

Low SES Minority Fourth-Graders' Achievement from an Urban Public Waldorf and Comparison School

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Students from low socioeconomic environments often have a difficult time in school. Socioeconomic status (SES) consistently is found to be positively correlated with achievement (Boocock, 1972; Matuszek & Haskin, 1978; Shakiba-Nejad & Yellin, 1981), and is one of the most important predictors of academic achievement in public school (Boocock, 1972). Children from low SES urban communities face some of the worst learning conditions in the nation (Esposito, 1999) and many children entering school from the inner-city are increasingly viewed as “broken” and socially troubled (McDermott & Varenne, 1995).

From an ecological perspective, there are several factors related to lower achievement among children from lower socioeconomic environments. Lower SES parent figures have fewer resources to meet the physical, emotional, and educational needs of their children, as well as their own needs. A positive home learning environment, however, can be a powerful influence on achievement. Parent modeling, motivating children to be learners, and parent contact with school are important *process* variables that have been found to increase the achievement of children of all SES levels (Christenson, 1995).

Process variables in the school environment play a similar role toward affecting student outcomes (Esposito, 1999). Makedon (1992) hypothesized that a middle class bias exists within the traditional organization of public schools that has manifested in the failure of public schools to educate children from a low SES and resulted in an achievement gap between low and higher SES students. Thus, perceptions and expectations in school settings may be influenced by SES. For example, researchers have found that, compared to students from a higher SES, low SES students were more frequently referred by teachers for special education (Warren, Gardner, & Hogan 1996), viewed less favorably by teachers (Shakiba-Nejad & Yellin, 1981), and were less popular than students from higher SES backgrounds (McPherson & Rust, 1987).

Along with school culture and climate, instructional methods are important process variables in education. One method that has been offered as an alternative to more traditional educational environments is the Waldorf model. Waldorf education has its roots as a vehicle to educate children from low SES environments (Oberman, 1997). Although qualitative evidence supports the Waldorf model, empirical examinations of the model are scant. The purpose of this study was to compare low SES fourth graders from a public Waldorf school and a comparison school in a large urban city to explore the effects of the Waldorf pedagogy on the academic achievement of

minority students from a low SES environment.

Waldorf Education and Students from a Low SES

The philosophy of the Waldorf method is derived from experiential and humanistic models of education. Within the Waldorf model, teachers guide students artistically to balance thinking, feeling, and willing in the pursuit of truth, beauty, and goodness, with an underlying goal of helping children to develop an inner moral impulse (Armon, 1997). An important component of the model involves “looping,” wherein the teacher remains with the same group of students from first through eighth grade (Grant, Johnson, Richardson, & Fredenburg, 1995). Looping appears to have benefits for the teacher, students, and parents, in that teachers do not have to get acquainted with new students each year, students may perform better academically, and social interactions potentially are strengthened (Burke, 1997; Gaustad, 1998; Jacobson, 1997; Lincoln, 1998).

The Waldorf pedagogy is rooted in a developmental view of children, which contains three general stages of learning: learning through imitation (from birth to the change of teeth), learning through authority and imagination (from change of teeth to puberty), and learning through independent judgment (after the onset of puberty) (Armon, 1997; Schmitt-Stegmann, 1997). The task of the teacher is to present all material to be learned in a developmentally appropriate way that evokes one of the three learning responses. By doing so, the teacher lays the groundwork for each successive “unfolding” of the learning stages. For example, a teacher with a first grade class may facilitate learning the four basic arithmetical operations by presenting them as characters in a drama to be acted out by the students, thereby transforming the curriculum into the language of imagination (Barnes, 1999).

Waldorf education has been applied in different public schools serving students from a low SES with qualitative success. For example, Thomas E. Matthews Community School is a Waldorf-oriented school for juvenile offenders located in Yuba County, California, which has the highest proportion of children from a lower SES in the state (approaching 68%). These students, who were unsuccessful elsewhere and expelled from other schools, appeared to experience significant success within the Waldorf environment and seemed to be doing so well that an outside evaluator advised that the school could not be properly judged because it did not have any problem children (Oppenheimer, 1999). Another example is the Urban Waldorf School, which is a public school located in the inner city of Milwaukee, WI. In 1995, a team of researchers visited the school for one week (McDermott et al, 1996) and reported that the school was an important interruption in the way of thinking that diminishes children from the inner city, because the school had a guiding assumption that children from a low SES can learn. These authors found that within three years, the Urban Waldorf School raised the level of third grade students performing

above grade level from 26% in 1992 to 63% in 1995 as measured by a standardized reading test. Qualitative evidence indicates that Waldorf education may offer other benefits. For example, students at Waldorf schools have been found to show higher creativity (Ogletree, 1996).

Purpose and Hypothesis

The qualitative evidence presented indicates that Waldorf education may be an effective educational experience for students most at risk in public school. The objective of this study was to further examine the effects of this experience. This research project examined the achievement results of fourth grade minority students from a low SES at an urban public Waldorf school and those at a neighboring public school from the 1997-1998 and 1998-1999 school years. We hypothesized that the children educated in the Waldorf model would evidence higher academic achievement than their peers who were educated in a more traditional educational environment and that the increased achievement would be consistent across cohorts.

Method

Comparison Groups

Fourth grade economically disadvantaged minority students from a public Waldorf school and a neighboring public school who took a statewide achievement test during the 1997-1998 and 1998-1999 school years comprised the comparison groups. The data from the statewide assessment are part of the extant public record and, although specific schools are designated, the data are anonymous for the individual children. Therefore, following an institutional panel review, informed consent from the participants and their parent figures was deemed unnecessary and was not solicited. The designation of economically disadvantaged was defined as students from families who met the income eligibility guidelines for subsidized lunch.

The two schools were in the same vicinity in a large Midwestern city and served the same community. In 1997-1998, the reported number of students who completed the statewide test ranged from 35 to 36 low SES students at the Waldorf School and 9 at the comparison school. In 1998-1999, there were 24 students at the Waldorf school and a range of 41 to 42 students at the comparison school who completed the test who were considered economically disadvantaged. Unfortunately, the data from the website did not provide specifics regarding sex, minority, or ethnic variables specific to the students who were economically disadvantaged.

Instrumentation and Procedure

The statewide achievement test served as the dependent variable. The test is designed to measure pupil attainment of knowledge and concepts, and is published by CTB/McGraw-Hill. The examination includes multiple-choice items and short-answer questions in each of the subtests as well as an on-demand essay. Each subtest includes approximately 75 percent multiple-choice and 25 percent constructed response or short-answer items. The multiple-choice questions are machine scored. The short-answer questions are scored by professional staff and partial credit is allowed. The on-demand essay is scored at least twice, with one scoring conducted by two different evaluators.

The five subtests that comprise the measure are mathematics, reading, social studies, science, and language arts (including writing). The mathematics subtest includes number and number relations, computation and numerical estimation, operation concepts, measurement, geometry and spatial sense, data analysis, statistics and probability, problem solving and reasoning, and communication. The reading subtest involves basic understanding of the literal meaning of a passage, analyzing text, evaluating and extending meaning, and identifying reading strategies. The social studies subtest evaluates students' understanding of perspectives in the following areas: geography, historical and cultural-specific topics, civics and government, and economics. The science subtest includes the areas of science inquiry, physical science, life science, and earth and space science. The language arts subtest examines sentence structure, writing strategies, and editing strategies. For each of the subtests, the test results are reported using a rubric for four levels of proficiency (minimal, basic, proficient, and advanced), which are summarized in Table 1.

Validity studies of the assessment measure were being conducted at the time of this study, therefore there were no data regarding the appropriateness or usefulness of the test's results. The test appears to possess good internal consistency, with Kuder-Richardson 20 estimates ranging from .85 to .95. Inter-rater reliabilities appear strong and are reported as ranging from .85 to .97 (CTB-McGraw Hill, 1997).

The scores used in this study were from the statewide tests completed in the 1997-1998 and 1998-1999 school years. The fourth grade students' proficiency levels from the two school years were collected from the state's Department of Public Instruction website during spring, 2000.

Table 1.

DEFINITIONS OF THE FOUR PROFICIENCY LEVELS

<u>Proficiency Level</u>	<u>Definition</u>
Minimal	Limited achievement in the content area. Test score shows evidence of major misconceptions or gaps in knowledge and skills tested in the academic content area.
Basic	Somewhat competent in the content area. Academic achievement includes mastery of most of the important knowledge and skills. Test score shows evidence of at least one major flaw in understanding the academic content area tested.
Proficient*	Competent in the content area. Academic achievement includes mastery of the important knowledge and skills. Test score shows evidence of skills necessary for progress in the academic content area tested.
Advanced	Distinguished in the content area. Academic achievement is beyond mastery. Test score provides evidence of in-depth understanding in the academic content area tested.

*For accountability purposes, this is the key category for the Department of Public Instruction.

Analysis and Interpretation

This study used a between-groups, ex post facto quasi-experimental design. The number of fourth grade economically disadvantaged minority students in each of the four proficiency levels was compared via a Chi-square test of independence to examine whether the proficiency distribution was different between the two school types in each year under study. Next, a residual analysis was performed to determine which cells were major contributors to the results. The Chi-square then was converted to Pearson's contingency coefficient (which is similar to the phi coefficient, but can be applied to tables larger than 2X2) in each subtest to determine how much of the variability in the students' scores was related to the type of education. Two years of

data were included to allow for an examination of potential temporal trends between the two groups.

Table 2.

FREQUENCIES IN EACH PROFICIENCY LEVEL BY SUBTEST AND SCHOOL

1997-1998

	Waldorf School					Matched School				
Proficiency Level	Math	Read.	SS*	Sci-ence	LA*	Math	Read.	SS*	Sci-ence	LA*
Minimal	9 (26)	5 (14)	15(42)	14(39)	13(36)	4 (44)	4 (44)	6(67)	7(70)	5 (56)
Basic	23(66)	15 (48)	14(39)	16(44)	21(58)	4 (44)	3 (33)	2(22)	2(20)	4 (44)
Proficient	3 (8)	16 (44)	7 (19)	6 (17)	2 (6)	1 (11)	2 (22)	1(11)	1(10)	0 (0)
Advanced	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	35	36	36	36	36	9	9	9	10	9

p<.01

1998-1999

	Waldorf School					Matched School				
Proficiency Level	Math	Read.	SS*	Sci-ence	LA*	Math	Read.	SS*	Sci-ence	LA*
Minimal	2 (8)	2 (8)	2 (8)	3 (13)	3 (13)	9 (22)	15(36)	16(38)	9 (22)	11(26)
Basic	11(46)	12(50)	9 (38)	6 (25)	13(54)	24(59)	11(26)	9(21)	24(59)	15(36)
Proficient	8 (33)	9 (38)	10(42)	14(58)	7 (29)	7 (17)	16(38)	14(33)	7 (17)	14(33)
Advanced	3 (13)	1 (4)	3 (13)	1 (4)	1 (4)	1 (2)	0 (0)	3 (7)	1 (2)	2 (5)
Total	24	24	24	24	24	41	42	42	41	42

p<.01, LA: p<.05

* SS: Social Studies, LA: Language Arts. Numbers in parentheses are rounded percentages.

Results

Tables 2 documents the frequency distribution of the achievement test scores of the students from the Waldorf school and matched school in the four proficiency levels for the 1997-1998 and 1998-1999 school years. For those analyses wherein expected frequencies in each cell were below the standard minimum frequency (5) for Chi-square analyses, cells in the proficiency levels were collapsed. Specifically, for the 1997-1998 results, all but the reading subtest levels of basic, proficient, and advanced were compressed. For the reading subtest, the minimum and basic categories, and the proficient and advanced categories were compressed. In the 1998-1999 results the proficient and advanced categories were compressed for all five subtests.

For the 1997-1998 results, there is a relationship between the proficiency level and the type of education for the economically disadvantaged minority fourth graders (the data must be interpreted cautiously, however, due to the extremely small sample size for the comparison school). There are more students from the public Waldorf school in the basic, proficient, and advanced proficiency levels and less students from the comparison school in these levels ($p < .01$). A residual analysis indicated that the basic, proficient, and advanced proficiency levels made a major contribution to the significant chi-square test in all of the subtests. The type of education had a moderate correlation with the students' test results (Pearson's C range: 0.57-0.61). For the 1998-1999 results, there is also a significant relationship ($p < .01$, Language Arts: $p < .05$). In the minimal proficiency levels, there are fewer students (percentage range 8-13) from the Waldorf school and more students (percentage range 22-38) from the matched school. Also, there are fewer students in the proficient and advanced levels from the matched school (percentage ranges 17-38 and 0-7) than the Waldorf school (percentage ranges 33-58 and 4-13). A residual analysis revealed the minimal proficiency level made a major contribution to the significant chi-square test in the reading, social studies, and science subtests. The type of education had a moderate correlation with the students' test results (Pearson's C range: 0.32-0.44).

Discussion

There is a consistent trend over the two years under study that indicates the public Waldorf school provided greater success for the minority, low SES fourth graders. The significant results of the Chi-square test of independence indicate that overall more students than expected achieved better than their comparison school peers in all academic content areas. The moderate correlation between the type of education and the students' test results may actually be higher, because nonparametric tests may underestimate the degree of differences and correlation (Springthall, 1987). Also, perhaps a moderate correlation is all that can be expected because of the multiple variables that may affect the academic performance of students from a low SES.

Although the results appear to favor a public Waldorf education, there are weaknesses in this study. For example, because validity data were not available, the test may not be an adequate instrument for measuring achievement in general and/or the achievement of minority students. Furthermore, the 1997-1998 sample size from the matched school was extremely small (N=9). In fact, 42-45% of low SES students at the matched school did not take the exam that year for reasons that were not specified in the extant database. Additionally, the students at the Waldorf school may have had higher aptitudes in general, so their results could be attributed to their intrinsic abilities and not the result of a Waldorf education. Finally, although it is likely the two schools differed in their pedagogical practices, the data do not specify the type of education children received at the comparison school.

Future Directions

The differences between the Waldorf and traditional public school in terms of how they educate children from a lower SES are important to examine. Several aspects of the Waldorf school educational philosophy may serve to enhance students' achievement. For example, because Waldorf teachers are looped with their students for several years, the differences in the teachers' perception and rapport with the students at Waldorf schools and the comparison schools should be examined. Also, comparing achievement results at a public Waldorf school with a more traditional public school that does loop students (for example, Project Families are Students and Teachers in East Cleveland, Ohio) would be important to examine whether looping plays a major role in students' success. Finally, it is important to examine how the Waldorf focus on character development correlates with the students' behavior and achievement: Are the students at the public Waldorf school better behaved and better able to resolve conflict than the students at the matched school? Do these behaviors enhance academic performance?

This study provided exploratory evidence that supports the Waldorf educational philosophy as a potential method for enhancing the achievement of low SES, minority children. Given the concerns and potentially negative outcomes for these children within typical educational environments, we believe the Waldorf method warrants consideration and empirical study.

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