should be asked that allow for variability in parent responses. One of the speculated reasons that few significant results were found using parent ratings of home and school involvement was that there was little variability in parent ratings of their involvement. Adding more items to a scale or using a five-point scale rather than a three-point scale may create more differences between parent ratings.

Furthermore, it may be important to determine if certain activities are associated with long-term educational success. Although this study did not show that any

individual items were associated with academic achievement, a previous study found that it was the number of activities that was associated with school success at age 14 (Miedel & Reynolds, 1999). Therefore, not only should the number of items a parent reports being involved with be examined, but also if participating in a particular activity more times leads to better child outcomes.

This study only examined the behavior of being involved in children's education. However, perhaps attitudes toward education are closely linked. Therefore, future research may want to examine parental attitudes as part of an explanatory model. Slaughter, Lindsey and Kuehne (1989) suggest that there is an internal mechanism connecting parent's self esteem to their level of parent involvement. Consequently, confident parents choose different parent involvement activities than parents with less self esteem or confidence. The authors found that parents involved in Head Start for longer periods of time had increased confidence and therefore tended to be more involved as a result (Slaughter et al., 1989). Perhaps, future research needs to examine parent involvement along with parental attitudes and parent expectations, rather than just measuring parent involvement as a behavior by itself.

Clearly, this study has implications for schools. The significant association between teacher ratings of parent involvement in elementary school and educational attainment implies that schools should implement a parent involvement component into the curriculum, early in the educational process of children. One study found that the school environment was associated with the level of parent involvement-increased efforts by teachers and administrators to implement a parent involvement component was positively associated with the amount parents were involved in school activities (Epstein & Dauber, 1991). There needs to be a supportive school system that encourages involvement. Unfortunately, many school personnel do not have the adequate education to bridge the gap between home and school. One study by the U.S. Department of Education (1994) reports that many teacher education programs do not discuss ways to incorporate parent involvement into teaching curriculum. Therefore, staff development in the form of in-service presentations by school administration, university teaching programs, or school policies can all be important resources to educate teachers about the importance of the home-school connection and give suggestions on how to incorporate parents into the curriculum.

While there are many advantages to involving parents in school, *requiring* parent involvement may not be appropriate in all circumstances. It is important to understand that different cultures may see the school as the 'teacher's arena' and may feel as though they are disturbing the educational process. In addition, requiring parent involvement may cause tension between the parent and the teacher. Teachers need to make parents feel like part of the process and by *requiring* parent involvement may feel patronizing to some parents and parents may resent the fact that they are being forced to do something. This may bring on negative feelings for the school and the teacher. Therefore, teachers need to find ways to involve parents in more than just the bake sale. Teachers and school administration need to encourage parent involvement in curriculum design, the school council, and other various activities. This, of course, does not take away from parent involvement in other traditional school activities.

Finally, involving parents in their children's education has implications for local, state, and federal governments. Policies that enable parents to take time off from work to participate in school activities, without being penalized, can be an important resource for parents. Working parents often are unable to take the time from work for fear of lost wages or being reprimanded from supervisors. However, if policies are in place to protect the home-school connection, parents will be able to participate fully in the educational process of their children. Importantly, policy makers need to continue funding early intervention program. Funding for programs that focus on the child and the family should be a priority.

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