

# Reading & Math Achievement for Third Grade African American Students in Public Montessori Schools

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## BACKGROUND

African American students in urban schools have historically been underserved, leading to low levels of academic achievement for this subgroup. On the 2013 National Assessment of Educational Progress (NAEP), only 15% of African American students were classified as proficient in reading at grade four, while only 17% were proficient in math (NCES, n.d.). These numbers indicate a failure to adequately provide a basic education to African American students. Advocates of the Montessori Method argue that the approach has the potential to address many of the persistent problems facing American schools (Lillard, 2005), including the failure to adequately serve students of color (Hall & Murray, 2011; Rambusch, 2007/1976). Over the last two decades, Montessori programs have been rapidly expanding from private schools into public schools (National Center for Montessori in the Public Sector, 2014). This expansion has created greater access to Montessori education for a more diverse population of students, including African American students in urban settings.

## RESEARCH QUESTION

**How effectively does Montessori instruction promote achievement for African American third grade students in reading and math, compared to similar traditional schools and other public school choice programs?**

## LITERATURE REVIEW

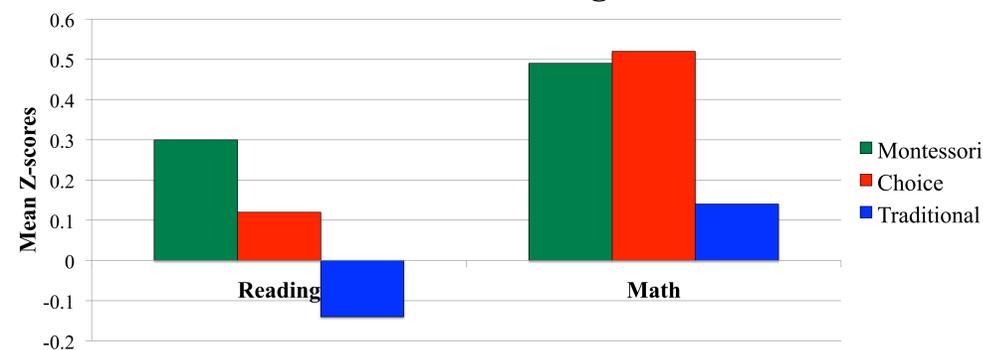
The extant literature provides some evidence that Montessori elementary instruction supports achievement for African American students, particularly in reading, and to a lesser extent in math (Dawson, 1987; Dohrmann, Nishida, Gartner, Lipsky, & Grimm, 2007; Mallett & Schroeder, 2015; Moody & Riga, 2011). Some studies, however, have found no benefits for African American students (Ansari & Winsler, 2014; Cisneros, 1994; Lopata, Wallace, & Finn, 2005; Moore, 1991). This evidence is inconsistent, and therefore does not provide justification for a directional hypothesis. Further, while recent studies of Montessori public schools have included diverse student samples, few disaggregate results by race or report results for African American students specifically.

## METHODS

This quasi-experimental study employed a posttest-only, intact group design. The sample consisted of 2,266 African American students who completed third grade at three public Montessori schools, three traditional schools, and three other school choice programs within the same large, urban district in North Carolina. The Montessori students (n=348) constituted the treatment group, with two comparison groups: students from traditional schools (n=557) and students from other choice programs in the same district (n=1361). Stratified sampling was used at the school level to match the Montessori schools to traditional and magnet schools that drew from the same attendance zones. Schools were matched on percent of students qualifying for free or reduced price lunch (FRL) and proportion of African American students. Data consisted of standard scores (z-scores) on end-of-year standardized state reading and math tests from the 2006-2007 school year to the 2013-2014 school year. A multivariate analysis of variance (MANOVA) was conducted to check for statistically significant differences among group mean reading and math scores.

## RESULTS

**Mean Standard Scores in Reading and Math by School Setting**



Note. 0 = statewide mean score.

A between-subjects MANOVA was performed using SPSS on reading and math scores, with school setting as the independent variable with three levels (Montessori, choice, and traditional). Using Pillai's trace, the combined dependent variables were significantly affected by school setting,  $F(4, 4498)=4.815, p=.001$ , though the effect size was very small (partial  $\eta^2=.004$ ). Planned comparisons were conducted to check for significant differences in reading and math scores between the Montessori group and the comparison groups. Reading scores were found to be significantly different between Montessori and choice school settings ( $p=.011$ ), with Montessori students scoring higher, but math scores were not significantly different ( $p=.791$ ). Significant differences were identified between Montessori and traditional school settings in both reading ( $p<.001$ ) and math ( $p=.002$ ), with Montessori students scoring higher in both subjects.

## DISCUSSION

One limitation of this study was an imperfect match in poverty levels between one Montessori school and one traditional school, with higher FRL levels in the traditional school. Student-level FRL data were not available. Nonetheless, these results suggest that the Montessori Method promotes academic achievement for African American students at the lower elementary level, particularly in reading, and less so in math. The significant difference in reading scores between Montessori students and students in other choice programs suggests that the high achievement of Montessori students is not solely the result of self-selection of high-achieving students into choice programs. The choice group included a STEM school; these results suggest that the Montessori schools were just as effective as the choice schools, including the STEM school, in promoting math achievement for African American students. These findings indicate that increased access to public Montessori elementary programs could be beneficial for African American students.

## REFERENCES

- Ansari, A., & Winsler, A. (2014). Montessori public school pre-K programs and the school readiness of low-income Black and Latino children. *Journal of Educational Psychology, 106*(4), 1066-1080.
- Cisneros, M. M. (1994). *Multiple measures of the effectiveness of public school Montessori education in the third grade* (Doctoral dissertation). Retrieved from UMI. (9424365)
- Dawson, M. (1987). *Minority student performance: Is the Montessori magnet school effective?* Houston, TX: Texas Southern University. Retrieved from ERIC: <http://files.eric.ed.gov/fulltext/ED309881.pdf>
- Dohrmann, K. R., Nishida, T. K., Gartner, A., Lipsky, D. K., & Grimm, K. (2007). High school outcomes for students in a public Montessori program. *Journal of Research in Childhood Education, 22*(2), 205-217.
- Lillard, A. S. (2005). *Montessori: The science behind the genius*. New York, NY: Oxford University Press.
- National Center for Education Statistics. (n.d.). *NAEP data explorer*. Retrieved from the United States Department of Education: <http://nces.ed.gov/nationsreportcard/naepdata>
- National Center for Montessori in the Public Sector. (2014c). *Growth of Montessori in the public sector: 1975-2014*. Retrieved from <http://www.public-montessori.org/growth-public-montessori-united-states-1975-2014>
- Lopata, C., Wallace, N., & Finn, K. (2005). Comparison of academic achievement between Montessori and traditional education programs. *Journal of Research in Childhood Education, 20*, 5-13.
- Mallett, J. D., & Schroeder, J. L. (2015). Academic achievement outcomes: A comparison of Montessori and non-Montessori public elementary school students. *Journal of Elementary Education, 25*(1), 39-53.
- Moody, M. J., & Riga, G. (2011). Montessori: Education for life. In L. Howell, C. W. Lewis, & N. Carter (Eds.), *Yes we can!: Improving urban schools through innovative education reform* (pp. 127-143). Charlotte, NC: Information Age Publishing.
- Moore, W. P. (1991). *The Faxon Montessori Magnet School, 1990-1991. Summative evaluation*. Kansas City, MO: Kansas City School District. Retrieved from ERIC.
- Rambusch, N. M. (2007). Montessori as an American public school alternative. *Montessori Life, 19*(1), 26-33. (Original work published 1976)

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