Early Childhood Education: Academic and Behavioral Benefits of Prekindergarten Educational Programming

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Abstract
State-funded prekindergarten educational programming for all children is a rarity in the United States. Five states offer no financial support to fund prekindergarten educational programming, and the majority offer partial funding. Only three states provide universally funded prekindergarten educational programming. The purpose of this study is to examine some of the benefits of prekindergarten educational programming to identify reasons to expand the programs and subsequently enroll, at the very least, all economically eligible children. The study analyzed the results of attendance, behavior reports, and test scores to evaluate the academic and behavioral success of six cohorts of students in Grades K–5. All students studied qualified for educational programming support at the level of 100% poverty. The two studied groups are those students who attended the prekindergarten educational programming and those students who did not attend prekindergarten educational programming. The study revealed statistically significant results predominantly with behavior and more specifically with office referrals. Students who attended prekindergarten educational programming received fewer office referrals at a statistically significant level compared with those students who did not attend the prekindergarten programming. Academically, the overall results of the data showed that those students who completed prekindergarten educational programming outscored their counterparts who did not attend prekindergarten but not at a statistically significant level. Studies showing the benefits of prekindergarten educational programming may motivate local and state officials to support funding to ensure that at a minimum, all students who qualify based on poverty will have the opportunity to attend prekindergarten educational programming.

Keywords
early childhood, educational psychology and counseling, education, social sciences, educational research, disparities, academics, achievement

Local, state, and federal governments have debated for years on methodologies concerning the best educational opportunities for prekindergarten students. One often-discussed topic is the optimal age to begin early childhood education. Barnett (1995, 2008) reviewed more than 30 studies and found that early childhood education to be positive for children living in poverty. Most individuals realize that the benefits of early childhood education exist, but the extent of those benefits and benefit–cost ratios have been debated. Schweinhart et al. (2005) analyzed the High/Scope Perry Preschool Program and estimated a return on investment of US$17.07 to the community on each dollar invested. The Abecedarian Project cost study by Barnett and Masse (2007) also saw a positive return of early childhood programming but at a lower level (US$3.78 for every dollar invested). The debate is hinged on the determination of cost-to-benefit ratio and who will fund the programs. In the meantime, millions of children are unable to attend pre-school programming due to the cost.

The National Education Association (NEA) under the direction of NEA President Van Roekel (2008) established the platform that students from low-income families need to begin their education early with prekindergarten education to begin to level the academic playing field. NEA President Van Roekel (2008) concluded, “All children need and deserve a
good start. Attending high-quality early childhood programs is an important part of starting early and starting right” (p. 1). In an NEA policy brief, President Van Roekel provided numerous examples of studies that reinforce the positive impact of prekindergarten educational programming and encouraged all school districts, states, and the federal government to create new funding sources to establish strong prekindergarten educational programming.

Parker et al. (2016) reported that Idaho, Montana, New Hampshire, South Dakota, and Wyoming are among the five states that do not have some form of state-funded prekindergarten educational programming. Parker et al. (2016) published the following in their 50-state review: “In the 15–16 budget year, 32 states and the District of Columbia raised [state] funding levels of prekindergarten educational programs” (p. 1). Parker et al. go on to report that “support for preschool transcends partisan labels, with 22 states with Republican governors and 10 states with Democratic governors (plus the District of Columbia) increasing funding for prekindergarten programs in 2015–2016” (p. 1). The report also showed that the nation, as a whole, increased total funding by US$767 million over the previous year. This increase indicates strong support across the nation for the benefits of an early start to a child’s formal education.

**Purpose of the Study**

The essential question that guided this study was the following: “To what extent does participation in prekindergarten educational programming benefit a child who lives in poverty?” This study was utilized to evaluate the differences of both academic and behavioral success of students affected by poverty based on the age at which they began formalized education. Does prekindergarten education mitigate the impact of poverty on children’s subsequent behaviors? The study also examined the impact of prekindergarten education on students from low-income families as a function of gender because this is an area of research that is less researched in comparison with other variables such as ethnicity, poverty, and academic achievement.

**Significance of the Study**

The results of the study could influence donors, state lawmakers, or federal entities who allocate funding to benefit over 15 million children currently living below the federal poverty threshold in the United States.

**Research Questions**

The questions utilized to guide this study are the following:

**Research Questions 1:** To what extent do students from low-income families who complete a prekindergarten educational program benefit academically as measured by the Measures of Academic Progress (MAP) assessment results after 1 through 6 years in elementary school compared with students from low-income families who do not participate in a prekindergarten educational program?

**Research Questions 2:** To what extent does the child’s gender influence the impact of prekindergarten educational programming on MAP assessment results in elementary school after 1 through 6 years?

**Research Questions 3:** To what extent do students from low-income families who complete a prekindergarten educational program benefit behaviorally when looking at the behavioral documentation such as attendance and office referrals after 1 through 6 years in elementary school compared with students from low-income families who do not complete a prekindergarten educational program?

**Research Questions 4:** To what extent does the child’s gender affect the behavioral documentation such as attendance and office referrals after 1 through 6 years in elementary school?

**Review of Related Literature**

The federal government allocates financial support to the states in the form of federal Title 1 dollars to be used for prescribed programming which can possibly include early educational services to preschool students who live in poverty or qualify for special education services. The federal dollars allocated are not sufficient to provide services for all students who qualify at 100% of the poverty rate. Some states also receive competitive federal dollars that assist in educating additional students within their state.

The U.S. Census Bureau (2017) reports that there are 24 million children in the United States ages 0 to 5, indicating that there are over nine million 3- and 4-year-olds who could be in prekindergarten educational programming. According to Mead (2015), “Nearly half of the states with state prekindergarten programs limit enrollment to low-income children. Furthermore, many state prekindergarten programs do not serve all eligible children” (pp. 1–2). Mead (2015) continues by reporting,

In 2014, of the 41 states with state-funded prekindergarten programs, only nine served more than half of all four-year-olds in the state, and 11 served less than 10 percent. Only three states—Florida, Georgia, and Oklahoma—truly have universal prekindergarten programs. (p. 2)

**Significant Longitudinal Studies**

**High/Scope Perry Preschool Project.** The High/Scope Perry Preschool Project was conducted by the High/Scope Educational Research Foundation and began in 1962. Researchers who conducted follow-up studies were Schweinhart et al. (2005). The foundation studied the lives of 123 African American children ranging in age from 3 to 4 who were of
poverty and possessed multiple signs of potential school failure. The children were randomly placed into two groups. One group received prekindergarten educational programming, and the second group did not receive any prekindergarten educational programming. The High/Scope Perry Preschool Study followed the individuals through their 40th birthday. Schweinhart et al. (2005) concluded after following up on 97% of the original participants that the children studied in the High/Scope Perry Study scored significantly higher on standardized tests, were more likely to hold a job, graduated high school on time at higher rates (65% vs. 45% for the control group), were much less likely to have been convicted of a crime (28% vs. 52% for the control group), and at age 40 had expected lifetime earnings that averaged about US$150,000 higher than the control groups.

**Abecedarian Project.** The Abecedarian Project (2017) website outlined the research conducted in North Carolina as a comprehensive study of prekindergarten educational programming for children at risk of school failure due to poverty. The Frank Porter Graham Child Development Institute conducted the study beginning in 1972 with the original research team consisting of Campbell, Ramey, Sparling, and Lewis. The study began with 111 infants with an average age of less than 4 months old. Fifty-seven of the individuals studied were given early childhood educational services, and 54 were used as the control group. It is noted that 98% of those studied were African Americans.

Campbell et al. (2002) summarized several of the most important findings. The study reviewed the status of adults at age 21 from both the control group and the group who attended prekindergarten educational programming. While in elementary school, the children who attended the prekindergarten educational programming demonstrated 1.8 grade levels of advanced reading achievement, 1.3 grade-level difference in math achievement, higher full-scale intelligence quotient (IQ) scores (4.4 points), and higher verbal IQ scores (4.2 points) compared with the students who did not attend prekindergarten educational programming.

The study by Campbell et al. (2002) also noted that at age 21, general life outcomes were affected in a positive way for those who attended the prekindergarten educational programming. The students who attended the prekindergarten educational programming had completed a half-year more of education, had a higher percent enrolled in schooling at age 21 (42% vs. 20%), had a higher percent who attended or were still attending a 4-year college (36% vs. 14%), had a higher rate involved in skilled jobs (47% vs. 27%), had a lower rate of being teenage parents (26% vs. 45%), and had less criminal activity.

**Chicago Longitudinal Study.** Reynolds et al. (2003) originally conducted the Chicago Longitudinal Study when they evaluated the Chicago Child–Parent Center Program providing prekindergarten educational programming to children in poverty and minority subgroups. The study, completed in the 1980s, consisted of 1,539 children and was followed up on multiple occasions as the children grew older.

The results of the Chicago Longitudinal Study as summarized by Reynolds et al. (2003) reported significantly higher levels of school readiness, achievement, and educational attainment, and lower rates of child maltreatment, juvenile delinquency, special education placement, and grade retention. By age 20, compared with a control group of children matched on demographic characteristics to the treatment group, children who had participated in CPC were less likely to have been placed in special education (13.5% vs. 20.7%) or retained (21.9% vs. 32.3%) and were more likely to have completed high school (49.7% vs. 38.5%). In addition, the CPC attendees had significantly lower rates of juvenile arrests (16.9% vs. 25.1%).

**Additional relevant studies.** The New Jersey’s Abbott Preschool longitudinal study conducted by Frede et al. (2009) showed positive results for students attending prekindergarten educational programs. The students in the program at the end of second grade continued to show substantially higher test scores and decreased grade retention compared with the control group. Grade retention was cut by one third for children who started preschool at age 4 and cut in half for those who started preschool at age 3.

Slaby et al. (2005) found that 24% of the students in first grade who attended preschool scored proficient on the California State Standards test in English language arts compared with only 10% proficiency from a comparable group who did not attend preschool. Math also showed difference with 50% of those attending preschool scoring proficient compared with a 34% proficiency rate for those who did not attend preschool. The differences continued through second and third grade.

Nores et al. (2005) completed an update to the High/Scope Perry Preschool Program Study and found that overall income was higher for persons who completed prekindergarten educational programming compared with those individuals who did not attend the programming. Nores et al. (2005) found that attending the prekindergarten program led to US$111,719 more in earnings from age 18 to 40, and females demonstrated US$132,406 more in earnings over the same time period compared with individuals who did not attend prekindergarten educational programming. Overall, the study showed higher degrees of home ownership (36.7% vs. 26.6%), car ownership (73.8% vs. 60.9%), savings account balances (75.8% vs. 50.7%), and life insurance (66.5% vs. 53.8%) being higher for those who obtained a prekindergarten education compared with those who did not.

Barnett (1995, 2008) reviewed more than 35 different studies and concluded that early childhood programming has cognitive, academic, and social benefits. These benefits vary from one study to the next but are consistently seen to have benefits to those individuals living in poverty. Barnett
confirms that students living in poverty are not the only individuals to gain academically and behaviorally with children from middle and upper classes also showing gains. However, these children have greater opportunities for access compared with students living in poverty, making the case for publicly funded programs to serve children from families with lower incomes.

**Prekindergarten Educational Programming**

**Benefits to Students of Poverty**

Prekindergarten educational programming has been an area of focus for the federal and state government for students who live in poverty. The federal government, through Title I and Early Childhood programming, does partially address the need for children from low-income families to receive some type of prekindergarten educational programming, but the federal programs are not funded at a level to meet the needs of all students living in poverty. States that offer some variation of universal prekindergarten educational programming, but not a program that allows access by all children, generally focus on those children living in poverty. Multiple studies have shown correlations between the socioeconomic status of students and their academic achievement. The academic achievement of students living in poverty is significantly lower than their counterparts not living in poverty.

Rokosa (2011) found that youth living in poverty fail academically at a much higher rate than their peers fail and have a significantly higher rate of grade retention because of the failed classes. Her work revealed that children from poor families are twice as likely to repeat a grade, and they are almost 10 times as likely to drop out of school. Rokosa felt that the academic failures and dropout rates were due to the results of living in poverty and due to the impoverished having significantly greater disadvantages than their peers at a significant academic time of their lives. Rokosa reiterated that 90% of a child’s brain growth occurs between birth and age of 3. Children in poverty, however, frequently do not have access to the same educational and developmental resources as their counterparts from high-income families during this vital time. Researchers estimate, for example, that children from professional families are exposed to 45 million words by the age of 4. Children in poverty are exposed to a scant 13 million words. Furthermore, more than two thirds of poverty-stricken households do not possess a single developmentally appropriate book for a child less than 5 years. Shapiro et al. (2019) studied the demographic characteristics of those families who opted out of applying for universal preschool programs and found that “nonapplicants are more likely than applicants to be from marginalized racial and ethnic groups, speak languages other than English, and be of low income” (p. 11).

Lamy (2013) concluded in her research on preschool’s impact on poverty that students in poverty are less likely to have the supports needed for their appropriate social and academic development. Lamy found that the parents of children living in poverty also will not have the financial resources to provide the experiences needed to grow behaviorally and academically when concluding, “The evidence is incontrovertible” (p. 32). In her follow-up work, Lamy (2014) reports,

> It is obvious that children must succeed in school to grow up and out of poverty as the direct path of the effect of preschool is through a positive impact on some combination of children’s cognition, skills, and expectations for themselves. (p. 2)

**Prekindergarten Educational Programming Impact by Gender**

The review of research based on gender also revealed numerous benefits toward children who participated in prekindergarten educational programming.

Kelchen et al. (2016) summarized their research specific to gender-based benefits to early educational programming by saying, “Our preliminary findings of achievement, cognitive, and other school-related outcomes measured in evaluations of early childhood programs suggest that the broad achievement and school outcomes of boys and girls are quite similar” (p. 5). Kelchen et al. (2016) go on to state that “early education programs neither exacerbate nor remediate any early gender advantages in cognitive and other achievement outcomes” (p. 5).

There is ample evidence to suggest that boys tend to have more antisocial and aggressive behavior even as a function of temperament and that girls demonstrate a greater ability for self-regulation of impulses (Else-Quest et al., 2006). Moreover, others (Nichols et al., 2006) found that such effects persist into middle-school with boys exhibiting more delinquent behaviors than girls.

**Research Methodology**

This study is a quantitative study supported through a nonexperimental, causal-comparative, ex post facto design. Gay et al. (2015) stated, “In causal-comparative research the researcher attempts to determine the cause, or reason for existing differences in the behavior or status of groups of individuals” (p. 237). In this study, the researcher utilized this study design to better determine academic and behavioral differences between the two groups of students studied. The referenced groups both qualified for non-fee-based prekindergarten educational programming based on qualifying at 100% of poverty. Educational achievement and behavior were compared between the two groups of students and then by gender to determine whether variations exist.

**Population, Sample, and Setting**

The population of this research study is all students who were eligible to participate in prekindergarten educational...
programming in one school district based on the qualifications of the family’s income level set at 100% poverty. The students meeting this guideline were then eligible to receive prekindergarten educational programming services at no cost, provided funding and space were available for their individual enrollment. The 6-year time period is current kindergarten through fifth-grade students.

The South Dakota Department of Education’s (SD DOE) Statistical Digest (2017) reported that South Dakota schools spent almost 3.8 million dollars from their general funds on prekindergarten educational programming during the 2015–2016 school year, and the studied school district accounted for over 40% of those expenditures. According to the SD DOE Statistical Digest (2017), a total of five elementary schools in the studied school district had their entire school qualify for free lunch as over 90% of the students attending that school qualified for free or reduced lunch during the school year.

The school district and prekindergarten educational program utilized for this study maintains quality early childhood experiences available for eligible children ages 3 through the time they enter kindergarten. The district uses a research-based curriculum, High/Scope, which actively engages children in developmentally appropriate activities to encourage language, social, cognitive, adaptive, and motor development as outlined in the South Dakota Early Learning Guidelines. Preschool programming, implementation, and instructional delivery is completed by highly qualified staff and is funded through local initiatives and federal dollars such as Head Start and Title 1. The district’s prekindergarten educational programming is consistently reviewed as part of the Head Start federal review process and was reviewed as recently as the 2017–2018 school year for compliance, meeting expected standards, and fidelity. The review includes classroom observations, as well as documentation and procedural reviews.

Two sample groups from six separate cohorts were selected for the study that consisted of current kindergarten through fifth-grade students. All the students in the study could have attended prekindergarten educational programming from the fall of 2011 to the spring of 2017. To avoid possible sample bias, the first group was students who qualified for prekindergarten educational programming based on economic qualifications and enrolled in the prekindergarten educational programming. The second group of students were a group of students who qualified for the programming based on economic qualifications but were placed on a waiting list and did not receive the prekindergarten educational programming services due to space constraints or parent refusal. Omitted from this study were students who did not have complete school records and those who qualified for special education services, migrant funding, or English Language Learner status.

The school district studied is located in a city with a population between 150,000 and 200,000 people. According to the SD DOE Statistical Digest (2017), the school district has 24 elementary schools with an elementary student enrollment of more than 11,000 students.

**Instrumentation**

The MAP was used to assess academic achievement in the areas of reading and math. The MAP is a norm-referenced measure of student academic growth over time. The teachers at the school district are trained by the district to administer the MAP assessment. The number of formally documented student disciplinary actions or office referrals was gathered as a numerical total for each student. Student attendance was taken daily and was provided by the district with permission.

**Data Collection**

The data used to analyze the academic growth and behavior incidents were retrieved with permission from the district and were stored in the district’s database. An official request for data was submitted and approved by the school district’s administrator charged with the approval of research requests.

**Data Analysis**

The primary statistical analysis was a two-by-two analysis of variance (ANOVA) in SPSS and two-sample t tests. ANOVA is generally considered robust with respect to the assumption of normality (Schmider et al., 2010). The data analysis was completed while protecting the rights and confidentiality of the students through the process by assigning alternate and random numberings prior to the author using the data. The .05 probability level of significance was used for analysis. Additional data and data analysis for this study are available from the authors upon request.

**Findings**

The findings of the study showed that attending prekindergarten appeared to have an effect on office referrals primarily for boys, which will be presented below. Daily attendance only showed an effect in fourth grade such that students who attended prekindergarten educational programming did have a statistically significant fewer number of absences compared with students who did not attend, $F(1, 184) = 6.874$, $p = .010$. The lack of consistency for this variable, however, suggests that this effect may be spurious. Although the academic scores on the MAP yielded higher mean scores for the majority of the testing points (30 of 36 measurement points), none were at a statistically significant level.

**Office Referrals**

The data in the following the $2 \times 2$ ANOVA comparing office referrals for students who attended prekindergarten
Table 1. Student Sample Used for the Study.

| Grade         | Females No pre-K | Males No pre-K | Females pre-K | Males pre-K | N  |
|---------------|------------------|----------------|---------------|-------------|----|
| Kindergarten  | 36               | 35             | 99            | 86          | 256 |
| First grade   | 35               | 29             | 83            | 84          | 231 |
| Second grade  | 36               | 31             | 90            | 70          | 227 |
| Third grade   | 30               | 18             | 88            | 76          | 212 |
| Fourth grade  | 24               | 25             | 77            | 62          | 188 |
| Fifth grade   | 25               | 18             | 70            | 52          | 165 |
| Totals        | 186              | 156            | 507           | 430         | 1,279 |

Table 2. Kindergarten to Fifth-Grade Comparison of Mean Scores for Office Referrals by Gender and PreK Participation.

| Grade         | M (SD)          | M (SD)          |
|---------------|-----------------|-----------------|
| Kindergarten  | Male            | Female          |
| PreK          | 0.23 (1.05)     | 0.0 (0.0)       |
| No PreK       | 1.17 (3.71)     | 0.14 (0.68)     |
| Gender: F(1, 252) = 8.96, p = .01 | PreK: F(1, 252) = 6.48, p = .05 | Gender × PreK: F(1, 252) = 3.57, p = .08 |
| First grade   | Male            | Female          |
| PreK          | 0.23 (2.82)     | 0.18 (0.89)     |
| No PreK       | 0.89 (0.83)     | 0.10 (0.41)     |
| Gender: F(1, 227) = 6.55, p < .05 | PreK: ns | Gender × PreK: ns |
| Second grade  | Male            | Female          |
| PreK          | 0.90 (1.70)     | 0.37 (1.40)     |
| No PreK       | 1.65 (3.15)     | 0.03 (0.17)     |
| Gender: F(1, 208) = 3.20, p < .08 | PreK: ns | Gender × PreK: ns |
| Third grade   | Male            | Female          |
| PreK          | 0.86 (1.90)     | 0.28 (1.47)     |
| No PreK       | 0.83 (1.86)     | 0.40 (1.45)     |
| Gender: F(1, 208) = 3.20, p < .08 | PreK: ns | Gender × PreK: ns |
| Fourth grade  | Male            | Female          |
| PreK          | 1.95 (3.02)     | 0.13 (2.00)     |
| No PreK       | 3.32 (7.02)     | 0.79 (6.63)     |
| Gender: F(1, 189) = 16.39, p < .001 | PreK: F(1, 189) = 3.45, p < .08 | Gender × PreK: ns |
| Fifth grade   | Male            | Female          |
| PreK          | 0.56 (1.02)     | 0.51 (1.16)     |
| No PreK       | 1.78 (4.05)     | 0.44 (1.45)     |
| Gender: F(1, 161) = 5.00, p < .05 | PreK: F(1, 161) = 3.44, p < .08 | Gender × PreK: F(1, 161) = 4.38, p < .05 |

Educational programming and those who did not as a function of gender produced the most consistent and interesting results. The relevant means are found in Table 2.

Office referrals were significantly lower for students who attended prekindergarten educational programming in kindergarten, $F(1, 252) = 6.48, p = .012$, partial eta-squared = .025, and in second grade, $F(1, 223) = 4.56, p = .034$, partial eta-squared = .020. This finding also approached significance in fourth grade, $F(1, 184) = 3.45, p = .065$, partial eta-squared = .018, and in fifth grade, $F(1, 161) = 3.44, p = .065$, partial eta-squared = .021. The first-grade and third-grade students did not show statistical significance in the number of office referrals when comparing those who did and did not attend prekindergarten educational programming.

It was also noted that the data suggest an interaction between gender and prekindergarten education enrollment in kindergarten, $F(1, 252) = 3.57, p = .06$, partial eta-squared = .014, and in fifth grade, $F(1, 161) = 4.39, p = .038$, partial eta-squared = .027.

Discussion

The results of the study showed that as expected, boys had more office referrals than did girls consistently at each grade level. The prekindergarten experience appeared to make more of a difference for boys than it did with girls based on finding significant interaction of gender and PreK experiences in kindergarten and fifth grade. What we found was an
interactive effect in selected grades such that the expected difference in office referrals as a function of gender was not as strong following prekindergarten experience.

Students who attended the prekindergarten educational programming had statistical significantly fewer office referrals compared with their nonattending peers at the kindergarten level when analyzed as two overall groups and then again when considered by gender and prekindergarten attendance. The kindergarten males showed statistical significance in having fewer office referrals than their nonattending male counterparts. There were levels of significance in second grade and then again in fourth grade. The significance was even more pronounced in fifth grade.

Academically, the students who attended prekindergarten educational programming scored higher in 12 of 12 academic comparisons when gender was not considered and 18 of 24 when gender was a factor of the results. There were no academic areas studied that showed statistically significant results.

The information tends to corroborate the most significant and well-known studies that have been completed specific to the benefits of prekindergarten educational programming. The benefits can be seen in academics, but the results tend to balance over time. The most significant and longest lasting results tend to be in the positive behavioral characteristics for those individuals who attend prekindergarten educational programming.

The results of the study show that prekindergarten educational programming does have a likely influence on subsequent behavior throughout elementary school. Specifically, the results suggest that males who attend this early education program were referred to the office less frequently than the boys who did not attend the program. It should be noted that significant differences with low effect size should be carefully considered because it implies that there is little correlation between the variables. However, for fourth- and fifth-grade males, the difference is a factor on the level of 2 and 3 times more frequent. This pattern exists across several grade levels.

Academically, the overall results of the data showed that those students who completed prekindergarten educational programming outscored their counterparts who did not attend prekindergarten, but not at a statistically significant level.

The prekindergarten experience effects may have been due to more pro-social curriculum programming in the early childhood program. We do not have any direct evidence of this effect but general knowledge of the curriculum would suggest that this may be likely. In addition, the interaction effect showing that males appeared to benefit more than females from the early childhood program could be due to the nature of interactions in that program. Hanish and Fabes (2014) suggest that cross-gender interaction leads to less stereotypical gender-based behaviors. It certainly is possible that the children enrolled in the prekindergarten program were exposed to more cross-gender interactions with children of the same age than their counterparts. In this case, this could have resulted in these interactions mitigating the tendency for boys to be involved in more disruptive behaviors and exercise more internal control. A counterargument, of course, is that one might also expect the girls to exhibit more aggressive behaviors expected of boys but that did not seem to be the case.

The lack of significant effects for attendance records are likely a matter that for the grades, a myriad of other factors affect attendance such as transportation and family situations so perhaps it is not surprising that little significant effects were found for attendance.

Although academic performance differences for attending or not attending the prekindergarten experiences were found in mean scores, none of these reached or approached statistical significance. It should be noted that in several of the previously cited studies (e.g., Barnett, 1995, 2008), children began the early childhood experiences at an earlier age. In addition, the most compelling findings from the longitudinal studies do not show up in academic performance but rather in life success variables such as lower rates of teenage pregnancies and criminal activity (Campbell et al., 2002) as well as increased home ownership (Nores et al., 2005). Our findings on office referrals seem to be consistent with these latter effects, especially for boys.

For policy makers, it is the noncognitive effects that are the primary driver for return on investment (ROI). For communities, reducing incidences of incarceration, teenage pregnancy, or increasing high school graduation rates all convert to increased economic development. Therein lies the value of early education although that ROI may not manifest itself for a decade.

Recommendations

The primary researcher had the opportunity throughout this study to discuss the topic of prekindergarten educational programming with school administrators, directors of elementary and kindergarten programming, and elementary teachers. These professionals expressed that they could more readily identify students who had not been in a prekindergarten educational setting, especially males, due to the social behaviors of the students. Given that statistically significant results did occur with kindergarten students in both areas of behavior and were seen throughout males in the kindergarten class, we are led to believe that the learning of behavioral control for males and perhaps for females as well is a critical component of prekindergarten educational programming.

The authors contend that additional studies may reveal even more significant reasons why students living in poverty need to be given the opportunity of a free prekindergarten education to benefit all students. An extension of this study should be completed in two separate ways. First, a study of kindergarten students needs to be completed in a qualitative format to identify the behavioral characteristics of the students and more specifically male students who did and did not attend prekindergarten educational programming. The
ability to identify these distinct differences may assist in affirming the need for the social skills training that occurs in prekindergarten educational programming. A future study could incorporate interviews of teachers, school counselors, and principals to gather their observations about students who attended early childhood education compared with those who did not attend early childhood education. A second study needs to be conducted in a longitudinal format to document the long-range differences between the students who did and did not attend prekindergarten educational programming. Factors such as graduation rates, dropout rates, incarceration, college enrollment, and other variables could then be studied to see whether the data show additional benefits to prekindergarten educational programming. These two additional research studies may even further motivate those who make the monetary decisions to dedicate dollars to early childhood education for our students who live in poverty.

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