

A review of the relationship between parental involvement indicators and academic achievement

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Abstract

This paper reviews the research literature on the relationship between parental involvement and students' academic achievement with 75 studies published between 2003 and 2017. The results first present how individual parental involvement variables correlate with academic achievement based on an age-related classification. Then we move to a more profound review of the literature to determine which variables are moderating or mediating the relationship between parental involvement and academic achievement. Finally, we describe the advancements that were made with studies from the last decade with special focus on the construct of parental involvement. Parental involvement variables that show promises according to their correlations with academic achievement are: (a) reading at home, (b) parents that are holding high expectations/aspirations for their children's academic achievement and schooling, (c) communication between parents and children regarding school, (d) parental encouragement and support for learning.

Keywords: Parent participation, educational outcomes, literature review

1. Introduction

Educational researchers have long been interested in the positive effect that parental involvement may have on the academic achievement of their children (e.g., Epstein, 1991; Fan & Chen, 2001). The perception that parental involvement has positive effects on students' academic achievement has led to a voluminous body of literature about parental involvement (Jeynes, 2003; Patall, Cooper, & Robinson, 2008; Hill & Tyson, 2009). Policymakers and researchers seem to have agreed that parental involvement is a critical ingredient for children's academic success (Graves & Wright, 2011; Mattingly et al., 2002). Parents who are active participants in their children's education are thought to promote children's social, emotional and academic growth (Green et al. 2007).

Despite the widespread belief that parental involvement is a critical ingredient for children's academic success, there are some issues related to the research on parental involvement (Desforges & Abouchaar, 2003). The degree of inconsistency surrounding findings with regard to parental involvement and its association with student's academic achievement is perhaps the most troubling aspect of current research (McNeal, 2012). Studies have found positive relations, negative relations, and also a lack of relations between parental involvement and student achievement (Fan & Chen, 2001).

A closer look at the empirical studies leads to the conclusion that these differences in the literature exist, because research has been conducted without a widely accepted theoretical framework. The concept of parental involvement has been operationalized, measured and applied in so many ways that it has become somewhat unclear what exactly is meant by the concept (e.g., Bakker & Denessen, 2007; Fantuzzo, Davis, & Ginsburg, 1995). Georgiou (1997) pointed to problems in the empirical literature which are still not resolved. These problems stem from the concept's complexity and the confusion that exists because of the absence of a clear definition. The issue of a wide range of research on parental

involvement, reflected in different study methodologies, research questions, operationalizations, and findings, can benefit from a research synthesis (Wilder, 2014). The purpose of this article is to review existing empirical literature and present the specific types of parental involvement that are related to academic achievement.

1.1 The parental involvement construct

A lack of consensus regarding parental involvement starts with the definition of the construct, and the fact that “despite its intuitive meaning, the operational use of parental involvement has not been clear and consistent” (Fan & Chen 2001, p. 3). Definitions vary from inclusive, such as the one provided by Grolnick and Slowiaczek (1994) who describe parental involvement as “the dedication of resources by the parent to the child” (p. 238) and Larocque, Kleiman, and Darling (2011) who explain parental involvement as “the parents’ or caregivers’ investment in the education of their children” (p. 116) to more specific ones that define parental involvement as parental activities at home and at school that are related to children’s learning in school (Hoover-Dempsey & Sandler, 1997). In other studies, researchers avoid a general definition of parental involvement and instead they focus on specific involvement types. For example, Epstein (1987) and Comer (1995) distinguished between two specific types of parental involvement: home-based strategies, such as providing structure and support with regard to learning and education at home, and school-based strategies, such as communicating with the teacher or attending school events.

1.2 Parental involvement and academic achievement

The relationship between parental involvement and academic achievement has been the primary interest of researchers for years. Overall, the results of prominent meta-analyses in the field indicate that in general statistically significant relationships exist between parental

involvement and academic achievement (e.g. Fan & Chen, 2001; Jeynes, 2005, 2007; Hill & Tyson, 2012). However, empirical research does not provide a clear picture about which specific types of parental involvement are predictive of achievement. This lack of clarity is the result of mixed findings from a variety of studies. Some studies have shown that certain parental involvement types are associated with positive academic achievement, whereas others found that it is not associated with changes in students' academic achievement. Additionally, studies also found parental involvement to be negatively associated with achievement.

For example, Singh et al (1995) explored the effect of four components of parental involvement on the achievement of 8th graders namely; parental aspirations for children's education, parent-child communication about school, home-structure and parental participation in school related activities. They showed that parental involvement in school activities was not related to achievement, whilst home structure had a slight negative association. Parental involvement in the form of parent-child discussions had a moderate positive impact. And parental aspiration had the strongest positive relationship with achievement. On the contrary, Ho and Willms (1996) found that parent-child discussions at home had the strongest positive relationship with 8th graders academic achievement. They also found that parental involvement in school had a moderate impact on achievement. These studies are just examples indicating that, as is often the case with complex phenomena, findings regarding parental involvement and its relationship with academic achievement are full of inconsistencies.

1.3 The present study

This paper examines the research literature on the association between parental involvement and student academic achievement. Our goal was to examine how parental involvement has

been defined, describe the relations between parental involvement variables and academic achievement, and to generalize the results. Because studies included various ages of children across different educational contexts in their samples, we decided to organize the studies based on age-related categories. The following categorization was used:

1. Early childhood education (up to the age of 6)
2. Elementary school (ages 6-12)
3. Middle, high school and beyond (ages 12-18)

2. Method

2.1 Literature Search

Studies investigating parental involvement and their relation with children's academic achievement were identified through a search in the databases of ERIC, PsycINFO, and Web of Science. After several trial runs, the final searches were conducted in September 2017 with the following queries: [(“parental involvement” OR “parental participation”) AND (“academic achievement” OR “student outcome” OR “student effect” OR “student impact” OR “student influence”). The Web of Science search resulted in 1662 hits. The searches in ERIC and PsycINFO, returned 428 and 2345 hits, respectively.

2.2 Inclusion of studies

To be eligible for inclusion in this review, a study had to (a) investigate parental involvement and its relation with academic achievement of learners aged 0 to 18; (b) provide clear descriptions of the parental involvement construct and measurements and type of academic outcome; (c) be published in the period 2003 and 2017 in a peer reviewed journal. The reason is that although parental involvement has continued to be a frequently studied concept since 2003, no systematic review of the literature has been conducted since then. The review by

Desforges and Abouchar (2003) was the most recent comprehensive review on parental involvement and its relations with student academic achievement. We eliminated studies that investigated parental involvement effects on maladaptive student behavior, such as publications that included measures of student aggression, bullying, delinquency and/or depression, as this review focused on the involvement expressions that parents use to foster their child's academic achievement. Studies that assessed parental involvement effects in relation to learning and/or developmental disorders (e.g. autism, dyslexia, ADHD) were also excluded. The same accounts for studies that focused on the link between parental involvement and achievement in developing countries.

These aforementioned criteria were used in an initial screening of the studies' abstracts. If no abstract was available, the full publication was collected and examined. This first round of selection resulted in the provisional inclusion of 156 studies. In order to reach a final decision, these studies were retrieved from an online library. The 156 studies that were eventually obtained were read by one author for inclusion. After careful consideration of the studies, the author found that 75 studies met all inclusion and exclusion criteria. The final number of studies included in this review is 75.

2.3 Defining parental involvement

Table 1 provides an overview of the most prominent aspects of parental involvement. Many studies examine underlying aspects of parental involvement, yet few do it in exactly the same way. Such differences make it difficult to assess cumulative knowledge across studies and can lead to contradictory findings. We will point these out in the result section as they arise. After a consideration of the different indicators used in the studies, we grouped these indicators into the two main categories of parental involvement:

(1) *Home-based involvement* refers to what parents do at home to promote their children's learning. Definitions of involvement at home included: parents' communication with their child on school issues and other types of home involvement such as monitoring school progress, guidance in learning activities at home or helping with homework. Multiple researchers also considered parental expectations for their child's academic achievement as a form of involvement.

(2) *School-based involvement* is basically defined by activities and behaviors parents engage in at school, such as attending parent-teacher conferences and attending school events. Common operational definitions of school-based involvement in previous studies also include participation in school activities such as volunteering in the classroom, going on class trips, and participation in school functions.

When considering the link between parental involvement and academic achievement, the distinction between home-based and school-based dimensions is important. Forms of involvement at home are very different in nature compared to forms of involvement at school. Therefore, throughout this review we treat involvement at home as conceptually and empirically distinct from involvement at school.

Table 1*Commonly used Indicators of Parental Involvement in the Literature*

| Parental involvement dimension | Indicators |
|---------------------------------------|--|
| Home-based involvement | Educational expectations /aspirations Valuing of education/academic achievement Reading with children Educational trips (going to the library or the museum) Academic pressure/ control Engagement in learning activities at home Assistance/help with homework Parent-child discussions about school experiences Parent-child discussions about selecting courses/programs Parent-child discussions about post-high school plans Parental support/encouragement in learning Rules for TV/ parental limit-setting |
| School-based involvement | Attendance at Parent-Teacher Association (PTA) meetings Volunteering at school Visiting the classroom Attendance at school or class events Participation in school functions (such as membership in PTA) Teacher-parent communication about academic performance Teacher-parent communication about problems or difficulties at school |

2.4 Analysis

The included studies were reported according to eight study features: (a) author(s), (b) study design, (c) parental involvement indicators (independent variable), (d) student academic outcome (dependent variable), (e) the measured effect of parental involvement on academic achievement, (f) moderators and/or mediators, (g) sample size, and, (h) country where the study was conducted. Tables 2, 3, and 4 present the included studies grouped into three age-related categories.

Furthermore, in the result section, we discuss the effect sizes for associations between parental involvement and academic achievement that were reported in the reviewed studies.

Studies used different effect sizes. To convey meaning of these different effect sizes we report effect sizes small, medium or large according to Cohen (1992).

3. Results

In the next section, the results of our analysis will be presented. We discuss how prominent individual parental involvement variables correlate with academic achievement. This analysis will be presented in three sections based on age-related categories. The results will be presented for (a) early childhood education, (b) elementary school and (c) middle school and beyond. We end the result section by discussing variables that influence the relation between parental involvement and academic achievement.

3.1 Parental involvement and early childhood academic achievement (22 studies)

In this section, we looked at the results of 22 studies on prominent parental involvement variables that were found to be related to children's academic achievement such as reading at home and parental engagement in learning activities at home. Table 2 presents an overview of the included studies for young children up to the age of six. The majority of studies reported positive associations between parental involvement and academic achievement. The effect sizes are small to medium. We now discuss beneficial involvement indicators.

Reading at home reflects parental modeling and support of their child's reading combined with the provision of a stimulating literacy environment. Studies have shown a positive association with academic achievement (Aikens & Barbarin, 2008; Graves & Brown Wright, 2011; Stylianides & Stylianides, 2011). For example, Crosby and colleagues (2015) found that parent reading lessons at home have an impact on their children's literacy development. Their study examined the effectiveness of a parent involvement program that teaches parents how to provide their children reading lessons at home. Results indicate that

implementation of the program was associated with higher levels of children's literacy achievement. Children whose parents implemented the parental literacy lessons at home made gains in literacy achievement over those children whose parents implemented fewer lessons or did not implement the lessons at all.

Parental engagement in learning activities at home has shown a positive association with the academic achievement of preschoolers. Research suggests that enriching activities, such as telling stories, teaching letters and numbers, problem solving activities, singing songs and playing games have been found to improve children's literacy skills (Durand, 2011; Fantuzzo et al., 2004; Manolitsis, Georgiou, & Tziraki, 2013) and reading achievement (Cooper, Crosnoe, Suizzo, & Pituch, 2010; Wen, Bulotsky-Shearer, Hahs-Vaughn, & Korfmacher, 2012; Youn, Leon, & Lee, 2012).

School involvement refers to the amount of contact between parents and teachers and participation in school activities. Several studies reported positive associations between school involvement and the academic achievement of young children (Aikens & Barbarin, 2008; Chang, Choi, & Kim, 2015; Cooper, Crosnoe, Suizzo, & Pituch, 2010; Dearing, McCartney, Weiss, Kreider, & Simpkins, 2004; Dearing, Kreider, & Simpkins, 2006; Englund, Luckner, Whaley, & Egeland, 2004; Hill & Craft, 2003; Hughes & Kwok, 2007; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004; Sibley & Dearing, 2014). For instance, Schulting, Malone and Dodge (2005) examined the association of parental school involvement with the academic achievement for 17,212 children from 992 schools and found that parental involvement in their child's school significantly predicted children's reading and math performance ($b = 0.89$). Other studies, however, showed no significant relation with school involvement such as volunteering at the school and keeping in touch with child's teacher on academic outcomes (Fantuzzo et al., 2004; Kicklighter Dove, Neuharth-Pritchett, Wright, & Wallinga, 2015; Hindman, Skibbe, Miller, & Zimmerman, 2010).

Table 2*Empirical Studies of the Relations between Parental Involvement and Academic Achievement: Early Childhood Education (Ages 0-6)*

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | N | Country |
|----|------------------------|-----------------------------------|--|---------------------------------------|---|------------------------------------|---------------------------|----------|----------------|
| 1. | Hill & Craft (2003) | Survey | - Valuing education - Extent to which parents were involved in school activities - Involvement with children in educational types of activities at home | Math and reading achievement | Positive for math and reading Positive for math Positive for math | Academic and social competence | Ethnicity | 103 | U.S. |
| 2. | Dearing et al. (2004) | Longitudinal survey | - Involvement in school (attendance PTA, volunteering at school, visit the classroom) | Literacy achievement | Positive | | Maternal education | 167 | U.S. |
| 3. | Dearing et al. (2004) | Longitudinal survey | - Involvement in school (attendance PTA, volunteering at school, visit the classroom) | Literacy achievement | Positive | Children's feelings about literacy | Maternal education | 167 | U.S. |
| 4. | Englund et al. (2004) | Longitudinal survey & observation | - Parental expectations - Level of parental involvement with school (teachers were asked (a) whether they knew the parents, (b) whether the parents demonstrated concern and interest in the child's schoolwork, and (c) whether the parents participated in parent conferences or other meetings with the teacher) | Academic progress (rated by teachers) | Positive Positive | Mothers quality of instruction | Parents educational level | 187 | U.S. |
| 5. | Fantuzzo et al. (2004) | Survey | - School-based involvement (e.g., volunteering in the classroom, going on class trips, meeting other parents to plan events) - Home-based involvement (e.g., creating space for learning activities at home, providing learning opportunities for the child in the community) - Home-school conferencing (e.g., talking with the child's teacher about | Literacy skills | No effects Positive No effects | | | 144 | U.S. |

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | <i>N</i> | Country |
|-----|-------------------------------|---------------------|--|---|---|-----------------------------------|------------------|-----------|----------------|
| | | | learning difficulties and accomplishments, discussing with the child's teacher ways to promote learning at home) | | | | | | |
| 6. | McWayne et al. (2004) | Survey | - Supportive home learning environment - Direct school contact - Inhibited involvement | Reading and math achievement rated by teachers | Positive No significant association Negative | | | 307 | U.S. |
| 7. | Schulting et al. (2005) | Survey | - School involvement (Parent-Teacher Association meetings, parent-advisory group or policy council meetings, regularly scheduled parent-teacher conferences, school or class events, volunteering at school, and fundraising activities) | Reading, math and general knowledge achievement | Positive | School-level transition practices | SES | 172 12 | U.S. |
| 8. | Hughes & Kwok (2007) | Survey | - Home-school relationship reported by teachers | Math and reading achievement | Positive | Child classroom engagement | Ethnicity | 443 | U.S. |
| 9. | Aikens & Barbarin (2008) | Survey | - Involvement in child's school - Home literacy environment - Parental warmth | Reading achievement | Positive Positive Positive | | | 212 60 | U.S. |
| 10. | Cooper et al. (2010) | Survey | - Provision of cognitively stimulating materials - Enrollment in organized activities outside the home - Home-learning activities with parents - School involvement | Math and reading achievement | Positive for math and reading Positive for math and reading Not related to math or reading Positive for math and reading | | Ethnicity | 203 56 | U.S. |
| 11. | Fekonja-Pekljaj et al. (2010) | Survey | - Quality of the home learning environment | Literacy skills | Positive | Mothers education level | | 229 | Slovenia |
| 12. | Hindman et al. (2010) | Longitudinal survey | - Home involvement (teaching about letters and numbers, playing games) - School involvement (volunteering in the classroom, attending workshops) | Literacy and math skill growth | No effects | | | 945 | U.S. |
| 13. | Durand (2011) | Survey | - Engaged in a variety of school | Literacy skills | Positive overall | | Ethnicity | 205 | U.S. |

| Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | N | Country |
|---|---------------------|---|---------------------------------------|--|----------|---------------------------------------|-----------|---------|
| | | readiness activities with children at home (reading, telling stories, singing songs, doing chores) | | | | | 1 | |
| | | - School involvement (scheduled conferences with teachers, PTA meetings, advisory groups, volunteering, fund-raising, attending class events) | | | | | | |
| 14. Graves & Brown Wright (2011) | Survey | - Cultural involvement (visiting a library, museum or sporting event) | Reading achievement | Positive | | Ethnicity | 149 51 | U.S. |
| | | - School involvement | | Negative | | | | |
| | | - Rules for TV | | Positive/negative | | | | |
| | | - Home involvement (reading, playing games, telling stories) | | Positive | | | | |
| 15. Stylianides & Stylianides (2011) | Survey | - Parent-child interaction (how often parents read to their child, how often they tell their child stories etc.) | Math, reading and science achievement | Positive for math, reading and science achievement | | SES | 103 69 | U.S. |
| 16. Wen et al. (2012) | Survey | - School involvement (volunteering and helping out in the classroom, attending social events) | Literacy and math skills | Negative | | Quality of teacher-child interactions | 196 8 | U.S. |
| | | - Home involvement (told stories, taught letters, numbers or words) | | Positive | | | | |
| 17. Youn, Leon & Lee (2012) | Survey | - School involvement (attend school events, volunteer at school, fundraising) | Math and reading achievement | Positive for reading and math | | | 175 65 | U.S. |
| | | - Parent-child interaction (read books to children, tell stories to children and talking with children) | | Positive for reading and math | | | | |
| | | - Educational trips (visiting library, attend concert, visiting museum) | | Positive for reading and math | | | | |
| 18. Manolitsis, Georgiou, & Tziraki, (2013) | Longitudinal survey | Parents were asked | Math and reading fluency | Positive for math and reading | | | 82 | Greece |
| | | - How often their child was taught to identify letters | | | | | | |
| | | - How often their child was taught letter sounds | | | | | | |

| Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | N | Country |
|-----------------------------------|---------------------|---|------------------------------|---|----------|----------------|-----------|---------|
| | | <ul style="list-style-type: none"> - How often their child was taught to read words - How often their child is read to at home - How many children's books are in the home - How often their child was taught to identify the names of written numbers (e.g., bus number) - How often their child was taught to count different objects - How often their child was taught to sort different objects according to their size and shape - How often their child was taught to count in a number line (e.g., 1, 2, 3, 4) - How often their child was taught to do simple calculations | | | | | | |
| 19. Sibley & Dearing (2014) | Survey | <ul style="list-style-type: none"> - Parents' contact with the school or children's teachers - Parent-child activities in the home (read books with child, playing games or do puzzles with the child etc.) - Parental expectations | Math and reading achievement | Positive but not significant for math Negative for reading and math Positive for reading and math | | Ethnicity | 920 3 | U.S. |
| 20. Chang, Choi, & Kim (2015) | Survey | <ul style="list-style-type: none"> - Parents participation in parent-teacher conferences - Parents participation in voluntary school activities - Informal contact with school - Parents phone contact with school | Math achievement | Positive Positive No effects Positive | | Ethnicity, SES | 204 59 | U.S. |
| 21. Crosby et al (2015) | Longitudinal survey | <ul style="list-style-type: none"> - Parental reading with their children - Parents tutoring their children in reading | Literacy achievement | Positive | | | 117 | U.S. |
| 22. Kicklighter Dove et al (2015) | Survey | <ul style="list-style-type: none"> - Parents discuss the child's school day with child - Parents participation in school | Literacy achievement | Positive Positive | | | 380 8 | U.S. |

| Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | <i>N</i> | Country |
|----------------|---------------------|--|-------------------------|------------------------|-----------------|------------------|----------|----------------|
| | | activities - Parents volunteering at the school - Parents keeping contact with the teacher | | No effect No effect | | | | |

3.2 Parental involvement and academic achievement for elementary school children

(22 studies)

Most of the reviewed studies investigated the link between parental involvement and elementary school achievement in math and reading (see Table 3). The studies presented different results. Although most studies reported (small to medium) positive associations between parental involvement and academic achievement, some studies found no effect or a negative relation between these variables. We now present prominent parental involvement variables and their relations with academic achievement.

Parental expectations and aspirations are often described collectively or used interchangeably in the literature. Taken together, expectations and aspirations represent the degree to which parents presume that their child will perform well in school, now and in the future. This parental involvement variable appears in many research studies and is shown to have a positive relation with academic achievement (e.g, Gubbins & Otero, 2016; Hung, 2007; Phillipson & Phillipson, 2012; Xu, Benson, Mudrey-Camino, & Steiner, 2010). For example, Lee and Bowen (2006) examined the level and impact of five types of parental involvement at home and at school and found that these variables together explained 9% of the variance in reading and math achievement beyond the effects of demographic variables. They found that one type of parental involvement was the strongest predictor of academic achievement, namely parents' educational expectations for their child ($\beta = 0.23$).

Parental academic pressure through the use of commands, punishment, or coercive interactions is negatively associated with academic achievement (e.g. Domina, 2005). Academic pressure from parents is also associated with lower self-concept in math and reading (Rogers, Theule, Ryan, Adams, & Keating, 2009). By contrast, studies found that *parental encouragement and support* is positively associated with student academic

achievement. This parental involvement variable is defined as the provision of support and encouragement, such as praising children's performance, progress and efforts and letting children know they care about them and their school performance. Encouragement and support significantly predicted higher academic achievement (Hung, 2007; Rogers, Theule, Ryan, Adams, & Keating, 2009).

Also, parental support such as providing the appropriate environment and materials conducive to learning seem to have a positive significant relationship with academic achievement. Sheldon and Epstein (2005) found that one type of involvement (i.e., learning at home) was consistently related to improvement in students' performance on mathematics achievement tests. They found that effective support for mathematics learning included (a) homework assignments that required students and parents to interact and talk about mathematics and (b) the use of mathematics materials and resources at home provided for families by teachers. The relations between these types of support and mathematics achievement were positive after influential variables such as prior achievement were taken into account.

Homework involvement. It is not clear how exactly parental homework involvement can be beneficial, because the relation between this type of involvement and academic achievement is inconsistent. Studies indicated that assisting children with their homework did not have a significant relationship with achievement (e.g. Driessen, Smit, & Slegers, 2005) or is negatively related to achievement (Domina, 2005; Lee & Bowen, 2006; Rogers, Theule, Ryan, Adams, & Keating, 2009). Additional studies also reported negative associations of homework help (Xu, Benson, Mudrey-Camino, & Steiner, 2010). On the contrary, Tam and Chan (2009) found that parental involvement in children's homework is positively associated with the academic development of children. And when parents are trained to help their child with homework, homework help is significantly associated with positive attitudes about math

homework and math achievement. Van Voorhis (2011) conducted a quasi-experimental study and examined the effects of a weekly interactive mathematics program (Teachers Involve Parents in Schoolwork - TIPS) on parental involvement, parental attitudes, and student achievement. This study revealed that participation in this program leads to more parental involvement. After accounting for prior achievement, students who used TIPS for 1 year ($\beta = .13$) or two ($\beta = .19$) had significantly higher standardized mathematics achievement scores than control students.

Additionally, a particular type of involvement in children's homework does seem beneficial. Gonida and Cortina (2014) examined whether different types of homework involvement (autonomy support, control, interference, cognitive engagement) could predict achievement. They found that only autonomy support is predictive of achievement. And parental interference in homework negatively predicted achievement. Similar results were found in two other studies. Moroni and others (2015) found that when homework involvement was perceived as supportive, it was positively associated with students' achievement, but when parents were perceived as intrusive and controlling in the homework process, their help was negatively associated with students' achievement. Additionally, students with low reading achievement reported more parental control ($\beta = -.12$) compared to students with higher achievement. Parental control also served as a statistically significant predictor of students' homework procrastination ($\beta = .15$): The more controlling behavior students perceived from their parents in Grade 5, the more they procrastinated in the homework process 2 years later (Dumont, Trautwein, Nagy, & Nagengast, 2014).

Reading at home was found to be significantly related to elementary school children's literacy performance. Parents who employ reading activities with their child at home, contribute to their child's reading achievement in school (Hemmerechts, Agirdag, & Kavadias, 2017; Myrberg & Rosen, 2009). Kloosterman and colleagues (2011) investigated

the extent to which parental reading socialization, that is, parental reading example and instruction, at the start of a child's educational career, is related to children's academic performance in successive primary school grades. They demonstrated that parental reading socialization positively affect children's language performance.

School involvement. The benefits of school involvement are not clear. To illustrate, studies showed that school involvement is associated with increased achievement (Dearing, Kreider, Simpkins, & Weiss, 2006; Hung, 2007; Lee & Bowen, 2003; McBride, Dyer, Liu, Brown, & Hong, 2009). Specifically, school involvement (such as volunteering and participation in school events) was found to have the largest beneficial effect on achievement ($\beta = 0.22$) among the dimensions of parental involvement examined in one study (Xu, Benson, Mudrey-Camino, & Steiner, 2010). Yet, others found that school involvement such as fundraising and volunteering was not significantly related to their children's achievement scores (Johnson & Hull, 2014; Phillipson & Phillipson, 2012). Stright and Yeo (2013) even found that parents' participation in school events negatively predicted achievement.

Table 3*Empirical Studies of the Relations between Parental Involvement and Academic Achievement: Elementary School (Ages 6-12)*

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | N | Country |
|-----|--------------------------|---------------------|---|--|--|-----------------|------------------|----------|----------------|
| 23. | Domina (2005) | Survey | <ul style="list-style-type: none"> - Parents attended PTA meetings - Parents attended meeting with teacher - Parents volunteer in classroom - Parents volunteer outside the classroom - Parents helped with homework - Parents checked homework | PIAT measure (mean math and reading achievement) | Positive Positive Positive Positive Negative Positive | | | 1445 | U.S. |
| 24. | Driessen et al. (2005) | Survey | <ul style="list-style-type: none"> - Help from parents with homework - Parent-child relation with respect to school matters - Leisure activities of child and parents - Involvement in television watching of child - Rules at home and at school - Choice of secondary education | Math and literacy achievement | Negative No effect No effect No effect No effect Positive | | | 12000 | NL |
| 25. | Sheldon & Epstein (2005) | Longitudinal survey | <ul style="list-style-type: none"> - School practices aimed at involving parents | Math achievement | Positive | | | 18 | U.S. |
| 26. | Dearing et al. (2006) | Longitudinal survey | <ul style="list-style-type: none"> - Involvement in school (attendance PTA, volunteering at school, visit the classroom) | Literacy performance | Positive | | SES | 281 | U.S. |
| 27. | Lee & Bowen (2006) | Survey | <ul style="list-style-type: none"> - Involvement at school (visiting the school, going to PTA meetings, volunteering in the classroom/school, going to fun events) - Discussing educational topics with child - Helping with homework | Math and reading achievement | Positive Positive Negative | | SES, Ethnicity | 415 | U.S. |

| Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | N | Country |
|----------------------------|--------------|--|---|------------------------------------|-----------------------------|-----------|-------|---------|
| 28. Hung (2007) | | - Managing child's time on literacy and nonliterary activities | Math and literacy achievement | No effect | | | 261 | Taiwan |
| | | - Parents educational expectations for their children | | Positive | | | | |
| | | - Parents' aspirations | | All positive for math and literacy | | | | |
| 29. McBride et al. (2009) | Survey | - Parents' involvement at home (perceptions of the support students receive at home) | Math and reading achievement | Positive | | | 390 | U.S. |
| | | - Parents' involvement in school | | | | | | |
| | | - Parental involvement at school (i.e., volunteered in the classroom, participated in formal conferences with child's teacher, participated in informal conversations with child's teacher, attended an extracurricular school event, attended a meeting of the PTA) | | | | | | |
| | | - Parent-child household centered activities (level of interaction with their children during household-centered activities) | | | | | | |
| 30. Myrberg & Rosen (2009) | Survey | - Parent-child child centered activities (reading stories together, playing games) | Reading achievement | No effect | | | 10000 | Sweden |
| | | - Parental limit setting | | No effect | | | | |
| | | - Early reading activities (reading with child, telling stories to child) | | Positive | | | | |
| 31. Rogers et al. (2009) | Survey | - Academic pressure | Average grade for math, reading and science achievement | Negative | Child academic competencies | | 231 | U.S. |
| | | - Encouragement and support for learning | | Positive | | | | |
| | | - Active management of learning environment | | Positive | | | | |
| | | - Participation with homework | | Negative | | | | |

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | N | Country |
|-----|--------------------------------|---------------------|---|--|---|--------------------------------|------------------|----------|----------------|
| 32. | Tam & Chan (2009) | Survey | Involvement in homework: - Autonomy support - Direct involvement - Provision of structure | Students' learning performance | Positive No effect Positive | | SES | 1309 | Hong Kong |
| 33. | Xu et al. (2010) | Survey | - Parent-child communication - School involvement - TV rules - Homework help - Parental educational expectations - Extra-curricular activities | Reading achievement | No effect Positive Negative Negative Positive Positive | Self-regulated learning | | 10120 | U.S. |
| 34. | Kloosterman et al. (2011) | Longitudinal survey | - Parental reading socialization - School involvement | Math and reading achievement | Positive for reading Positive for math and reading | | | 10885 | NL |
| 35. | Magi et al. (2011) | Longitudinal survey | - Parental beliefs about the child's school success | Reading and math skills | Positive | Task avoidance | | 1267 | Finland |
| 36. | Van Voorhis (2011) | Quasi-experimental | - Homework involvement intervention (TIPS) | Math achievement | Positive | | | 153 | U.S. |
| 37. | Phillipson & Phillipson (2012) | Survey | - School involvement - Home involvement - Parental beliefs of their child's ability - Parental expectations | Math, English and Chinese language achievement | No effect Positive Positive Positive | Cognitive ability of the child | SES | 1279 | Hong Kong |
| 38. | Stright & Yeo (2013) | Survey | - Home-based involvement (help with homework, talk about school etc.) - Home-school conferencing (Meet with teacher, talk with teacher) - School-based involvement (volunteer at school, attend | Average math, English and science achievement | Positive Positive Negative | Parenting styles | | 712 | Singapore |

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | N | Country |
|-----|---|---------------------|--|---|---|--|------------------|----------|----------------|
| | | | special events, going on class trips) | | | | | | |
| 39. | Dumont, Trautwein, Nagy, & Nagengast (2014) | Survey | Parental homework involvement: - Parental control - Parental responsiveness - Parental structure | Reading achievement | Negative Positive Positive | | | 2830 | Germany |
| 40. | Gonida & Cortina (2014) | Survey | Parental homework involvement: - Autonomy support - Control - Interference - Cognitive engagement | Composite score based on school grades in language and math | Positive Negative Negative No effect | Student mastery, student performance, Student academic self-efficacy | | 282 | Greece |
| 41. | Johnson & Hull (2014) | Longitudinal survey | - School involvement (participation in open house, PTA, school events and volunteering) | Science achievement | No effect | | | 8070 | U.S. |
| 42. | Moroni et al (2015) | Longitudinal survey | Parental homework involvement: - Supportive - Intrusive - Quantity of homework involvement | Reading achievement and language grades | Positive Negative Negative | | | 1685 | Germany |
| 43. | Gubbins & Otero (2016) | Survey | Parental expectations | Language and math performance | Positive | | | 55401 | Chili |
| 44. | Hemmerechts, Agirdag, & Kavadias (2017) | Survey | Late literacy involvement (listen to child read, discuss classrooms reading, help child with reading for school) | Reading achievement | Positive | | | 43870 | Western Europe |

3.3 Parental involvement and academic achievement at middle school, high school and beyond (31 studies)

The majority of the reviewed studies investigated the link between parental involvement and student achievement in math and literacy. For an overview, see Table 4. Most of these studies reported positive associations between parental involvement and academic achievement. Effect sizes are small to medium. We will now discuss the most prominent parental involvement variables.

Parental aspirations and expectations. Studies that focus on parental expectations generally report a positive association with academic achievement (Antonopoulou, Koutrouba, & Babalis, 2011; Carranza, You, Chhuon, & Hudley, 2009; Choi, Chang, Kim, & Reio, 2015; Fan, Williams, & Wolters, 2012; Gordon & Cui, 2012; Pearce, 2006; Simons-Morton & Chen, 2009; Strayhorn, 2010; You, Lim, No, & Dang, 2016). For example, Chen and Gregory (2010) found that, among involvement variables, attainment expectation was the only parental involvement type that remained significant in the prediction of GPA ($\beta = .32$) when the other involvement types were taken into account, after controlling for gender and ethnicity. Thus, students who reported their parents had higher expectations for their educational attainment had higher GPAs and were also rated as more engaged in the classroom by their teachers compared with peers who received lower parental attainment expectations.

Valuing academic achievement and reinforce learning at home. Parental involvement in the form of valuing academic achievement and then reinforcing it has shown a significant positive association with students' mathematics achievement throughout high school (Hayes, 2012; Hong, Yoo, You, & Su, 2010). Ho (2010) also found that students' science performance, which was measured by their science achievement and self-efficacy for science,

was significantly associated with certain types of parental involvement. Parental involvement in terms of organizing science learning enrichment activities was found to be significantly associated with students' science performance. Activities such as watching TV programs about science, reading books on scientific discovery, watching, reading or listening to science fictions seem effective for promoting children's science achievement and self-efficacy.

Academic encouragement and support. Across different studies, parental academic encouragement and support was found to be positively related to students' academic achievement (Bean, Bush, McKenry, & Wilson, 2003; Chen & Gregory, 2010; Dumont et al., 2012; Gordon & Cui, 2012). For example, Martinez, DeGarmo, and Eddy (2004) demonstrated that academic encouragement and being able to talk to parents about important life issues, along with academic support, led to greater student homework completion frequency. Frequency of homework completion, in turn, promoted greater academic achievement and lower drop-out rates.

Parent-child educational discussions refers to ongoing conversations between parents and their children concerning school-related activities, near- and long term school plans, and other academic issues. This variable yields positive associations with academic achievement (Altschul, 2011; Hayes, 2012; Hong & Ho, 2005; Houtenville & Conway, 2008; Hsu, Zhang, Kwok, & Ju, 2011; Gordon & Cui, 2012; Park, 2008; Park, Buyn, & Kim, 2011). McNeal (2012), for example, found that the only dimension of parental involvement that was associated with improved achievement and reduced problematic behavior (truancy) was parent-child discussions. Greater levels of communication increase student achievement ($r = .13$) and reduce truancy ($r = -.20$) in 8th grade.

Parental control or interference has shown negative relations with academic achievement. For example, students' evaluations of parental academic pressure negatively predicted their self-efficacy, mastery goal orientation, and achievement in math (Levpuscek

& Zupanic, 2009). Other studies reported similar results. Parental control, which refers to excessive control and pressure on children, is negatively related to academic achievement (Bean et al., 2003; Karbach, Gottschling, Spengler, Hegewald, & Spinath, 2013). Likewise, parental interference with homework (Gonida & Cortina, 2014) and homework-related conflict (Dumont et al., 2012), checking of homework (Strayhorn, 2010), homework control (Nunez, Suarez, Rosario, Vallejo, Valle, & Epstein, 2015) or help with homework (Altschul, 2011) were found to have negative relations with student achievement.

School involvement. Many of the school involvement measures examined in studies with adolescents are not or negatively related to achievement. Studies suggest that when parents attend events at school, meet with teachers and/or volunteer at school, it is not related to academic achievement (Altschul, 2011; Birman & Espino, 2007; Chen & Gregory, 2010; Choi, Chang, Kim, & Reio, 2015; Hayes, 2012; McNeal, 2012; Park, Buyn, & Kim, 2011; Wang & Sheik-Khalil, 2014). Parental communication with the school was negatively related to achievement (Ho, 2010). On the other hand, some studies did find positive association between school involvement and academic achievement (Hong & Ho, 2005; Martinez, DeGarmo, & Eddy, 2004; Oyserman, Brickman, Rhodes, 2007; You, Lim, No, & Dang, 2016).

Table 4

Empirical Studies of the Relations between Parental Involvement and Academic Achievement: Middle school, High school and Beyond (Ages 12-18)

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | <i>N</i> | Country |
|-----|------------------------|---------------------|--|--|---|--|------------------|----------|----------------|
| 45. | Bean et al. (2003) | Survey | Parenting behavior: - Support - Behavioral control - Psychological control | Overall academic achievement | Positive Positive/negative Negative | | Ethnicity | 155 | U.S. |
| 46. | Hill et al. (2004) | Longitudinal survey | Parent academic involvement - School involvement (PTA attendance visit an open house) - Home involvement (parents know what the child is doing in school, parents help choose classes, parent-child educational discussions) | Math and reading achievement | Positive | Behavioral problems | SES, Ethnicity | 463 | U.S. |
| 47. | Martinez et al. (2004) | Survey | - Parent academic encouragement - Extracurricular encouragement - School involvement - Parental monitoring | Grade Point Average (GPA) | Positive Positive Positive No effect | Homework frequency | | 564 | U.S. |
| 48. | Hong & Ho (2005) | Survey | - Parent-child communication about school related issues - Parental educational aspiration - Parental school participation - Parental supervision | Math, reading & science achievement | Positive Positive Positive Positive | Students' self-concept, locus of control, academic aspirations | Ethnicity | 1500 | U.S. |
| 49. | Pearce (2006) | Survey | - Educational expectations - Parental involvement (e.g., discuss school activities with parent, parents attend meetings at school, parents checking homework) | Average score on math, reading and science achievement | Positive Positive/negative | | Ethnicity | 8522 | U.S. |

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | <i>N</i> | Country |
|-----|--|---------------------|---|------------------------------|---|---------------------------------|------------------------------|------------|----------------|
| 50. | Birman & Espino (2007) | Survey | - Parent knowledge of school practices - Parent contact with the school | Grade Point Average (GPA) | Positive No effect | | | 240 | U.S. |
| 51. | Oyserman et al. (2007) | Quasi-experimental | - Parent school involvement (attends PTA meetings, act as volunteer etc.) | Grade Point Average (GPA) | Positive | | Possible selves intervention | 239 | U.S. |
| 52. | Houtenville & Conway (2008) | Survey | - Parent discussions about activities or events of particular interest to the child - Parent discuss things child studied in class - Discuss selecting courses or programs at school - Attend school meetings - Volunteer at the child's school | Math and reading achievement | Positive Positive Positive Positive No effect | | | 24599 | U.S. |
| 53. | Park (2008) | Survey | - Parent-child educational discussions | Reading achievement | Positive | | | 26500 0 | U.S. |
| 54. | Carranza, You, Chhuon, & Hudley (2009) | Survey | - Communication with child about school - Help with homework - Parental expectations - Monitoring of school work | Grade Point Average (GPA) | No effect No effect Positive No effect | | | 298 | U.S. |
| 55. | Levpuscek & Zupanic (2009) | Survey | - Parental help - Parental academic pressure - Parental academic support | Math achievement | No effect Negative Positive for motivational beliefs but not for math grade | Motivational beliefs about math | | 365 | Slovenia |
| 56. | Chen & Gregory (2010) | Survey | - Direct parental participation in school-related activities - Parental encouragement of success - Parental expectations | Grade Point Average (GPA) | No effect No effect Positive | | Ethnicity | 59 | U.S. |

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | <i>N</i> | Country |
|-----|--------------------|---------------------|---|------------------------------|--|-----------------|------------------|----------|----------------|
| 57. | Ho (2010) | Survey | <ul style="list-style-type: none"> - Parental investment in the (science) resources for their children's education - Cultural communication (discussing current affairs and social issues, discussing books, films or TV and listening to music) - Educational and social communication (discussing how well children are doing at school, spending time chatting and discussing homework) - Communication with school (discussing with teachers about their child's learning, keeping contact with the school and teachers and attending parents' day) - Participation in school (keeping contact with other parents in their school, volunteering in school activities, participating in Parent Teacher Association and participating in programs offered for parents) | Science literacy performance | <ul style="list-style-type: none"> Positive No effect No effect Negative Negative | | | 4645 | Hong Kong |
| 58. | Hong et al. (2010) | Longitudinal survey | <ul style="list-style-type: none"> - Parents' mathematics value - Parents' academic reinforcement | Math achievement | <ul style="list-style-type: none"> Positive No effect | | | 3116 | U.S. |
| 59. | Strayhorn (2010) | Survey | <ul style="list-style-type: none"> - Parents attending school meetings - Parents visiting classes - Parents checking homework - Parents require doing chores - Limit watching TV - Limit going out - Parent-child discussions about college | Math achievement | <ul style="list-style-type: none"> Positive Negative Negative No effect No effect No effect No effect | | | 24599 | U.S. |

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | <i>N</i> | Country |
|-----|---------------------------|---------------------|---|--|---|-------------------------|------------------|----------|----------------|
| | | | - Parental expectations | | Positive | | | | |
| 60. | Weiser & Riggio (2010) | Survey | How often parents: - Inquired about school - Helped with homework - Communicated with the school | Grade Point Average (GPA) | No overall effect | Students' self-efficacy | | 193 | U.S. |
| 61. | Altschul (2011) | Survey | - School involvement - Discussion of school-related issues between parents and students - Parental help with homework - Parent-child involvement in enriching activities - Allocation of resources to extracurricular instruction | Average for reading, math, science and history achievement | No effect Positive Negative Positive Positive | | | 1609 | U.S. |
| 62. | Hsu et al. (2011) | Longitudinal survey | - Parent-child discussions about career plan - Parents listening to adolescent thinking - Monitoring student behavior - Participation in school | Overall math, reading and science achievement | Positive Positive Positive Positive | | | 8108 | Taiwan |
| 63. | Park et al. (2011) | Longitudinal survey | - School contact - Parent-child educational discussions - Monitoring - Private tutoring-related activities | Math and English achievement | No effect Positive Positive Positive | | | 6568 | Korea |
| 64. | Cheung & Pomerantz (2012) | Longitudinal survey | - Parents' involvement (e.g., attendance of parent-teacher conferences, discussion of school with children, and assistance with homework) | Overall math, reading and science achievement | Positive | Self-regulated learning | | 825 | U.S. |
| 65. | Dumont et al. (2012) | Survey | Parental homework involvement: - Support - Conflict | Math and reading achievement | Positive Negative | | | 1270 | Germany |

| | Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | <i>N</i> | Country |
|-----|--|---------------------|--|-----------------------------|--|---------------------|------------------|----------|----------------|
| 66. | Gordon & Cui (2012) | Survey | <ul style="list-style-type: none"> - School specific parenting (talking about school, and helping with school-related tasks) - General parental support (how close student feel to their parents and how satisfied they were with the way they communicated with their parents) - Parental expectations | Grade Point Average (GPA) | <ul style="list-style-type: none"> Positive Positive Positive | | | 9350 | U.S. |
| 67. | Hayes (2012) | Survey | <ul style="list-style-type: none"> - Parents values and attitudes about the importance of effort and academic success - Parent-child communication about school and learning - School involvement (attending and participating in school events) | Grades | <ul style="list-style-type: none"> No effect Positive No effect | | | 145 | U.S. |
| 68. | McNeal (2012) | Longitudinal survey | <ul style="list-style-type: none"> - Parent-child discussions about school matters - Monitoring - School involvement | Science achievement | <ul style="list-style-type: none"> Positive Negative No effect | | | 7983 | U.S. |
| 69. | Karbach, Gottschling, Spengler, Hegewald, & Spinath (2013) | Survey | <ul style="list-style-type: none"> - Autonomy supportive practices - Achievement oriented control - Structure - Emotional responsivity | Math and German achievement | <ul style="list-style-type: none"> No effect Negative Negative No effect | | | 334 | Germany |
| 70. | Wang & Sheik-Khalil (2014) | Longitudinal survey | <ul style="list-style-type: none"> - Home-based involvement (extent to which parents structure after-school time for study and provide enriching materials and events) - School-based involvement (extent to which parents attend school events and volunteer at school) | Grade Point Average (GPA) | <ul style="list-style-type: none"> Positive No effect | Academic engagement | Ethnicity,SES | 1056 | U.S. |

| Authors | Study design | Parental involvement indicator | Academic outcome | Effect | Mediator | Moderator | <i>N</i> | Country |
|-------------------------------------|--------------|--|--|--|------------------------|-----------|----------|---------|
| | | - Academic socialization (extent to which parents communicate educational goals, values, and aspirations and discuss plans for the future with their children) | | Positive | | | | |
| 71. Choi, Chang, Kim, & Reio (2015) | Survey | - Parent participation in school events and activities - Parental guidance on academic performance and future academic plans - Parental aspirations | Math performance | No effect Positive Positive | Mathematics efficacy | | 8673 | U.S. |
| 72. Nunez et al (2015) | Survey | Parental homework involvement: - Control - Support | Overall grade in math, language, and social sciences | Negative Positive | Homework behaviors | | 1683 | U.S. |
| 73. You, Lim, No, & Dang (2016) | Survey | - Parental school participation - Parental supervision - Parental expectations | Overall achievement in math, reading and English | Positive Positive Positive | Academic self-efficacy | | 6334 | Korea |
| 74. Dotterer & Wehrspann (2016) | Survey | - Parental educational involvement (school-related activities at home and at school) | Grade Point Average (GPA) | Positive | School engagement | | 108 | U.S. |
| 75. Perkins et al. (2016) | Survey | - Parental guidance - Parental support - Parental involvement in school activities at home - Parental involvement in non-school activities at home | Overall school grades | No effect No effect Positive Positive | | | 607 | U.S. |

Table 5*Summary of Findings for Parental Involvement by Age-Related Categories*

| Involvement dimension | Positive relation with achievement | Negative relation with/not related to achievement |
|------------------------------|--|---|
| Home | <i>Early childhood</i> Reading activities at home The provision of literacy materials Parental engagement in learning activities at home | |
| | <i>Elementary school</i> High parental expectations and aspirations Academic encouragement and support Providing the appropriate environment and materials conducive to learning Autonomy supportive homework help Reading activities at home | Academic pressure Homework help Homework control |
| | <i>Middle school and beyond</i> High parental expectations and aspirations Valuing academic achievement and reinforce learning at home Academic encouragement and support Parent-child educational discussions | Academic pressure Parental control Parental interference with homework Homework-related conflict Checking of homework Homework control Help with homework |
| School | <i>Early childhood</i> Volunteer at school Participation in school events (attending events, help with fundraising) Visit the classroom Attendance at PTA meetings or other meetings with the teacher | Volunteer at school Contact with teacher on child academic outcomes |
| | <i>Elementary school</i> Volunteer at school Participation in school events (attending events, help with fundraising) Visit the classroom Attendance at PTA meetings or other meetings with the teacher | Volunteer at school Participation in school events (attending events, help with fundraising) Visit the classroom Attendance at PTA meetings or other meetings with the teacher |
| | <i>Middle school and beyond</i> Volunteer at school Participation in school events (attending events, help with fundraising) Visit the classroom Attendance at PTA meetings or other meetings with the teacher | Volunteer at school Participation in school events (attending events, help with fundraising) Visit the classroom Attendance at PTA meetings or other meetings with the teacher |

3.4 Relation between parental involvement and academic achievement: mediators and moderators

While each of the parental involvement variables presented in this section has shown a relation to students' academic achievement, it is also clear from recent research that the associations are complex. Across the age-related categories, multiple studies found interactions between parental involvement variables and ethnicity/race, socio-economic status, and child characteristics. Consequently, we can view these as potentially moderating or mediating variables in relation to student achievement. We will now discuss studies that found mediating or moderating variables with respect to the relationship between parental involvement and academic achievement.

Several findings indicate that the relationship between parental involvement and academic achievement is mediated by children's characteristics and competencies (Cheung & Pomerantz, 2012; Choi, Chang, Kim, & Reio, 2015; Dearing, McCartney, Weiss, Kreider, & Simpkins, 2004; Dotterer & Wehrspann, 2016; Gonida & Cortina, 2014; Hill & Craft, 2003; Hong & Ho, 2005; Levpuscek & Zupanic, 2009; Magi, Lerkkanen, Poikkeus, Rasku-Puttonen, & Nurmi, 2011; Nunez, Suarez, Rosario, Vallejo, Valle, & Epstein, 2015; Wang & Sheik-Khalil, 2014; Weiser & Riggio, 2010; Xu, Benson, Mudrey-Camino, & Steiner, 2010; You, Lim, No, & Dang, 2016). To illustrate, Rogers and colleagues (2009) found evidence that parental involvement does not influence academic achievement directly, but indirectly through the mediational role of the child's academic competencies. According to their study, parents influence their child's characteristics and, consequently, the academic achievement of their child. Similar results were found by Phillipson and Phillipson (2012). They found evidence that parents influence their child's academic achievement indirectly through the mediational role of cognitive ability beliefs. Based on their findings, they proposed a cognitive-affect model of achievement. This model shows that academic achievement

depends on subjective cognitive ability of the child, a self-evaluation of cognitive ability. And subjective cognitive ability depends on feedback from parents through their communication of beliefs of their children's ability and academic expectations.

Another relevant issue is the role of social economic status (SES) in the relationship between parental involvement and academic achievement. SES is typically measured as family income and the educational level of parents. Some studies included in this review tested if SES moderates the relation between parental involvement and academic achievement and found that SES indeed partially moderates this relationship (e.g., Wang & Sheik-Khalil, 2014). For instance, in a study conducted by Dearing and others (2004) longitudinal data for 167 children was analyzed to examine associations between parental involvement during kindergarten, children's feelings about literacy, and children's literacy achievement from kindergarten through fifth grade. The beneficial effect of involvement for feelings about literacy and literacy achievement was partially moderated by maternal education. Similar moderating effects of maternal education for associations between involvement at kindergarten and the development of children's feelings about literacy and literacy achievement were found in a subsequent study (Dearing, Kreider, Simpkins, & Weiss, 2006). According to these findings, higher educated mothers are in general more successful in their involvement activities compared to lower educated mothers. This could be explained by more effective involvement skills of educated mothers (e.g., Englund, Luckner, Whaley, & Egeland, 2004; Fekonja-Peklaj, Marjanovic-Umek, & Kranjc, 2010).

In spite of the fact that parental involvement is associated with higher achievement for children from higher social class backgrounds and this could partially be explained by the educational level of mothers, the abovementioned studies conducted by Dearing and others (2004; 2006) also found evidence that achievement gaps between children of more and less educated mothers became nonexistent if parental involvement levels were high. They found

that although children of relatively less educated mothers have more negative feelings about their literacy performance at kindergarten than do children of relatively more educated mothers, this difference diminishes over time if families are highly involved. These results indicate that high levels of involvement may have added reward for low SES children with the added risk of low parent education.

Findings about the relationship between parental involvement and achievement also vary according to the populations examined. Although the impact of certain types of parent involvement on academic achievement overall is significant among children from all racial/ethnic groups, multiple studies suggest that the association is moderated by racial/ethnic characteristics. For example, Hill and Craft (2003) found that parental involvement at home improved pro-social behavior and children's ability to control their emotions and this, in turn, enabled Euro-American children to use their academic skills to perform better in reading and math. However, home-based involvement was not related to achievement for African Americans. The reverse was found for school-based involvement: parental involvement at school, including volunteering in the classroom and sending materials to school, improved children's academic skills, which in turn improved math performance for African American children. This association was not found for Euro-American children. Other studies also indicated that racial/ethnic variations exist in the relation between parental involvement and academic achievement (Aikens & Barbarin, 2008; Bean et al., 2003; Birman & Espino, 2007; Cooper, Crosnoe, Suizzo, & Pituch, 2010; Hill & Craft, 2003; Hill et al., 2004; Hong & Ho, 2005; Hughes & Kwok, 2007; Lee & Bowen, 2006). Interestingly, however, is that when parental involvement is measured as 'parental expectations or aspirations for their children's academic achievement and schooling' it is positively associated with achievement regardless of SES or ethnicity/race (Chen & Gregory, 2010; Lee & Bowen, 2003).

4. Conclusion

This review analyzed the results of 75 studies examining the relation between parental involvement and academic achievement. Findings of studies published between 2003 and 2017 confirm that parental involvement is related to children's academic achievement. However, this association is not as great as traditionally believed. Correlational studies have found small to medium associations between various parental involvement variables and academic achievement. The most consistent and positive relations were found for: (a) reading at home, (b) parents holding high expectations/aspirations for their children's academic achievement and schooling, (c) communication between parents and children regarding school, and (d) parental encouragement and support for learning. See Table 5 for a summary of findings. Furthermore, important conclusions from the present literature review are: (1) parental involvement does not diminish as children grow older but it does change in nature, (2) several studies challenge the common assumption that parental involvement is directly related to academic achievement, (3) the beneficial forms of parental involvement should be defined more clearly because not all forms of parental involvement are positively related to academic achievement and (4) this association is not the same for all ethnic/racial groups. These conclusions and other insights will be discussed below.

5. Discussion

5.1 Relationship between parental involvement and academic achievement

In this review we considered two dimensions of parental involvement, namely parental home-based involvement and parental school-based involvement. Research has provided some interesting insights with regard to the home-based involvement dimension. Several indicators that belong to this dimension were consistently found to be related to the academic achievement of children. Interestingly, the association with academic achievement was often

found the strongest for one particular measure: parental expectations and aspirations. Apparently, parents' beliefs/attitudes are more predictive of higher achievement than behavioral forms of involvement. Parents' educational expectations and aspirations are associated with increases in reading, math and grades for children regardless of SES or ethnicity (Chen & Gregory, 2010; Lee & Bowen, 2003). Another insight from this review is that the potential benefits for the school-based involvement dimension are not clear. Some studies found positive relations with school involvement types, whereas others found no or negative relations with the same involvement types. Future research should consider this dimension more in-depth to figure out how parental school-based involvement could be beneficial for the academic achievement of children.

Another important conclusion with regard to the relation between parental involvement and academic achievement is that parental involvement does not diminish when children grow into young adults. Parental involvement is commonly thought to simply decline as children move up to middle and high school (e.g., Desforges & Abouchar, 2003). However, according to the results of this review it seems more likely that the involvement of parents does not necessarily decrease but rather that involvement changes over time as the child develops and time spent on direct involvement activities decreases. Direct involvement practices such as guidance in learning (e.g. reading with children and learning together) or forms that can be characterized as active involvement at school is most beneficial in the earlier stages of education. The results indicate that when children grow older, instead of guidance or assistance in learning, it is more important that parents create the conditions under which academic success can be fostered. Parents seem to affect their children's academic outcomes by setting high academic expectations and creating a comfortable space for them to develop their academic motivations in ways not considered intrusive or controlling.

Furthermore, several recent studies examined if mediating variables could explain more accurately how parental involvement is related to the academic achievement of their children. Interestingly, these results challenge the common underlying assumption that parental involvement is directly related to students' academic achievement. The findings indicate that parental involvement could contribute to academic achievement indirectly through the influence of other proximal student outcomes, such as motivation, attitudes, and learning strategies. That is consistent with the assumptions of the parental involvement process model (Hoover-Dempsey & Sandler, 1995, 1997, 2005, 2010). In this model, students are seen as the authors of their academic success. And their parents involvement does not contribute directly to their academic achievement in school, however, they do contribute to the development of their learning attributes (academic self-efficacy, intrinsic motivation to learn, self-regulatory strategies and social self-efficacy for relating to teachers), which are, in turn, used by students in support of their academic success.

5.2 SES and ethnicity

Multiple studies included measurements of SES or ethnicity/race to determine whether these indicators influence the relationship with academic achievement. Several patterns were found across different studies. The first pattern is that when parental involvement is measured as expectations or aspirations it is positively associated with academic achievement regardless of social class or ethnicity/race. The second pattern is that the relationship between behavioral forms of involvement and academic achievement functions differently across ethnic/racial groups. The third pattern is that SES influences the relation between parental involvement and academic achievement. We will discuss these patterns and their implications more in detail below.

The first pattern is that multiple studies found that when parents have higher educational expectations or aspirations this is consistently associated with higher academic achievement of their children despite of social class or ethnicity/race (e.g., Lee & Bowen, 2003). This means that all children regardless of their background could benefit from parents who expect them to do well in school. Interestingly, however, is that when behavioral forms of involvement are taken into account in predicting the academic achievement of children it becomes unclear which types of parental involvement could be beneficial for different demographic groups. This is especially true for parents and their children from different ethnic/racial groups. What we know from recent studies is that the relation between behavioral forms of involvement (such as parent-child discussions or attending school events) and academic achievement functions differently for each racial/ethnic group. However, what has been missing in research thus far is a concrete answer to the question: which involvement activities impact children's academic achievement for each racial/ethnic group?

The third patterns refer to the academic advantage that children have when they come from higher social class backgrounds compared to those from lower social class backgrounds. Multiple studies included in this review confirm that children from higher SES families outperform children from lower SES families (e.g., Choi, Chang, Kim, & Reio, 2015; Hemmerechts, Agirdag, & Kavadias, 2017). This could, partially, be explained by the characteristics of parents. Studies found that maternal education partially moderates the relationship between parental involvement and academic achievement. Higher educated parents appear to be more effective in their involvement activities. Intriguing and promising is that some findings provided evidence that low SES children could benefit more from their parents academically if they raise their involvement levels (Dearing, Kreider, Simpkins, & Weiss, 2006). Therefore, future research should examine more in-depth how low educated parents can be guided on how to raise their involvement levels and how to become more

effective in their involvement activities so they have an opportunity to provide an academic advantage for their children.

5.3 The parental involvement construct

The construct of parent involvement has been developed in order to gain more insight in parental mechanisms that could create an academic advantage for children. Parental involvement is often conceptualized in the literature as multidimensional. This means that the construct refers to a broad variety of parental behaviors and beliefs/attitudes that directly or indirectly is related to children' school achievement. The problem, however, with this broad conceptualization is that it remains unclear how exactly parents can contribute to the academic success of their children. We will now discuss why a broad definition of parental involvement should be avoided in the future.

First, studies have included children of various ages and have not specifically tried to understand if and how parental involvement differs in nature per age group. According to this review, the benefits of involvement clearly depend on the developmental level of the children that were assessed. For example, involvement in the form of reading with children or being involved in learning activities at home such as singing or playing games together is consistently positively associated with the academic achievement of young children. These involvement behaviors are no longer beneficial when the child grows older. Instead, older children seem to benefit from high parental expectations in combination with academic encouragement and support from their parents, such as praising their children's performance and efforts. And children who experience greater levels of communication with their parents about school-related topics are academically more successful in comparison with those who talk less with their parents. Thus, future research should avoid a broad conceptualization of parental involvement, instead, they should pay more attention to creating a better

understanding of the beneficial aspects of specific types of involvement for a particular age group.

Second, another finding from this review is that not all forms of parental involvement are positively related to academic achievement. This insight challenges the notion that parental involvement as a whole has a widespread benefit on children's achievement. There clearly are forms of parental involvement that are positively related to achievement. However, several studies consistently suggest the opposite. The findings of this review suggest that rather than assuming that any form of involvement is a good thing, educators, parents, and researchers should be aware that some forms of involvement that parents employ just do not work or might actually lead to declines in achievement. With regard to the measures of parental involvement associated with declines in achievement, it is important to understand why these indicators are negatively related and how parents could be guided on how to become more effective and thus avoid compromising achievement.

One example is parental homework involvement. Parents often become involved in their children's education through homework involvement (Walker, Hoover-Dempsey, Whetsel, & Green, 2004). Unfortunately, the results of this review confirm that findings for homework involvement have been mixed (Patal, Cooper, & Robinson, 2008). Most studies found negative relations with academic achievement. When involvement was measured as the amount of 'homework help', 'homework control' or 'checking of homework' it is negatively associated with academic achievement (e.g., Xu, Benson, Mudrey-Camino, & Steiner, 2010). Interestingly, however, when parents' homework help is autonomy supportive the relation with academic achievement is positive (Gonida & Cortina, 2014; Moroni, Dumont, Trautwein, Niggli, & Baeriswyl, 2015). This suggests that the "more involvement is better" approach does not apply to this form of involvement. Rather, how parents become involved in the homework process seems to be the crucial factor. Future research should make attempts to

refine the parental homework involvement construct, as well as other broad forms of involvement, to better identify what particular elements of involvement may be most effective for students, and when.

Based on this review it is apparent that researchers remain to operationalize and test a broad variety of parental involvement indicators. Unfortunately, when researchers remain to consider and test parental involvement as a broad construct it will not be clear what exactly parents could do to support their children's academic success. Therefore, researchers who plan to examine the relationship between parental involvement and students' academic achievement should pay special attention to the operational definition and measurement of parental involvement, and should carefully document such definition and measurement. And more importantly, different dimensions should be measured separately and more in-depth, instead of being summed up into a general composite.

5.4 Limitations

Almost all reviewed studies were based on correlational data, and therefore the results cannot support causal claims. In the absence of more experimental data, it is not possible to determine whether some types of parent involvement preceded or occurred in response to children's academic achievement. Moreover, in the absence of experimental studies, it is not possible to rule out other possible causes of children's academic achievement. Thus, this research field would greatly benefit from experimental data to determine the true impact of parental involvement on the academic achievement of their children.

Another limitation of the studies reviewed was its reliance on ordinal frequency scales. Response choices on such scales may be biased. When assessing behaviors that are suggested to be indicative for measuring forms of involvement, we should keep in mind that the empirical evidence of involvement obtained with questionnaires is doubtful. Bias in ratings of

involvement should be considered as a major problem, for which a solution is very difficult to find. This limitation was attenuated to some extent by the fact that some studies used measures of parent involvement from teacher-report or student-report questionnaires. The use of multiple informants, however, does not seem satisfactory for overcoming this problem. The use of observations should be considered in future measures of parents' involvement.

References

- Aikens, N. L., & Barbarin, O. (2008). Socioeconomic differences in reading trajectories: The contribution of family, neighborhood, and school contexts. *Journal of Educational Psychology, 100*, 235-251. doi:10.1037/0022-0663.100.2.235
- Altschul, I. (2011). Parental involvement and the academic achievement of Mexican American youths: What kinds of involvement in youths' education matter most? *Social Work Research, 35*, 159-170.
- Antonopoulou, K., Koutrouba, K., & Babalis, T. (2011). Parental involvement in secondary education schools: The views of parents in Greece. *Educational Studies, 37*, 333-344. doi:10.1080/03055698.2010.506332
- Bakker, J., & Denessen, E. (2007). The concept of parental involvement. Some theoretical and empirical considerations. *International Journal about Parents in Education, 1*, 188-199.
- Bean, R. A., Bush, K. R., McKenry, P. C., & Wilson, S. M. (2003). The impact of parental support, behavioral control, and psychological control on the academic achievement and self-esteem of African American and European American adolescents. *Journal of Adolescent Research, 18*, 523-541. doi:10.1177/0743558403255070

- Birman, D., & Espino, S. R. (2007). The relationship of parental practices and knowledge to school adaptation for immigrant and nonimmigrant high school students. *Canadian Journal of School Psychology, 22*, 152-166. doi:10.1177/0829573507307803
- Carranza, F. D., You, S., Chhuon, V., & Hudley, C. (2009). Mexican American adolescents' academic achievement and aspirations: the role of perceived parental educational involvement, acculturation, and self-esteem, *Adolescence, 44*, 313-333.
- Chang, M., Choi, N., & Kim, S. (2015). School involvement of parents of linguistic and racial minorities and their children's mathematics performance, *Educational Research and Evaluation, 21*, 209-231. doi: 10.1080/13803611.2015.1034283
- Chen, W. B., & Gregory, A. (2010). Parental involvement as a protective factor during the transition to high school. *The Journal of Educational Research, 103*, 53-62. doi:10.1080/00220670903231250
- Cheung, C. S., & Pomerantz, E. M. (2012). Why does parents' involvement enhance children's achievement? The role of parent-oriented motivation. *Journal of Educational Psychology, 104*, 820-832. doi:10.1037/a0027183
- Choi, N., Chang, M., Kim, S., & Reio, T. G. (2015). A structural model of parental involvement with demographic and academic variables, *Psychology in the Schools, 52*. 154-167. doi: 10.1002/pits.21813
- Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155- 159. doi:10.1037/0033-2909.112.1.155
- Comer, J. P. (1995). *School power: Implications of an intervention project*. New York: Free Press.
- Cooper, C. E., Crosnoe, R., Suizzo, M. A., & Pituch, K. A. (2010). Poverty, race, and parental involvement during the transition to elementary school. *Journal of Family Issues, 31*, 859-883. doi:10.1177/0192513X09351515

- Crosby, S. A., Rasinski, T., Padak, N., & Yildirim, K. (2015) A 3-year study of a school-based parental involvement program in early literacy, *The Journal of Educational Research*, 108, 165-172. doi: 10.1080/00220671.2013.867472
- Dearing, E., Kreider, H., Simpkins, S., & Weiss, H. B. (2006). Family involvement in school and low-income children's literacy: Longitudinal association between and within families. *Journal of Educational Psychology*, 98, 653-664. doi:10.1037/0022-0663.98.4.653
- Dearing, E., McCartney, K., Weiss, H. B., Kreider, H., & Simpkins, S. (2004). The promotive effects of family educational involvement for low-income children's literacy. *Journal of School Psychology*, 42, 445-460. doi:10.1016/j.jsp.2004.07.002
- Desforges, C., & Abouchar, A. (2003). *The impact on parental involvement, parental support, and family education pupil achievements and adjustment: A literature review* (Report Number 433). U.K. Department of Education and Skills. Nottingham (UK): DfES Publications.
- Domina, T. (2005). Leveling the home advantage: Assessing the effectiveness of parental involvement in elementary school. *Sociology of Education*, 78, 233-249. doi:10.1177/003804070507800303
- Dotterer, A. M. & Wehrspann, E. (2016). Parent involvement and academic outcomes among urban adolescents: examining the role of school engagement, *Educational Psychology*, 36, 812-830. doi: 10.1080/01443410.2015.1099617
- Driessen, G., Smit, F., & Slegers, P. (2005). Parental involvement and educational achievement. *British Educational Research Journal*, 31, 509-532. doi:10.1080/01411920500148713
- Dumont, H., Trautwein, U., Ludtke, O., Neumann, M., Niggli, A., & Schnyder, I. (2012). Does parental homework involvement mediate the relationship between family

- background and educational outcomes? *Contemporary Educational Psychology*, *104*, 820-832. doi:10.1016/j.cedpsych.2011.09.004
- Dumont, H., Trautwein, U., Nagy, G., & Nagengast, B. (2014). Quality of parental homework involvement: predictors and reciprocal relations with academic functioning in the reading domain, *Journal of Educational Psychology*, *106*, 144-161. doi: 10.1037/a0034100
- Durand, T. M. (2011). Latino parental involvement in kindergarten: Findings from the early childhood longitudinal study. *Hispanic Journal of Behavioral Sciences*, *33*, 469- 489. doi:10.1177/0739986311423077
- Englund, M. M., Luckner, A. E., Whaley, G. J. L., & Egeland, B. (2004). Children's achievement in early elementary school: Longitudinal effects of parental involvement, expectations, and quality of assistance. *Journal of Educational Psychology*, *96*, 723-730. doi:10.1037/0022-0663.96.4.723
- Epstein, J. L. (1987). Toward a theory of family-school connections: Teacher practices and parent involvement. In K. Hurrelman, F. X. Kaufman, & F. Losel (Eds.), *Social intervention: Potential and constraints* (pp. 121-136). Berlin: de Gruyter.
- Epstein, J.L. (1991) Paths to partnership: What can we learn from federal, state, district, school initiatives. *Phi Delta Kappan*, *72*, 344-349.
- Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis, *Educational Psychology Review*, *13*, 1-22. doi:10.1023/A:1009048817385
- Fantuzzo, J., Davis, G. Y., & Ginsburg, M. D. (1995). Effects of parent involvement in isolation or in combination with peer tutoring on student self-concept and mathematics achievement. *Journal of Educational Psychology*, *87*, 272-281. doi:10.1037/0022-0663.87.2.272

- Fantuzzo, J., McWayne, C., Perry, M. A., & Childs, S. (2004). Multiple dimensions of family involvement and their relations to behavioral and learning competencies for urban, low-income children. *School Psychology Review, 33*, 467-480.
- Fekonja-Pekljaj, U., Marjanovic-Umek, L., & Kranjc, S. (2010). Children's storytelling: The effect of preschool and family environment. *European Early Childhood Education Research Journal, 18*, 55-73. doi:10.1080/13502930903520058
- Georgiou, S. N. (1997). Parental involvement: Definitions and outcomes. *Social Psychology of Education, 1*, 189-209. doi:10.1007/BF02339890
- Graves, S. L., & Brown Wright, L. (2011). Parental involvement at school entry: A national examination of group differences and achievement. *School Psychology International, 32*, 35-48. doi:10.1177/0143034310396611
- Green, C. L., Walker, J. M. T., Hoover-Dempsey, K. V., & Sandler, H. M. (2007). Parents' motivation for involvement in children's education: An empirical test of a theoretical model of parental involvement. *Journal of Educational Psychology, 99*, 532-544.
- Gonida, E. N. & Cortina, K. S. (2014). Parental involvement in homework: Relations with parent and student achievement-related motivational beliefs and achievement, *British Journal of Educational Psychology, 84*, 376–396. doi:10.1111/bjep.12039
- Gordon, M. S. & Cui, M. (2012). The effects of school-specific parenting processes on academic achievement in adolescence and young adulthood, *Family Relations, 61*, 728-741. doi: 10.1111/j.1741-3729.2012.00733.x
- Grolnick, W. S., & Slowiaczek, M. L. (1994). Parents' involvement in children's schooling: A multidimensional conceptualization and motivational model. *Child Development, 65*, 237-252. doi:10.1111/1467-8624.ep9406130692
- Gubbins, V. & Otero, G. (2016). Effect of the parental involvement style perceived by elementary school students at home on Language and Mathematics performance in

- Chilean schools, *Educational Studies*, 42, 121-136,. doi:
10.1080/03055698.2016.1148586
- Hayes, D. (2012). Parental involvement and achievement in African American adolescents. *Journal of Comparative Family Studies*, 43, 567-582.
- Hemmerechts, K., Agirdag, O., & Kavadias, D. (2017). The relationship between parental literacy involvement, socio-economic status and reading literacy, *Educational Review*, 69, 85-101. doi: 10.1080/00131911.2016.1164667
- Hill, N. E., Castellino, D. R., Lansford, J. E., Nowlin, P., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2004). Parent academic involvement as related to school behavior, achievement, and aspirations: Demographic variations across adolescence. *Child Development*, 75, 1491-1509. doi:10.1111/j.1467-8624.2004.00753.x
- Hill, N. E., & Craft, S. A. (2003). Parent-school involvement and school performance: Mediated pathways among socioeconomically comparable African American and Euro-American families. *Journal of Educational Psychology*, 95, 74-83.
doi:10.1037/0022-0663.95.1.74
- Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology*, 45, 740-763. doi:10.1037/a0015362
- Hindman, A. H., Skibbe, L. E., Miller, A., & Zimmerman, M. (2010). Ecological contexts and early learning: Contributions of child, family, and classroom factors during Head Start, to literacy and mathematics growth through first grade. *Early Childhood Research Quarterly*, 25, 235-250. doi:10.1016/j.ecresq.2009.11.003
- Ho, E. S. H. (2010). Family influences on science learning among Hong Kong adolescents: What we learned from PISA. *International Journal of Science and Mathematics Education*, 8, 409-428. doi:10.1007/s10763-010-9198-3

- Hong, S., & Ho, H. Z. (2005). Direct and indirect longitudinal effects of parental involvement on student achievement: Second-order latent growth modeling across ethnic groups, *Journal of Educational Psychology, 97*, 32–42. doi:10.1037/0022-0663.97.1.32
- Hong, S., Yoo, S. K., You, S., & Wu, C. C. (2010). The reciprocal relationship between parental involvement and mathematics achievement: Autoregressive cross-lagged modeling. *The Journal of Experimental Education, 78*, 419-439.
doi:10.1080/00220970903292926
- Hoover-Dempsey, K. V., & Sandler, H. M. (1995). Parental involvement in children's education: Why does it make a difference? *Teachers College Record, 95*, 310-331.
- Hoover-Dempsey, K.V., & Sandler, H.M. (1997). Why do parents become involved in their children's education? *Review of Educational Research, 67*, 3-42.
- Hoover-Dempsey, K.V., Walker, J.M.T., Sandler, H.M., Whetsel, D., Green, C.L., Wilkins, A.S., & Clossen, K.E. (2005). Why do parents become involved? Research findings and implications. *Elementary School Journal, 106*, 105-130.
- Hoover-Dempsey, K.V., Green, C.G., & Whitaker, M.W. (2010). Motivation and commitment to partnerships for families and schools. In S. L. Christenson & A. L. Reschly (Eds.), *Handbook of School-Family Partnerships* (pp. 30-60) New York: Routledge/Taylor and Francis Group.
- Houtenville, A. J., & Conway, K. S. (2008). Parental effort, school resources, and student achievement. *Journal of Human Resources, 43*, 437-453.
- Hsu, H. Y., Zhang, D., Kwok, O. M., Li, Y., & Ju, S. (2011). Distinguishing the influences of father's and mother's involvement: Analysis of Taiwan education panel survey data. *Journal of Early Adolescence, 31*, 694-713. doi:10.1177/0272431610373101

- Hughes, J., & Kwok, O. (2007). Influence of student-teacher and parent-teacher relationships on lower achieving readers' engagement and achievement in the primary grades. *Journal of Educational Psychology, 99*, 39-51. doi:10.1037/0022-0663.99.1.39
- Hung, C. L. (2007). Family, schools and Taiwanese children's outcomes. *Educational Research, 49*, 115-125. doi:10.1080/00131880701369644
- Jeynes, W. H. (2003). A meta-analysis. The effects of parental involvement on minority children's academic achievement. *Education and Urban Society, 35*, 202-218.
- Jeynes, W. H. (2005). A meta-analysis of the relation of parental involvement to urban elementary school student academic achievement. *Urban Education, 40*, 237-269. doi:10.1177/0042085905274540
- Jeynes, W. H. (2007). The relationship between parental involvement and urban secondary school student academic achievement. A meta-analysis. *Urban Education, 42*, 82-110. doi:10.1177/0042085906293818
- Johnson, U. Y. & Hull, D. M. (2014). Parental involvement and science achievement: a cross-classified multilevel latent growth curve analysis, *The Journal of Educational Research, 107*, 399-409. doi:10.1080/00220671.2013.807488
- Karbach, J., Gottschling, J., Spengler, M., Hegewald, K., & Spinath, F. M. (2013). Parental involvement and general cognitive ability as predictors of domain-specific academic achievement in early adolescence, *Learning and Instruction, 23*, 43-51. doi: 10.1016/j.learninstruc.2012.09.004
- Kicklighter Dove, M., Neuharth-Pritchett, S., Wright, D. W., & Wallinga, C. (2015) Parental involvement routines and former head start children's literacy outcomes, *Journal of Research in Childhood Education, 29*, 173-186. doi: 10.1080/02568543.2015.1011360

- Kloosterman, R., Notten, N., Tolsma, J., & Kraaykamp, G. (2011). The effects of parental reading socialization and early school involvement on children's academic performance: A panel study of primary school pupils in the Netherlands. *European Sociological Review*, 27, 291-306. doi:10.1093/esr/jcq007
- LaRocque, M., Kleiman, I., & Darling, S. M. (2011). Parental involvement: The missing link in school achievement, *Preventing School Failure: Alternative Education for Children and Youth*, 55, 115-122, DOI: 10.1080/10459880903472876
- Lee, J. S., & Bowen, N. K. (2006). Parent involvement, cultural capital, and the achievement gap among elementary school children. *American Educational Research Journal*, 43, 193-215. doi:10.3102/00028312043002193
- Levpuscek, M. P., & Zupanic, M. (2009). Math achievement in early adolescence: The role of parental involvement, teachers' behavior, and students' motivational beliefs about math. *Journal of Early Adolescence*, 29, 541-570. doi:10.1177/0272431608324189
- Magi, K., Lerkkanen, M. K., Poikkeus, A. M., Rasku-Puttonen, H., & Nurmi, J. E. (2011). The cross-lagged relations between children's academic skill development, task-avoidance, and parental beliefs about success. *Learning and Instruction*, 21, 664-675. doi:10.1016/j.learninstruc.2011.03.001
- Manolitsis, G., Georgiou, G. K., & Tziraki, N. (2013). Examining the effects of home literacy and numeracy environment on early reading and math acquisition, *Early Childhood Research Quarterly*, 28, 692-703. doi: 10.1016/j.ecresq.2013.05.004
- Martinez, C. R., DeGarmo, D. S., & Eddy, J. M. (2004). Promoting academic success among Latino youths. *Hispanic Journal of Behavioral Sciences*, 26, 128-151. doi:10.1177/0739986304264573

- Mattingly, D. J., Prislin, R., McKenzie, T., Rodrigues, J. L. & Kayzar, B. (2002). Evaluating evaluations: The case of parent involvement programs. *Review of Educational Research, 72*, 549–576.
- McBride, B. A., Dyer, W. J., Liu, Y., Brown, G. L., & Hong, S. (2009). The differential impact of early father and mother involvement on later student achievement. *Journal of Educational Psychology, 101*, 498-508. doi:10.1037/a0014238
- McNeal, R. B. (2012). Checking in or checking out? Investigating the parent involvement reactive hypothesis, *The Journal of Educational Research, 105*, 79-89.
doi:10.1080/00220671.2010.519410
- McWayne, C., Hampton, V., Fantuzzo, J., Cohen, H. L., & Sekino, Y. (2004). A multivariate examination of parent involvement and the social and academic competencies of urban kindergarten children. *Psychology in the Schools, 41*, 363-377.
doi:10.1002/pits.10163
- Moroni, S., Dumont, H., Trautwein, U., Niggli, A., & Baeriswyl, F. (2015). The need to distinguish between quantity and quality in research on parental involvement: the example of parental help with homework, *The Journal of Educational Research, 108*, 417–431. doi: 10.1080/00220671.2014.901283
- Myrberg, E., & Rosen, M. (2009). Direct and indirect effects of parents' education on reading achievement among third graders in Sweden. *British Journal of Educational Psychology, 79*, 695-711. doi:10.1348/000709909X453031
- Nunez, J. C., Suarez, N., Rosario, P., Vallejo, G., Valle, A., & Epstein, J. L. (2015). Relationships between perceived parental involvement in homework, student homework behaviors, and academic achievement: differences among elementary, junior high, and high school students, *Metacognition Learning, 10*, 375-406. doi: 10.1007/s11409-015-9135-5

- Oyserman, D., Brickmann, D., & Rhodes, M. (2007). School success, possible selves, and parent school involvement. *Family Relations*, 56, 479-489. doi:10.1111/j.1741-3729.2007.00475.x
- Park, H. (2008). The varied educational effects of parent-child communication: A comparative study of fourteen countries. *Comparative Education Review*, 52, 219-243. doi:10.1086/528763
- Park, H., Buyn, S. Y., & Kim, K. K. (2011). Parental involvement and students' cognitive outcomes in Korea. *Sociology of Education*, 84, 3-22. doi:10.1177/0038040710392719
- Patall, A., Cooper, H., & Robinson, J. C. (2008). Parent Involvement in Homework: A Research Synthesis. *Review of Educational Research*, 78, 1039-1101.
- Pearce, R. R. (2006). Effects of cultural and social structural factors on the achievement of White and Chinese American students at school transition points. *American Educational Research Journal*, 43, 75-101. doi:10.3102/00028312043001075
- Perkins, D. F., Syvertsen, A. K., Mincemoyer, C., Chilenski, S. M., Olson, J. R., Berrena, E., Greenberg, M., Spoth, R. (2016). Thriving in school: the role of sixth grade adolescent-parent-school relationships in predicting eight grade academic outcomes, *Youth & Society*, 48, 739-762. doi: 10.1177/0044118X13512858
- Phillipson, S., & Phillipson, S. N. (2012). Children's cognitive ability and their academic achievement: The mediation effects of parental expectations. *Asia Pacific Educational Review*, 13, 495-508. doi:10.1007/s12564-011-9198-1
- Rogers, M. A., Theule, J., Ryan, B. A., Adams, G. R., & Keating, L. (2009). Parental involvement and children's school achievement: Evidence for mediating processes. *Canadian Journal of School Psychology*, 24, 34-57. doi:10.1177/0829573508328445

- Schulting, A. B., Malone, P. S., & Dodge, K. A. (2005). The effect of school-based kindergarten transition policies and practices on child academic outcomes. *Developmental Psychology, 41*, 860-871. doi:10.1037/0012-1649.41.6.860
- Sheldon, S. B., & Epstein, J. L. (2005). Involvement counts: Family and community partnerships and mathematics achievement. *The Journal of Educational Research, 98*, 196-206. doi:10.3200/JOER.98.4.196-207
- Simons-Morton, B., & Chen, R. (2009). Peer and parent influences on school engagement among early adolescents. *Youth and Society, 41*, 3-25. doi:10.1177/0044118X09334861
- Singh, K., Bickley, P.G., Keith, T.Z., Keith, P.B., Trivette, P., & Anderson, E. (1995). The effects of four components of parental involvement on eighth grade student achievement: structural analysis of NELS-88 data. *School Psychology Review, 24*, 299-317
- Sibley, E. & Dearing, E. (2014). Family educational involvement and child achievement in early elementary school for American born and immigrant families, *Psychology in the Schools, 51*, 814-831. doi: 10.1002/pits.21784
- Strayhorn, T. L. (2010). The role of schools, families, and psychological variables on math achievement of black high school students. *High School Journal, 93*, 177-194.
- Stright, A. D. & Yeo, K. L. (2013). Maternal parenting styles, school involvement, and children's school achievement and conduct in Singapore, *Journal of Educational Psychology, 106*, 301-314. doi: 10.1037/a0033821
- Stylianides, A. J., & Stylianides, G. J. (2011). A type of parental involvement with an isomorphic effect on urban children's mathematics, reading, science, and social studies achievement at kindergarten entry. *Urban Education, 46*, 408-425. doi:10.1177/0042085910377605

- Tam, V. C., & Chan, R. M. (2009). Parental involvement in primary children's homework in Hong Kong. *The School Community Journal, 19*, 81-100.
- Van Voorhis, F. L. (2011). Adding families to the homework equation: A longitudinal study of mathematics achievement. *Education and Urban Society, 43*, 313-338.
doi:10.1177/0013124510380236
- Walker, J. M. T., Hoover-Dempsey, K. V., Whetsel, D. R., & Green, C. L. (2004). Parental involvement in homework: A review of current research and its implications for teacher, after school program staff, and parent leaders. Harvard Family Research Project retrieved from www.gse.harvard.edu/hfrp/projects/fine/resources/homework.html on January 20, 2017
- Wang, M. T. & Sheik-Khalil, S. (2014). Does parental involvement matter for student achievement and mental health in high school?, *Child Development, 55*, 610-625.
doi:10.1111/cdev.12153
- Weiser, D. A., & Riggio, H. R. (2010). Family background and academic achievement: Does self-efficacy mediate outcomes? *Social Psychology of Education, 13*, 367-383.
doi:10.1007/s11218-010-9115-1
- Wen, X., Bulotsky-Shearer, R. J., Hahs-Vaughn, D. L., & Korfmacher, J. (2012). Head Start program quality: Examination of classroom quality and parent involvement in predicting children's vocabulary, literacy, and mathematics achievement trajectories. *Early Childhood Research Quarterly, 27*, 640-653. doi:10.1016/j.ecresq.2012.01.004
- Wilder, S. (2014). Effects of parental involvement on academic achievement: a meta-synthesis, *Educational Review, 66*, 377-397, DOI: 10.1080/00131911.2013.780009
- Xu, M., Benson, N. K., Mudrey-Camino, R., & Steiner, R. P. (2010). The relationship between parental involvement, self-regulated learning, and reading achievement of

fifth graders: A path analysis using the ECLS-K database. *Social Psychology of Education: An International Journal*, 13, 237-269. doi:10.1007/s11218-009-9104-4

Youn, M. J., Leon, J., & Lee, K. J. (2012). The influence of maternal employment on children's learning growth and the role of parental involvement, *Early Child Development and Care*, 182, 1227-1246. doi:10.1080/03004430.2011.604944

You, S., Lim, S. A. No, U., & Dang, M. (2016). Multidimensional aspects of parental involvement in Korean adolescents' schooling: a mediating role of general and domain specific self-efficacy, *Educational Psychology*, 36, 916-934. doi: 10.1080/01443410.2015.1025