

The impact of parental involvement and education on academic achievement in elementary school

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ABSTRACT

The academic achievement of students in schools is subject to a variety of factors, many of which are beyond the control of the student. Factors such as parental involvement, parental level of education, and disability all influence the academic achievement and learning of students. The study analyzed nation-wide survey data on students in elementary school and investigates the relationship between student achievement and multiple variables. The variables were parental involvement, and the existence of Autism Spectrum Disorder (ASD) or other disability. Results indicated that students, both ASD and typically developing, have lower parent involvement if they are successful in school.

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1. INTRODUCTION

In educational research, one lingering question remains on the minds of educational psychologists, researchers, and practitioners alike and is a central theme of numerous research studies: who or what is the key to student learning? This topic of interest that was analyzed by Coleman et al. [1] in the infamous report *Equality of Educational Opportunity* or commonly known in educational circles as *The Coleman Report*, which found that the family background of students, in tandem with a different socio-economic status (SES), appeared to be the largest component of learning in the classroom in the United States. Additionally, this study was one of the first that identified an achievement gap that existed between students who were African American, who performed lower, and white Caucasians. This landmark study shifted how the public viewed the perceived success of a school from an input focused view (e.g. class size, per pupil expenditure, resource allocation) to an output focused view (e.g. yearly gains in learning, long-term employment impact, amount and type of post-secondary education pursued) [2]. The ideas from this early report have guided and impacted educational policy and practice and form new types of teaching practices to be employed in the school. However, the responsibility of the student learning as well as subsequent student achievement is placed by parents onto the schools and teachers themselves.

The expectations placed on school professionals have continued to grow and expand, with school being responsible for addressing academic, behavioral, social, and emotional needs of students no matter what issues they face in their home. Research on the impact of individual teachers on student achievement has found that there is no data supporting the role of teachers in the determination of academic achievement in the school, in future academics and career [3]. Considering the factors that influence the academic achievement of students who are disabled and/or have low incidence disabilities is also an important topic

that deserves consideration. For students who are served under the disability category of Autism Spectrum Disorder (ASD), schools are ramping up intervention efforts to improve the academic achievement of this population within their school due to increased prevalence rates of ASD and increased litigation between the parents of a student with ASD and local education agencies (LEA) [4]. Debates still exist amongst researchers on the overall impact of individual teachers on student achievement as well as how these data should be used in some form to guide teacher evaluations in the school [5].

Academic achievement is an important aspect of a student's life that is influenced by a number of compounding factors interacting with each other on a daily basis. Amongst all of these factors, researchers still debate which factors have the largest impact on the academic achievement of students who are typically developing, students who are disabled, such as students with ASD, and students from various family constellations and cultural backgrounds. Understanding the factors that influence student achievement can enable school professionals to make changes to current school practices in order to impact their student body. The current study aims to investigate the impact of the following factors on the academic achievement of students in grades k-5: parental involvement, diagnosis of disability, and existence of Autism Spectrum Disorder (ASD). The study will use statistical analysis to examine the impact of each of these variables on student academic performance and investigate the results using a large representative national data set.

2. REVIEW OF LITERATURE

2.1. Elementary level parental involvement

The background of research on the impact of parental involvement on the academic achievement comes from the foundations of Ecological Systems Theory and a developmental-ecological perspective of child development. Bronfenbrenner [6] first presented his ideas on *Ecological Systems Theory*, which centered on the influence of the differing environments, or context, on the overall development of the child. Bronfenbrenner speculated that each child experienced interactions from the environment in 5 different environments with differing levels of intimacy. The first to levels consist of the microsystem (i.e. the environmental influences the child experiences on a daily basis with high levels of intimacy), the mesosystem (i.e. groups of microsystems interacting with each other), and the macrosystem (i.e. group influencing the child but is furthest from them) [6], which are the focus of parental involvement. The overall academic tasks, the attitude of the child towards completing the given task, and the parental support that exists to help the child complete a task are all interconnected, and subject to the interactions between the macrosystem (e.g. school and community norms, cultural beliefs), the mesosystem (e.g. teachers of the student, social groups, parent characteristics) and microsystems (individual parent characteristics, student characteristics, family characteristics) [7]. By increasing the involvement of parents, schools are essentially working to make connections to the child's microsystem to support the learning and academic achievement in and outside of the classroom.

The ideas of the importance of family involvement and family structure was first emphasized with ideas first presented by Coleman et al. [1] and have continued to central in new educational initiatives and policy. Ideas such as these have led to education law and policy to reflect the needed and importance of parental involvement. Under the Every Student Succeeds Act (ESSA) (2015), which is the second reauthorization of the original Elementary and Secondary Education Act of 1965 (ESEA) which was reauthorized as the No Child Left Behind Act of 2002, schools are required by federal law to include parents in the education of their child through specific programs and activities and through specifically designed district initiatives [8]. For teachers across the nation, parental involvement is a best practice in teaching and is a federally supported mandate.

In addition to ESEA, the Individuals with Disabilities Education Act (IDEA) includes parental involvement as one of the foundational principles and strongly supports parents to be involved in the educational process. These regulations ensure that school systems from state to state welcome parents and they have the opportunity to participate in the educational decision-making process. Since the initial passing of The Educational for All Handicapped Children Act in 1975, the role of the parent has increased in importance and has been a focal point of special education regulations and legal revisions. According to Lynch [9], when collaboration takes place between families and school, student learning and outcomes, children's attitudes toward school, social skills and behavior all improve with the likelihood that they will take classes that are more challenging and pass them. This holds true across families of all economic, ethnic, racial, and educational backgrounds and for students of all ages. It is evident that strengthening the role and responsibility of the family and ensuring parents have meaningful opportunities to participate in the educational process results in greater educational gains.

According to Jeynes [10], parental involvement has become one of the centerpieces of educational dialogue among educators, parents, and political leaders. His research suggests that the presence of more

parents in the workforce, the fast pace of modern society, and the declining role of the family have all been reasons that some social scientists have pointed to to explain an apparent decline in parental involvement in education. Parental involvement has many positive impacts in the classroom, especially for students in elementary school. Research has found that parental involvement in lower elementary school was key in the academic achievement of students [11]. Parental involvement as well as initiatives increasing community-school partnerships have been found to improve student attendance, academic achievement, and behavior [12]. Parental involvement in school can take many forms. Li and Fischer [13] highlighted the effects of parental networking on parental involvement. The results of the study showed that not only did parental networking increase parental involvement in later grades, but it also had a positive impact on student achievement. Socioeconomic status plays a great role in the ability of a parent to be involved with their child's education due to less flexibility in work schedule, being a single parent, and less financial resources [14]. Through parental networking, parents living in disadvantaged school neighborhoods can interact and support each other in a way that assists them in overcoming the negative effects of living in that neighborhood during elementary school [13]. Parental involvement can make an impact on the community through parental networking and can improve the interactions between the school and family.

School districts can do a variety of things to promote parental involvement. One of the strongest types of involvement that is most strongly associated with student achievement in middle school is academic socialization (i.e. the parents communication of education/achievement expectations, parental value of education, fostering aspirations in academics and future employment), as compared to home-based involvement and school-based involvement [15]. This level of involvement involves critical thinking and may not be developmentally appropriate for elementary school students. School-based involvement has been shown to have a positive impact on the academic achievement of students [12], as well as home-based involvement, which are more appropriate for students in elementary school.

Research supports the value of parental involvement in education at all levels of education but emphasizes the elementary grades. Research has shown that elementary grades were a direct predictor of middle and high school grades [15]. With research indicating that the academic performance of students is directly influenced by the level of parental involvement, it is crucial for schools to take initiative in fostering parental involvement at this early age. Ensuring high levels of parental involvement is a daunting task which is contingent on many different student and parent factors.

Rates of parental involvement differ amongst certain populations of students. According to Graves [16], parents were more likely to be involved with their child in kindergarten (e.g. reading, playing games, telling stories, doing chores, and building things) if their child was a male, and in first grade if the child was female. According to Harry et al. [17], parents of children in special education were shown to have been highly involved in their child's education, which persisted until the parent was met with overwhelming barriers to education. Within special education and the instruction of students with exceptionalities, the Individuals with Disabilities Education Act of 2004 federally mandates parental involvement in all steps of their child's education [18]. This involvement is crucial for students with disabilities, especially those who suffer from low-incidence disabilities.

2.2. Autism spectrum disorders

Autism Spectrum Disorders (ASD) occurs globally in 1 per 132 persons (Baxter, 2015). According to the Centers for Disease Control and Prevention [19] the current rate of Autism in the United States is estimated to be 1 in 68 persons, with Autism being more common in males than females. Academically, students with ASD suffer from a variety of limitations that require support in order to engage in typical school activities. Students with ASD experience sensory integration impairments that manifest themselves in stereotypical, repetitive behaviors (e.g. humming, flapping, rocking) [20]. Students with ASD display social impairments and communication deficits [21]. Social impairments can impact the interactions that students with ASD have with their parents. Bussanich, Hartley, and Bolt [22] completed a study on the attributional style of positive, expected behaviors in parents of individuals with ASD. The researchers found that the father of a student with ASD with a higher educational level saw their child's behavior as controllable, versus the mother's which did not have this association. Parent involvement plays a vital role in the academic achievement of students in general, but it plays an even bigger role in the education of students with ASD.

Parental involvement is considered best practices when educating and supporting students with ASD in the classroom [23]. Parents can participate in various school-based activities (e.g. attending school meetings, communicating with teachers, volunteering in classroom) and home-based activities (e.g. one on one instruction, therapy-play, and positive behavior support) to become more involved and supportive in their child's education [24]. Numerous factors in the parental involvement of students with ASD have been identified including the severity of problem behaviors in the student and level of parental stress [25], level of

language [26], the existence or amount of prosocial behaviors [24], and lack of time due to typical parental issues such as work and sibling care [27].

Researchers Sharabi and Marom-Golan [28], found that mothers were more likely to be involved in their child's education and also more likely to communicate with the caregivers of the child. In general, mothers were more likely to be involved in their child's education when they receive more informal support (e.g. friends, support groups) and fathers were more likely to be involved in their child's education when they received more formal support (e.g. special education teacher, family doctor, social workers). With this population of students, parental education level plays an important role in the parental involvement. Students with ASD who had parents with more than a high school education receive more support educationally than those who had parents with an elementary or high school education, and the participants with ASD who had a father with more than a high school education exhibited higher levels of collaboration and social interaction [28]. With this in mind, research is needed to further examine the impact of a diagnosis of ASD in elementary students on the academic achievement in the classroom compared to the level of parental involvement.

3. RESEARCH METHOD

3.1. Participants

Four hundred and fifty students Kindergarten through fourth grade, were selected for the current study. Sixty-six participants had ASD and three hundred and eighty-four did not have ASD. The participants from this study were a stratified, random sample. Participants were randomly selected for inclusion from a larger sample of Kindergarten through 12th grade student data collected through the Parent and Family Involvement in Education (PFI) Survey completed through the National Household Education Surveys Program (NHESP) of 2016 by the National Center for Educational Statistics [29]. All identifying information was removed for the purposes of confidentiality. Participants grade levels were not equally distributed between the six grade levels examined within the study. Researchers stated that this unequal sampling between grade levels would not impact the validity of the results because of the overall low incidence of ASD.

3.2. Instrumentation

Data were collected through the PFI Survey section of the NHESP. This survey was a part of the national data collection by the NCES to determine parental involvement in education of children ages 20 and under for students who were enrolled in k-12 grades in public or private school or those who are homeschooled. The PFI Survey included questions on the following: school choice, parent and family involvement at school, the child's behavior at school, grade retention, parents' satisfaction with the child's school, family's involvement in schoolwork and activities outside of school, and factors affecting family involvement [29].

Parents or guardians who had homeschooled children completed a homeschool specific form of the PFI. Surveys were completed through mail or online. Instructions for completing the survey indicated that the individual who was completing the said survey should be a parent or guardian who had knowledge of the sampled child's education.

3.3. Procedures

The survey was administered through mail using a random selection of addresses from a database of residential households that is maintained by the Marketing Systems Group (MSG), based on address information from the United States Postal Service (USPS). The survey was administered to a total of 206,000 households. A stratified sample was made using a two-phase sampling procedure. Phase one consisted of gathering addresses from a database of residential households that is maintained by the Marketing Systems Group (MSG), based on address information from the United States Postal Service (USPS). Phase two consisted of evaluating results of initial household screener to evaluate participant eligibility for inclusion as well as oversampling of Black and Hispanic households. The PFI surveys were completed by 14,075 parents and guardians of children who were in Kindergarten through 12 who were under the age of 20. From the collected data set, a random sample of 450 students was selected for the study. Additional students with ASD in elementary school grade levels were randomly assigned to the study to ensure an accurate sampling of the ASD disability category.

Parents or guardians in the identified sample were sent three topical questionnaires to complete during the second stage of data collection: the PFI-Enrolled or the PFI-Homeschooled questionnaire, the Early Childhood Program Participation (ECPP), and Adult Training and Education Survey (ATES). To ensure the accuracy of the completed survey, the NHESP used multiple data processing procedures.

These procedures are data capture and imaging; deduplication of cases; merging paper data and web data; the reformatting of keyed data; a preliminary interview status classification; the implementation of disclosure prevention procedures; a series of computer edits (to check that the data are in range, are consistent throughout a questionnaire record, and follow the correct skip pattern); school coding (where applicable); a final interview status classification; and a set of imputation procedures used to generate values for all appropriate questionnaire items with missing information [29].

Upon completion of data processing, logic-based, hot deck, weighted random, and manual imputation were used. Editing procedures were used to ensure the accuracy of the data after imputation. Data from the PFI-Enrolled and PFI-Homeschooled were used in the current study. From the data collected, a random sample of 400 participants was first selected for the use of this study.

In the current study, 11 variables out of a total of 409 variables tested through the PFI were examined in this study. These 11 variables were: student grade attending (Grade), child's grades (SEGrades), diagnosis of ASD (HDAutismx) and a number of parent involvement variables, which included: attend a school event (FSSPORTX), serve as a volunteer (FSVOL), attend a school meeting (FSMTNG), attend a parent-teacher organization meeting (FSPTMTNG), attend a parent-teacher conference (FSATCNFN), participate in fundraising (FSFUNDERS), serve on a school meeting (FSCOMMTE), and meet with guidance counselor (FSCOUNSLR). The eight variables dealing with parental involvement were combined into one cumulative variable that was named parent involvement scores (PITotal). The grades were averaged based on a five point GPA (0=F, 1=D, 2=C, 3=B, 4=A). In this sample of participants, 65 students were identified as being on the spectrum. The variables were analyzed using SPSS software. These results are presented in Table 1.

4. RESULTS AND DISCUSSION

The basic descriptive statistics for each of the factors was computed. These results are presented in Table 1. As seen in Table 1, data were collected on a total of three variables that had normal distributions. Data was further analyzed to address the above stated research questions.

Table 1. Basic descriptive statistics

Variable	<i>f</i>	Mean	SD	Skewness	Kurtosis
Parent Involvement Score (PIT)	432	11.54	1.89	0.21	-0.36
Child's grades	432	2.1	1.37	0.1	1.18

A binary logistic regression was conducted in order to understand if parent's involvement in child's school, the child's grades could be used to predict which children were identified with autism or a disability. Results indicated two significant binary models in which Parents Involvement Total Score and the student's grades are more predictive of a student having a disability (Nagelkerke $R^2= 15.75\%$) relative to being identified with Autism (Nagelkerke $R^2= 8.87\%$). Table 2 provides a breakdown of the results by variable for each model.

Table 2. Results of binary logistic analysis by model, log odds [confidence interval]

Model	Parent Total Involvement	Grades
Disability	1.13 [1.07, 1.41]	2.67[1.92, 3.73]
Autism Spectrum	1.32 [.962, 1.35]	2.19 [1.51, 3.17]

As indicated in Table 2, parents are 13% more likely to be involved in a child's school experience if the child is identified with a disability, relative to non-disable students' parents. Also, parents are 32% more likely to be involved in the child's educational experience if the child is identified as autistic. Grades are 167% more likely to be predictive of a child with a disability, whereas grades are 119% predictive of a child with autism. This is a significant difference. The breakdown of student grade by membership group is provided in Table 3.

Table 3. Proportion of students receiving grades by group

GPA	Disability	Autism	Not Identified
A	32.60	34.80	58.60
B	37.20	30.40	34.00
C	23.30	28.30	6.30
D	7.00	6.50	1.10

The current study aimed to investigate the impact of multiple variables on student academic achievement and parental involvement. The results are presented in relation to their specific research question answered.

Research Question 1 asked: *Are there differences in parental involvement across academic achievement and incidence of ASD in elementary school populations?* Results indicate that parents are significantly more involved in their child's academics was significantly predictive of the child is identified with a disability or on the spectrum. Specifically, the data found there to be significant difference in parental involvement between students who scored mostly A's and mostly B's. This indicated that students who scored mostly A's typically had less parental involvement than students who scored mostly B's in both populations of elementary school students (i.e. with and without ASD). However, these results should be interpreted with caution due to a small sample size of students who reportedly scored mostly C's and D's or lower, which could impact the validity of these results.

Fan and Chen [30] conducted a meta-analytic investigation to synthesize the quantitative literature about the relationship between parental involvement the positive influence it can have on academic achievement. The authors describe this involvement as an important ingredient for the remedy for many problems in education. These findings support later meta-analytic research conducted by Castro, Exposito-Casas, Lopez-Martin, Lizasoain, Navarro-Asencio and Gaviria [31] that suggests that the strongest associations between type of parental involvement and academic achievement were found when parents have high academic expectations for their children, develop and maintain communication with them about school activities and schoolwork, and promote the development of reading habits. This study also indicated that other family behaviors such as supervision and control of homework and parental attendance of school activities do not appear to be related to the children's academic achievement.

Research Question 2 asked: *What is the relationship between academic achievement of students with and without ASD in elementary school populations?* The results of the comparison of academic achievement and incidence of ASD found that grades were predictive of students' autism or typically developing status; students who did not have ASD had higher reported rates of academic achievement than students who were diagnosed with ASD. This provides evinces to the literature that suggests the academic struggles of students with ASD. Likewise, with disability status (Research Question 3) the findings were that grades were a significant predictor of the students' disability or non-disability status.

Multiple factors may contribute to students with ASD having lower reported rates of academic achievement than students that do not have ASD. The Indiana Resource Center for Autism [32] suggests that it may be difficult or impossible for the student's with ASD to adhere to the administration guidelines and still elicit their best performance. Social skills deficits may also make it more challenging to perform in a testing environment that does not promote reciprocal social interaction. According to Watson and Marcus [33], "tests that are highly dependent on language comprehension, for example, may be biased against students with ASD. Specifically tests that require lengthy verbal directions and verbal responses are almost always inappropriate". The performance subtests may also pose problems due to the need for receptive language skills that are required to understand the directions. Students with ASD face significant deficits that put them at a clear disadvantage on tests dependent on receptive and expressive language.

The results of the current study indicated that students without ASD who scored mostly A's and Mostly C's had parents with higher levels of education in comparison to students with ASD. This indicates elementary school students without ASD who had parents with higher levels of parental education scored better academically. This evidence adds to a large body of evidence that connects parental education to child's academic achievement. At the elementary school level, these challenges in relation to academic performance can be seen. ASD is a disorder that is diagnosed at age 3 [23]. The implications of these findings suggest that students with ASD typically show academic achievement deficits at the elementary years and need supports from teachers in order to achieve academically. Students with disabilities also performed lower academically, as is the trend found in the extant research [32].

5. CONCLUSION

The current study provided evidence that suggested that students in elementary school with ASD scored lower on academic test as compared to typically developing students. Data were found to support the idea that students who performed higher on academic tests typically showed lower levels of parental involvement in the classroom. This relationship was seen in students with and without ASD.

One of the most interesting findings of this study was the finding related to parental involvement. Parents who had students who scored better academically showed lower levels of parental involvement in the classroom. This relationship is interesting and has many possible reasons as to why this relationship exists. For student who perform better in class, parents may not be as involved in classroom activities compared to

students who scored Mostly C's. The implications of these findings suggest that teachers should provide outreach to parents who have high academically performing child and, as a result, do not interact with teachers or school professionals.

Another finding from this study was the implication of ASD and disability status, and academic performance. Past research has shown that students with ASD may perform lower on academic tasks due to the number of challenges that ASD presents. These results generally reflect the investment and commitment for students with exceptional needs that are managed by the public-school districts. More works needs to be done to ensure that all student have equal access to a great education.

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