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Twenty Years and Counting: A Look at Waldorf in the Public Sector Using Online Sources

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As the number of public Waldorf schools operating in the U.S. continues to grow, there is a need to examine the effectiveness of this approach in the public sector. This empirical study provides a beginning look at available quantitative and qualitative extant data on public Waldorf schools obtained from state and national websites. Available data included standardized tests and parent comment boards hosted by the independent source, GreatSchools.org. Public Waldorf schools were compared to their district standardized test scores in Reading and Math as well as matched comparison schools. Test score results suggested the Waldorf experience provided a slower academic build-up resulting in poorer test scores in the lower grades followed by higher levels of advanced performance in the 8th grade. Quantitative content analysis of parent comments supported the idea that public Waldorf is indeed a more holistic approach with greater emphasis on the arts, community and developmentally appropriate practice. Findings suggest standard measures of school quality may midjudge the effectiveness of holistic education particularly with regards to academics. Challenges for successfully bringing holistic education into the current cultural-political climate are discussed.

Keywords: charter schools, holistic education, Steiner, testing, Waldorf

It has been more than two decades since the first public Waldorf methods school opened its doors in the high poverty urban area of Milwaukee, WI. The Milwaukee Urban Waldorf Elementary School created in 1991 was an immediate success, increasing grade level reading scores from 26% to 63% in just three years (McDermott et al., 1996). Since that time, the number of public Waldorf methods schools has continued to grow across the United States, with more than half operating in the state of California. Although Waldorf has predominantly existed in the private sector and has been called a “special philosophy for special children” (see Oberman, 2008, p. 10), on its inception Waldorf was intended to meet the needs of all types of students. In

speaking to teachers, Rudolf Steiner described the aims of the school as, “a school for all classes” with the aim of taking into “account of what is universally human.” He goes on to say, “In the Waldorf school what is considered is the educational principles and no difference is made in their application between a child of the proletariat and a child of the ex-Kaiser” (Steiner, 1922/1947, *Lecture 4*). Steiner also made specific recommendations as to how the school must adapt to fit sufficiently well within the existing structures of traditional schools. This running in parallel with the traditional schools was both strategic and practical as Steiner stated:

This arrangement to run parallel with the organization of ordinary schools was an

endeavor to accord our own intentions and convictions with things as they are, to make a certain harmony. For there is nothing unpractical about the Waldorf School, on the contrary, on every point [Waldorf education] aims at realizing things which have a practical application to life. (Steiner, 1922/1947, *Lecture 4*)

Nonetheless, Waldorf schools in today's modern public educational milieu face unique challenges when operating within the policy structure of standards driven high stakes testing. The difficulty of this endeavor is highlighted by the recent closing of the Milwaukee Urban School. Hence, research on the potential of Waldorf to provide a holistic experience for public school children is critical if we are to protect this approach from the encroachment of rigid policies misaligned with developmental and holistic pedagogies (Nichols & Berliner, 2007; Ravitch, 2010).

Waldorf is not an add-on program to a traditional approach; rather it is structurally and functionally different from conventional public education. It is not a free school where students can decide whether to attend class or not, and it is not a democratic school where students vote on coursework and other aspects of running the school. Waldorf education follows a learner-centered pedagogy within a specific curricular framework including content suffused with texts from mythology and classical literature (Ogletree, 1975). The order of the curriculum across grades is set to accord with the developmental and psychological challenges of each specific age range. Teachers are trained to appreciate these specific challenges and utilize meditative practice to fully understand and meet the needs of each student in his/her classroom (Woods, Ashley, & Woods, 2005).

Steiner describes his approach as being "based on educational theories founded on a real knowledge of the growing, developing human being" (Steiner, 1971, p. 15). The Waldorf curriculum moves through learning first by engaging students' motor/action systems, then students' emotions and finally engaging students' knowledge and skill base; this is referred popularly to teaching to the head, heart and hand (Steiner, 1919/1997). Perhaps the most significant difference between Waldorf and conventional education is the structure of the school day. Rather than switching from class to class in 50 minutes blocks, the students engage in what is called the Main Lesson presented at the beginning of the school day while the afternoon is spent entirely in what some schools would be considered electives: second languages, drama, painting, movement, music, and handwork. The Main Lesson contains the core of the academic content and is fully integrated across disciplines. For example, when the students in 7th grade study the Renaissance, the Main Lesson includes content from history, math, science and art from that time. Discussions of the major figures of the

time are presented as historical narratives within which cross discipline content is presented via the major discoveries of those historical figures. So for example, learning about Leonardo da Vinci, students might hear how he was commissioned to draw images for the mathematician Luca Pacioli. From there the discussion of the mathematical concepts of the golden ratio could be followed by student created geometrical constructions as well as perspective drawing. Across the grades, the Main Lesson content follows logically and/or historically so that each year provides the foundation for the following years of schooling. In this way students are able to have significant context allowing for greater ability for meaning making, something that is well recognized in the brain sciences as critical for learning (Tokuhama-Espinosa, 2011). All basic content is addressed through the Main Lesson, and the subject is presented for several weeks during which students prepare a high quality product called the Main Lesson Book. General themes and sequencing of content are defined by the Waldorf curriculum, however, the details and specific focus is left to the teacher's discretion, and can be based on the interests of the students. Completely original content is added to meet the specific needs and interests of the community as Steiner was clear that Waldorf education must be responsive to the space and time in which it would be enacted (Steiner, 1919/1966). Other central aspects of traditional Waldorf include: (1) the integration of the arts into all subjects, (2) a slower, more developmental approach to academics, (3) looping of students with a single Main Lesson teacher, (4) block scheduling in which two hours a day are spent on a single subject for several weeks, (5) two second languages starting in first grade, and (6) no text books or standardized testing (Ogletree, 1975). Modern day Waldorf schools also have rules regarding exposure to media. The incorporation of technology is delayed, with some schools not introducing computers until high school. Public Waldorf schools attempt to maintain as much of this framework as possible, but of course must also follow the requirements of public schools, including the administration of standardized tests.

The empirical research on Waldorf education is surprisingly limited given its nearly 100 year history. However, the available studies suggest a positive impact of Waldorf on a number of cognitive and social outcome measures. These outcomes are aligned with some of the more recent initiatives in education to promote greater creativity and critical thinking in students (Partnership for 21 Century Skills, 2008; Bellanca & Brandt, 2010). Waldorf has been shown to be associated with greater creativity (Ogletree, 1971), critical thinking (Gidley, 1998; Mitchell & Gerwin, 2007) and potential for engagement as global citizens (Dahlin, 2010; Oberman, 2008). Research suggests that students attending Waldorf schools show more mature social and moral impulses

(Armon, 1997; Dahlin, 2010; Rivers & Soutter, 1996) as well as better social skills (Payne, River-Bento, & Skillings, 2002) and a reduction in bullying of peers (Rivers & Soutter, 1996). Further, studies indicate that Waldorf students value lasting relationships and helping others (Mitchell & Gerwin, 2007) and have a tendency to have more long term friendships (Oberman, 2007).

Research findings on the academic outcomes of Waldorf students are scarcer. Oppenheimer (1999) reported that Waldorf graduates' SAT scores are well above the national average; however these findings are confounded by the fact that most Waldorf schools are private, and that parents tend to be well-educated and financially stable. Studies in public Waldorf schools, although limited, indicate a positive impact of Waldorf on academic achievement (Oberman, 2008; Schieffer & Busse, 2001). Schieffer and Busse (2001) compared achievement scores on national assessments of 4th graders in the Urban Waldorf School to scores in a neighboring school with a similar demographic profile. Overall there were a greater number of students achieving higher levels of performance in the Waldorf schools. Oberman (2007) examined not just overall test scores, but the interaction of performance and grade level. Overall, test scores were significantly lower for Waldorf students; however, this effect was isolated to the early grades. The significantly lower second grade test-scores in her sample were replaced by superior scores by the 8th grade Waldorf students, and these standardized test scores were on par with the top ten peer-alike public schools in the state (Oberman, 2007/2008).

In an article examining parent and teacher's perceptions on the outcomes of Waldorf on students, Smith (1998) reported that parents felt that Waldorf education developed artistic abilities and appreciation of nature in students as well as imagination, intuitive abilities, and a strong sense of self. There was also a belief that Waldorf contributed to academic and intellectual skills and, although less frequently cited, a responsibility to the local and global community and spiritual awareness. The study by Smith (1998) was performed in private schools. Parent perceptions of public Waldorf schools have not been formally examined, and hence this research addresses this gap in the literature by examining parent's self-reported perceptions of their experiences with Waldorf using available online data.

In their extensive report on Waldorf schools in the UK, Woods, Ashley, and Woods (2005) point to the fact that:

No research was found on Steiner schools entering the public sector, nor on the process and outcomes of mutual sharing of practices between Steiner and mainstream schools. Both of these topics would benefit from systematic investigation, through action

research and other methods. (p. 6)

Although the number of Waldorf schools in the public sector continues to grow, the dearth of literature continues. Beyond the need to examine Waldorf in particular, there is a noteworthy value in determining how holistic approaches are faring in the current context of high stakes testing. By examining the ways in which Waldorf schools are performing under the constraints and structure of public education, we can begin to identify the issues facing holistic and alternative approaches in general as they are implemented under the current standards driven model of education.

This study compared standardized test measures of public Waldorf schools using three different data sets. Data Set A examined national public Waldorf schools against district standardized test scores for the year 2008, Data Set B examined performance on Standardized Testing and Reporting (STAR) for California public Waldorf schools for the year 2009, and Data Set C examined longitudinal performance on the STAR for California public Waldorf schools from the years 2005-2011. In addition to examining quantitative test scores, this study looked at open-ended school comments posted from the parents, teachers, and students obtained from the third-party resource GreatSchools.org. Content analysis of parent comments from Waldorf schools were examined for multiple themes including issues surrounding holistic education.

The current challenges and successes of Waldorf schools can be connected with greater emerging trends and issues being faced nationally. Becoming aware of how alternative approaches perform might help guide practice to meet the concerns and issues of communities working towards greater holism in their local public schools.

Methods

School Selection

All public Waldorf schools in the United States were considered for use in our study. A list of public Waldorf schools were obtained from the Waldorf Answer website (<http://www.waldorfanswers.com/PublicWaldorf.htm#list>) and from Oberman (2007) producing an initial sample of 34. Schools were selected from the list given they met the criteria outlined in Table 1. The exclusion of schools that had been in operation for less than five years acted to assure the student had had a minimal number of years participating in the Waldorf curriculum. The initial exclusion criteria for Data Set A were also applied to the two following data sets, but were expanded to exclude schools outside of California. This was done so that differences and variability caused by the comparison of multiple state standardized tests would be eliminated.

For Data Set A, standardized test scores in Reading and Math by public Waldorf schools were compared to the district averages. Twenty Waldorf

Table 1
School Exclusion Criteria

Data Set A – 2008	Data Set B – 2009	Data Set C – 2005-2011
National Waldorf	California Waldorf	Ca. Waldorf Longitudinal
Charter less than 5 years (N=2)	Non-California schools	No available data from 2005/2006-2010/2011
Court ordered/alternative schools (N=1)	Same as Data Set A	Same as Data Set B
Grade range less than 6 th grade (N=8)		
Unavailable test scores (N=3)		

Table 2
School Selection Criteria

Quantitative Data Sets	Data Set A	Data Set B	Data Set C
Waldorf Schools	All National Waldorf Public Schools (N=20)	CA Waldorf Public Schools (N=15)	CA Waldorf Public Schools (N=11)
Control/Comparison Schools	District Averages (N=20)	Matched in District for SES & % minority (N=20)	Highest-Performing K-8 th Schools in CA (N=11)
Data Sources	www.GreatSchools.org www.SchoolMatters.com	California department of education http://star.cde.ca.gov/	California department of education http://star.cde.ca.gov/
Dates Collected	11/2009-2/2010	4/2010	2/2011-8/2011

schools were used for this data set, and were compared to their 20 district scores. Data Sets B and C examined California Waldorf schools matched to comparison schools according to appropriate criteria (see Table 2). Data Set B comparison schools were selected from the same districts and matched for socioeconomic status (SES) and percent of minority groups with known achievement gaps, i.e. African American and Hispanic. Fifteen Waldorf schools were compared to twenty comparison schools. This was because only ten of the comparison schools provided a full K-8 education. The remaining matches represented separate elementary and middle schools, each matched for demographics. For Data Set C, the longitudinal study, because it used a within-subjects design, there was a greater requirement for matching schools with continuous enrollment of their student body from 2nd – 8th grade. Eleven Waldorf schools met this criteria, and eleven schools with K-8 education were matched. The reduced number of

available schools meeting the criteria of K-8th and data available from 2005-2011 made it not possible to match across every demographic variable or to maintain cohesion within the district. For Data Set C, rather than matching schools for demographic variables, comparison schools were selected based on performance. The schools with the highest performance ratings according to the GreatSchools.org rating system were selected as our final eleven matches (see Appendix II).

School Selection, Qualitative Data Set

Qualitative data were collected from the GreatSchools.org website from May to June 2011. All Waldorf public schools for which parent comments were available were utilized in the qualitative data analysis, resulting in a total of 23 schools (see Appendix I for list). Comparison schools represented all of the matched schools utilized across the quantitative data analyses for which parent comments were available on the GreatSchools.org website. All of the 26 comparison

schools used from Data Set B and Data Set C had parent comments available for analysis (see Appendix II).

Data Analysis –Quantitative Data

ANOVAs. For Data Set A and B reading and math score data were submitted to individual between subject ANOVAs where GROUP (Comparison, Waldorf) and GRADE (2nd, 3rd, 4th, 5th, 6th, 7th, 8th) represented the two between factors. Any significant interactions were further submitted to a post-hoc Fisher LSD. For Data Set C, data were submitted to repeated measures within and between factor ANOVAs where the between factor was GROUP (Comparison, Waldorf) and the within factor was YEAR (2005, 2006, 2007, 2008, 2009, 2010, 2011).

Treatment of Missing Data. There were several missing values in all three of the data sets. For Data Set A there were the following missing data values: 7th grade reading (2 schools), 7th grade math (3 schools), 8th grade reading (5 schools), 8th grade math (7 schools). There was also no 2nd grade test score data in several schools since NCLB does not require 2nd grade testing. Data from the following states did not provide 2nd grade scores: Arizona (N=3), Oregon (N=1), Alaska (N=1) or Wisconsin (N=1). No attempt was made to replace or estimate missing values in these cases. However, a missing value for a Waldorf school resulted in the elimination of the district score for that school so that scores were paired with their comparison districts only. The greater number of missing values for math was due to the use of alternative testing in the Algebra subtest in 8th grade. For this reason, Data Sets B and C excluded 8th grade math scores.

For Data Set B there were the following missing data values: 7th grade reading and math (2 schools), 8th grade reading (4 schools) making the group totals (N=13 and N=11, respectively). Only five out of the 15 schools provided general math scores for the 8th grade, as mentioned previously, due to school alternate assessment of Algebra; therefore, 8th grade math scores were excluded from both this data set and Data Set C. Missing values from Comparison schools were eliminated when no comparison values from Waldorf schools were available. No attempt was made to replace or estimate missing values.

For Data Set C, the use of repeated measures, made it necessary to replace missing values with appropriate estimates. There were three missing data points: two from year 2005 and one from 2011. The estimated values for these missing data points were determined by taking the mean difference between the missing year, and adding it to the closest available year. So for example, the mean difference between 2005 and 2006 for Waldorf schools was -8, so taking the 2006 score and subtracting 8 provided the estimate. There were no missing values from matched comparison schools. Estimated values were required in order to run the

repeated measures ANOVA, however, to verify that these estimated values did not impact the overall performance scores, t-test values of year-by-year differences were run, demonstrating that no changes in the data output were seen when the estimated values were removed.

Qualitative Data Analysis-Content Analysis

First Coding: Emergent Themes. In the first stage of coding we examined 606 comments from 23 public Waldorf schools. These comments were coded by hand using in vivo and descriptive coding techniques (Saldana, 2009). Hand coding was performed by the first author and results were discussed with the other authors. Coded comments were assigned, based on these discussions, into three groups: (1) *Parent School Relationships*, which corresponded to the codes of: community, parent involvement, teachers, leadership; (2) *Academic Core*: second languages, academics, curriculum; and (3) *Whole Child Education*: 21st Century skills, art and music, holistic education, developmentally appropriate practice (DAP), love of learning, world citizens. Each code from these three emergent themes was then utilized for the second coding procedure. Although there are the opportunities for teachers, students, administrators, and other community members to submit comments on the GreatSchools.org site, our data showed that approximately 97% of the comments were from parents (also including the very few comments by grandparents or other direct relatives or guardians of the students). Non-parent/guardian comments consisted of less than 1% of comments from teachers, and slightly less than 2% from students or former students. Because of the low numbers of comments from other sources than parents we refer to the analyses as parent comments and no effort was made to distinguish between comments from any of the subgroups during the frequency and subsequently autocoding process.

Second Coding: Autocoding Procedure.

Autocoding is an approach to content analysis that acts to minimize subjectivity. The use of predetermined keywords allowed for examination of patterns of responses in Waldorf schools compared to non-Waldorf schools. The same 606 responses from the 23 Waldorf schools used in the *First Coding* were compared to the 1013 comments posted for the 26 comparison schools. There was a higher average number of responses for comparison versus Waldorf schools (Mean= 39, 26 respectively) however, median values for comments were fewer for comparison versus Waldorf schools (Median= 11, 17 respectively). Each school was entered as a separate case into HyperResearch™ QDA software and was coded using key terms relating to our selected themes (see Appendix III). The autocodes were checked for accurate correspondence with the theme before being included in the final counts. The frequencies counts were then changed to percents and compared for pattern in responses using an exploratory factor analysis. As with

our first hand-coding procedure, each of the parents' comments was separated into positive and negative statements. Patterns of responding across positive and negative comments were submitted to separate independent-samples t-tests with school type as the grouping variable.

Results

Data Set A – 2008 Scores

There were several significant differences between Waldorf student performance compared to their district scores in both reading and math. For reading, there was no significant difference for GROUP, $F_{(1,240)} = 1.13$. However, there was a significant effect of GRADE $F_{(6,240)} = 13.93$, $p < 0.0001$, as well as a GROUP X GRADE interaction, $F_{(6,240)} = 4.65$, $p < 0.001$ (Fig. 1a). This effect was due to an increase in reading scores progressing from the lowest to the higher grades in Waldorf-based curriculums. Fischer LSD post-hoc analysis revealed significant differences for GROUP at second grade ($p < 0.01$), where Waldorf methods showed significantly poorer test scores than their matched districts. There were no significant Fisher test values for 3rd, 4th or 5th grades. For 6th, 7th and 8th grade, however, Waldorf students significantly outperformed

district comparisons ($p < 0.05$ and $p < 0.01$ respectively).

For math scores, unlike reading, there was a significant main effect of GROUP, $F_{(1,240)} = 9.47$, $p < 0.01$, but there was no significant main effect of GRADE. Similar to reading, there was a significant interaction between GROUP and GRADE, $F_{(6,240)} = 2.53$, $p < 0.05$, (see Fig. 1b). Fisher LSD post-hoc analyses revealed significant differences between Waldorf and district scores at 3rd grade ($p < 0.01$). This was due to poorer performance by Waldorf students at this grade level. No significant differences were noted at any other grade level.

Data from our first analysis were taken from nationwide public Waldorf programs compared to their district scores. Some concerns over the validity of these comparisons, specifically regarding use of multiple state measures and comparing average district scores with individual Waldorf schools, needed to be addressed. A second set of data was collected to address these issues. The criteria for the second data set are outlined above (see Table 2).

Data Set B – 2009 Scores

Waldorf schools in California matched to non-Waldorf schools in the same or neighboring districts

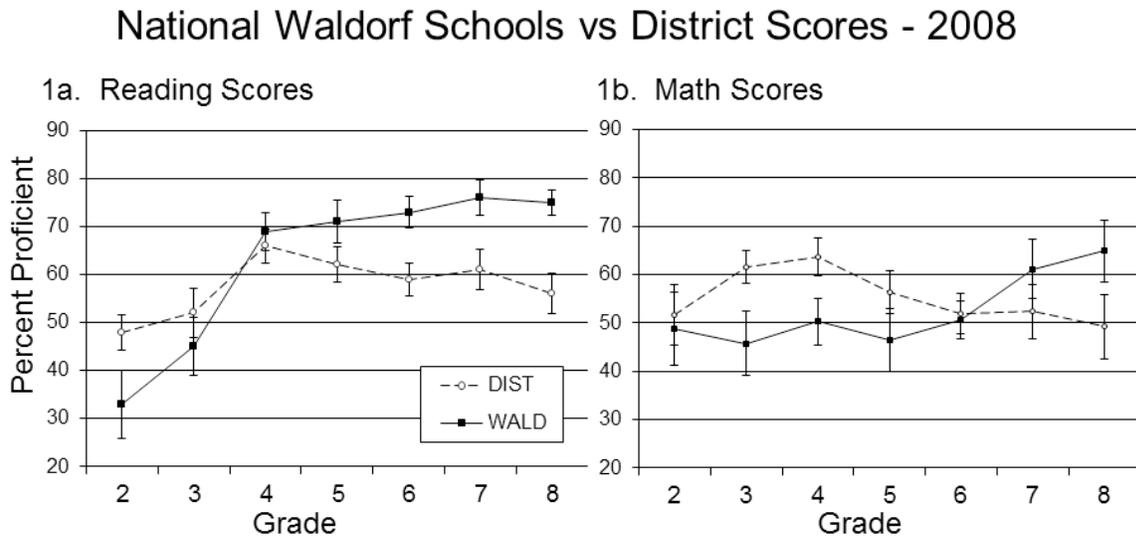


Figure 1. Waldorf curriculum was associated with poor initial performance in the early grades in reading (1a) and math (1b) this effect was reversed in the higher grades. (Error bars = SEM).

Table 3
Demographic Information from Waldorf Schools in California and Matched Comparisons

Waldorf n=15 Comparison n=20	Class Size	% SES	Parent Education	% Minority	Teacher Credentials
Waldorf	23.4	19.9	3.93	11	89.8*
Comparison	25.4	20.7	3.76	15.4	98.7

(* = p<0.05)(Parent Education 1= did not grad HS; 5=completed graduate school, % Minority = %Hispanic+%African American)

California Waldorf Schools vs Matched Comparison Schools - 2009

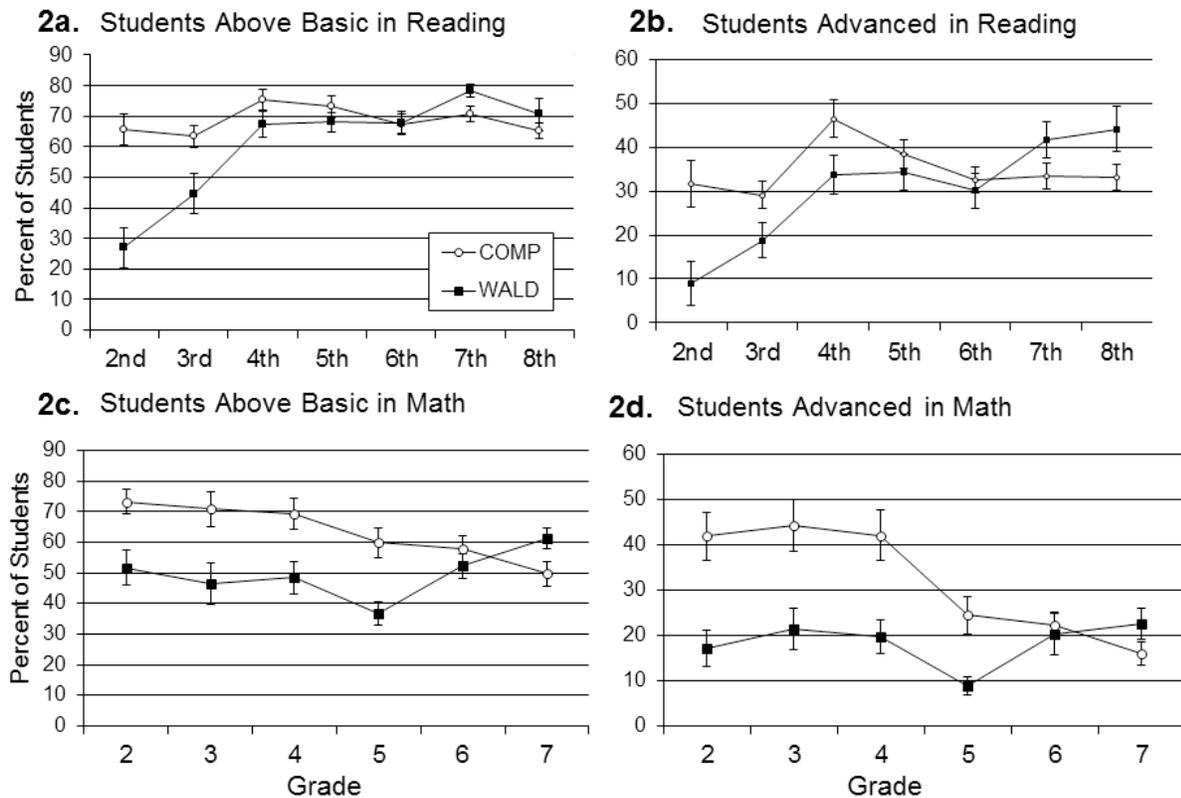


Figure 2. Waldorf school scores compared to comparison schools matched for SES. Scores are presented as those students performing at or above the proficient level (2a., 2c) and those performing at the advanced level (2b, 2d). Waldorf students performed more poorly in early grades, but these differences were no longer present in the upper grades. (Error bars = SEM).

showed similar demographic profiles (see Table 3) Five out of the 15 matches were taken from separate elementary and middle schools, the other 10 matches provided K-8th education. Demographic data were submitted to separate individual t-tests and showed no significant differences between Waldorf and matched non-Waldorf schools on any of the demographic measures, except teacher credentialing, where Waldorf schools were associated with fewer credentialed teachers $p < 0.05$.

ANOVA Analysis

The California Department of Education website breaks down performance not only by percent proficient or above, but into five levels: far below, below, basic, proficient, and advanced. We compared performance across schools by comparing percent proficiency and above (proficient + advanced scores) as well as looking at students who were in the advanced range for both math and reading.

There were several significant differences between Waldorf school scores and district scores in both reading and math. For reading, there was a significant difference for GROUP for both those scoring above proficient, as well as for percent advanced only, $F_{(1,198)} = 15.4, p < 0.001$; $F_{(1,198)} = 6.7, p < 0.01$, respectively. There was also a significant GROUP X GRADE interaction for both proficient, $F_{(6,198)} = 12.2, p < 0.001$ (Fig 2a) and advanced scores, $F_{(6,198)} = 4.0, p < 0.001$ (Fig. 2b). This effect was due to poorer performance in reading and math in early grades shifting to better performance higher grades in Waldorf schools. Fisher LSD post-hoc analysis revealed significant differences between groups at second and third grade ($p < 0.01$), for students above proficiency (advanced + proficient) and for second grade and third grade ($p < 0.01, p < 0.05$ respectively) for students in advanced proficiency. Although not significant, there was a trend towards significance for 8th grade reading scores in the advanced range, ($p = 0.08$). This was due to higher percentages of Waldorf students scoring in the advanced range by 8th grade.

For math scores, there was a significant main

effect for GROUP and a GROUP X GRADE interaction both for students' scoring above basic, as well as those scoring in the advanced range $F_{(1,188)} = 18.7, p < 0.001$; $F_{(1,188)} = 26.9, p < 0.001, F_{(6,188)} = 5.7, p < 0.001$ (Fig 2c), $F_{(6,188)} = 4.7, p < 0.001$ (Fig. 2d). Fisher LSD post-hoc analysis revealed significant differences between groups in second through fifth grades for students above basic (advanced + proficient) and for students in advanced proficiency. This effect was no longer significant in 6th through 8th grade.

Data Set C – 2005 to 2011

Waldorf schools are unique in their continuity of education. More than simply remaining in the same school through the elementary and middle school years, the students and teacher in Waldorf are intentionally kept together through the practice of looping; i.e. instruction by a single main lesson teacher from grade one to grade eight. Data from our previous analyses indicated improved test scores of students in the higher grades. However, examining cross-sectional data from a single testing year limits the assumptions regarding the growth of those same students. In order to address whether individual classes of students would demonstrate the same pattern of performance as our cross-sectional data, test scores of Waldorf school classes from grades two to grade eight corresponding to the academic school years of 2005-2011 were submitted to repeated measures within subject ANOVAs. Grade eight data for mathematics were excluded based on the loss of subjects in that year due to the high number of schools opting to take the Algebra portion of the math exam rather than the general math exam for eighth grade.

Performance of Waldorf students from California schools were compared to schools matched for continuity of grade (i.e. combined elementary and middle school program) and the availability of test scores from 2005-2011. Because of the limited number of schools meeting these criteria, it was not possible to match on all variables known to affect standardized test scores (see Table 4). Comparison schools were chosen based on the nationally recognized GreatSchools.org

Table 4
Demographic Information from 2010 for Waldorf and Comparison Schools Included in the Longitudinal Analysis

Waldorf (N=11) Comparison (N=11)	Charter School	Class Size	SES	Parent Education	Minority	Teacher Credentials	Parents' School Rating	Great School Rating
Waldorf	9	22.1	18.8	3.83	13.1	92.9	4.36	5.82
Comparison	8	22.2	19.4	3.55	32.9*	95.2	4.09	7.45*

(* $p < 0.01$) (Parent rating, 1=poor, 5=excellent) (GreatSchool rating, 1=low, 10=high)

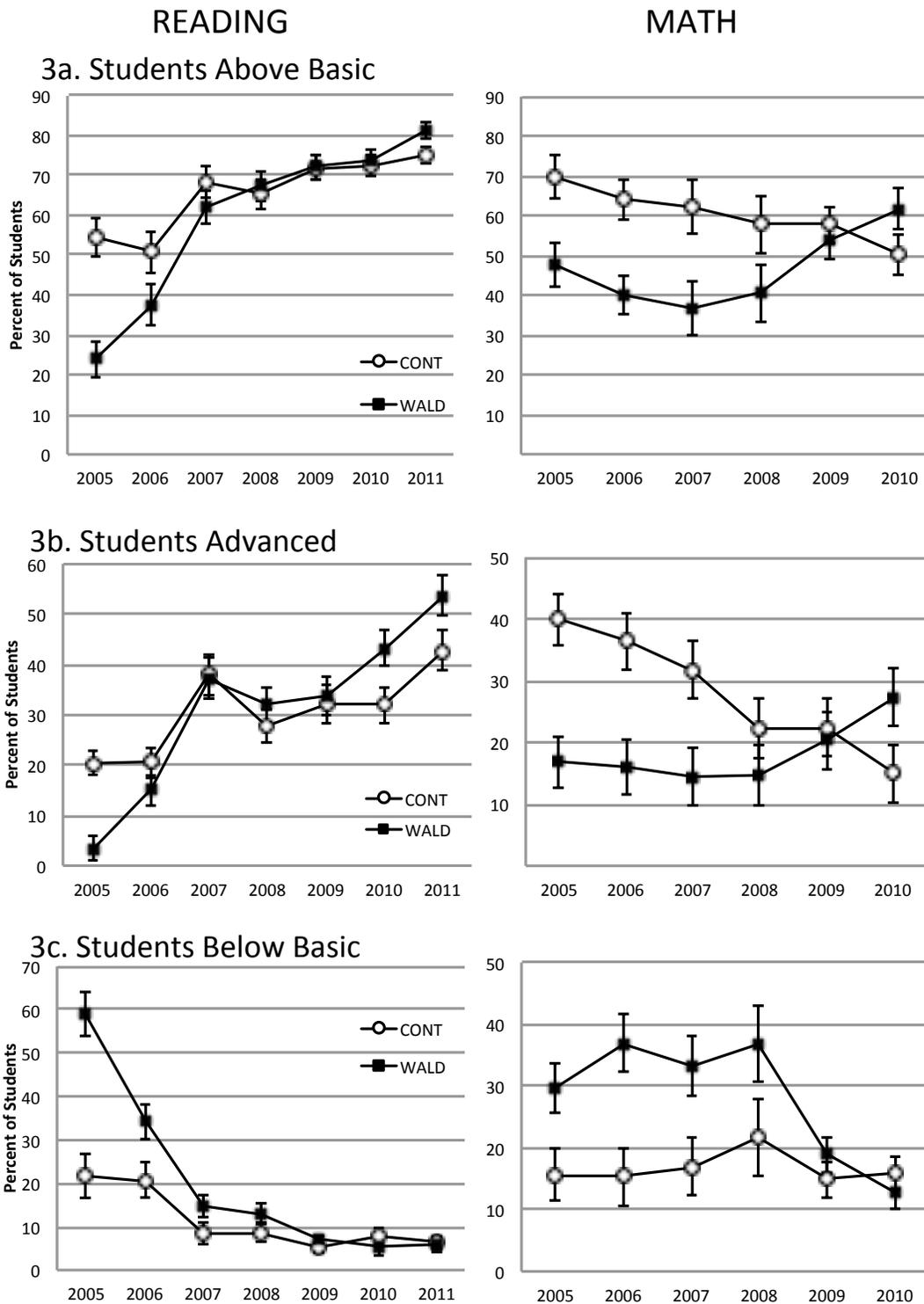


Figure 3a-c. Reading and Math Scores (Column 1 & 2 respectively) for California public Waldorf schools compared to high performing California K-8 schools. Waldorf students scored poorer in the early grades, but show significant improvement in the later grades (Error bars = SEM).

Table 5
*T-test Post-hoc Analyses of Waldorf and Non-Waldorf Schools**

t-test P-values	READING – t-tests & p values						
	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade
ABOVE BASIC	-4.53 .00	-1.82 .08	-1.16 .26	.38 .71	.06 .95	.42 .68	2.02 .06
ADVANCED	-5.23 .00	-1.27 .22	-.14 .89	.84 .41	.27 .79	2.22 .04	1.99 .06
BELOW BASIC	5.25 .00	2.38 .03	1.75 .10	1.29 .21	1.19 .25	-.70 .49	-.33 .74

	MATH – t-tests & p values					
	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade
ABOVE BASIC	-2.94 .01	-3.42 .00	-2.86 .01	-1.77 .09	-.69 .50	1.58 .13
ADVANCED	-4.24 .00	-3.21 .00	-2.70 .01	-1.16 .26	-.32 .75	1.75 .10
BELOW BASIC	2.78 .01	3.37 .00	2.81 .01	2.14 .05	1.52 .14	-.63 .53

Note. * Data corresponds to Fig 3a-c. Darker blue indicates significantly poorer performance by Waldorf students, while darker orange indicates significantly better performance. Lighter blue indicates performance trending towards significantly poorer performance, while lighter orange indicates performance trending toward significantly better performance. (Above Basic = Proficient + Advanced; Below Basic = Below + Far Below Basic)

rating system score. This score is based on a number of performance variables (<http://www.greatschools.org/find-a-school/defining-your-ideal/2423-ratings.gs>).

In addition, the GreatSchools.org site provides the opportunity for parents to rate their own school. Notably, the GreatSchools.org performance measure was significantly higher in our selected schools, suggesting that the schools selected for comparison were “better” schools. However, there was no difference between parent ratings on their satisfaction with the school. There was no significant difference in the SES measure between our groups. However, there was a significantly greater number of African American and/or Latino minorities in our comparison schools. Although previous research has shown a relationship between minority students and standardized test performance, correlational analysis between percent minority and students scoring proficient or above in our sample did not indicate a negative impact of percent minority. On the contrary, using a Pearson’s bivariate correlation, California Standardized Test (CST) performance measures were *positively* correlated with increasing percent minority, these included Reading scores for 2005, $r(20) = 0.514, p < .05$; and Math scores for

2007, $r(20) = 0.575, p < .01$. This reflects the nature of the schools that were selected for comparison, of which many utilized unique approaches to teaching, i.e. international schools, open classroom, positive discipline, project based learning (see Appendix II).

ANOVA Analysis. For the test score longitudinal data analysis we performed separate mixed between and within factor ANOVAs for the following four categories: basic level, above basic (proficient + advanced), below basic (below basic + far below basic), and advanced. There were no group main effects or group interactions on the percent of students achieving basic level performance, and therefore basic scores were not included in any other of the analyses. The findings from the remaining three categories were as follows.

For reading scores above basic (i.e. proficient and above), there was a main effect of TIME, $F_{(6,15)} = 71.6, p < .0005$, but no main effect of GROUP. This was also true for those scoring in advanced only $F_{(6,15)} = 54.7, p < .0005$. There was also a significant GROUP X TIME interaction for both above basic $F_{(6,15)} = 12.7, p < .0005$, and advanced only $F_{(6,15)} = 8.59, p < .0005$. This was the result of increasing numbers of students in Waldorf

education achieving higher levels of proficiency by later grades compared to no change seen in Comparison students. In math there was no main effect for either GROUP or TIME, for above basic and advanced only. However, there was a significant interaction, between GROUP X TIME for both above basic $F_{(5,16)}=7.89$, $p<0.0005$ and advanced $F_{(5,16)}=7.89$, $p<0.0005$. This was due to increasing scores in later grades for Waldorf students, while matched schools declined in their average scores (Fig 3a, 3b).

For scores below basic the trend was reversed. Reading and math showed main effects for GROUP ($p<0.005$; $p<0.05$, respectively) and TIME ($ps < 0.0005$). In addition, both reading and math scores below and far below basic resulted in significant interactions for GROUP X TIME $F_{(6,15)}=14.8$, $p<0.0005$; $F_{(5,16)}=4.04$, $p<0.01$ (Figure 1c).

Post Hoc Analysis: Independent Samples t-tests. The initial repeated measures ANOVA was significant for GROUP X TIME for above basic, advanced and for below basic. In order to examine which of the grade levels differed between our groups we examined differences at each time point using independent sample t-tests (Table 5). There were several significant differences between our two groups in the early grades. All of the performance levels for reading and math show significantly poorer performance by Waldorf students in 2nd grade ($ps < 0.01$). By the 6th grade Waldorf students were no longer performing more poorly than matched schools, and for advanced students by 7th grade there was a significant difference in performance in reading, and a trend towards better performance in math ($p<0.05$, $p<0.10$, respectively). In 8th grade, both those scoring above basic and in advanced range in reading showed a trend towards better performance than non-Waldorf students ($p<0.10$).

Qualitative Data Results

First Coding. The first coding of the parent comments utilized Waldorf school data only. This first coding sequence segregated positive and negative comments, an approach supported by quantitative content analysis using frequency coding (Saldana, 2009; Weber, 1990). By far the majority of the comments were positive, with the emotional tones of enthusiasm, gratitude, appreciation, ownership, and pride. Approximately 10% of the codes were negative, and these had the tones of warning, insulting, sarcasm, disappointment and anger. Once positive and negative comments were separated, differences in code frequencies between the positive and negative codes provided a look at tendencies within the data. The frequency of the more common hand-codes is presented in order (Table 6).

Many of the codes corresponded to the central elements of Waldorf education. Parents appreciated the arts integration, music and handwork along with second language starting in the early grades and continuing

throughout the child's education. In reference to the Waldorf approach, parents particularly liked the holistic model, and cited frequently the attention to "head, heart and hand" (Steiner, 1919/1971). Positive comments included an appreciation for the slow build-up to academics and the use of play in the early childhood without formally teaching reading until later. In fact there were positive comments for almost all of the aspects central to Waldorf (see Ogletree, 1975). Although the data are rich, it is beyond the scope of this paper to go into too much depth. Here we report specifically on the most common themes that could provide indicators as to how Waldorf schools in the public sector are being received by parents.

For the first coding, i.e. hand-coded Waldorf school data, the most common code was teachers. Parents referred to teachers as caring, committed, dedicated, aware, knowledgeable, and doubly-credentialed. Teachers were seen as being sensitive and responsive to their child and respecting individual differences. Not all teacher comments were positive. Negative posts were more varied and mentioned several problems including: communication, flakiness, cold, cliquish attitudes, aggressive behavior towards their child, and brushing off parents. One aspect of the teacher-student relationship that was specific to Waldorf spoke to the difficulty of successfully "looping" with the child given factors such as teacher attrition and inconsistent teacher quality. By some, getting a good teacher was considered the luck of the draw and was deemed critically important in the quality of the education. Negative comments surrounding disciplinary issues, with parents mentioning lack of teacher control of the class and/or parent led classrooms. Several comments mentioned bullying as a problem with a lack of intervention or taking of responsibility. This was more frequently cited as a leadership problem than the fault of the teachers.

Besides art, the most common positive theme was community. Waldorf parents described the community as warm, welcoming, loving, nurturing, supportive, diverse, open-minded, dynamic, active, magic, and rare in comparison to traditional public education. Community was often associated with parent involvement and a sense of ownership towards the school. There was mention of the participation in festivals and school performances. The community was compared to a family and thought to foster sensitivity and respect for others.

Many of the parents reported with enthusiasm how much their children loved school and felt this was the beginning of life-long learning. There was great enthusiasm from many parents that this education was free, and that their children were obtaining a private school experience in a public school.

Although parent involvement was a decidedly positive theme, there were some negative comments

associated with involvement. These related to parents feeling they were being used as piggy banks, and serving mandatory volunteer hours, especially for single, working parents. Parents reported feeling unappreciated and that their voice was not heard or that they were *not* allowed in the classroom. On the other-hand, parent involvement was also seen as negative when it seemed pervasive. Several comments mentioned parents dictating classroom activities and teachers not being in control. One comment suggested that certain parents, referred to as “Waldorfites”, controlled the school. Along those lines there were a few extreme comments of Waldorf as being a cult, having a secretive feel, or that there was a spiritual undercurrent to the school.

In terms of academics, many parents appreciated the slow build-up to academics, with positive comments that revolved as much around the lessened focus on academics as the quality of academics themselves; however, this was also one of the more common negative codes. Negative comments referenced poor test scores, although test scores also came up in positive comments too, with parents praising the fact that their schools were not just about test scores, and that they did not ‘teach to the test’ as other public schools did. With respect to the

reduced academic load and holistic focus, one parent commented that Waldorf was teaching laziness and mediocrity, another that students were being taught arts and crafts at the expense of real learning or factual knowledge. Parents also feared that the reduced academic load would leave their child unprepared for high school or life. Parents voiced concerns that the Waldorf approach was not preparing their children for the future. In some cases the same parents who were concerned with the lack of academics stated that they appreciated the arts, and others appreciated the slow pace for the younger grades, but were decidedly unhappy with the pace in the later grades. A number of these comments were associated with decisions to take a child out for middle school due to ‘lack of rigor’ in the upper grades.

Frequency Based Content Analysis. Following analysis of hand coding a frequency report of the codes was generated. Raw data was not used for this analysis, rather the codes themselves were counted. Looking at the pattern of codes some things become immediately apparent (Table 6). Overall, frequency of comments tended to be more positive than negative, and there were distinct differences in the balance of that positive negative frequency across the codes.

Table 6
Waldorf Hand-Coding Counts Based on Positive/Negative Comments

HANDCODING	Frequency Counts	
	Positive	Negative
WALDORF		
Teacher	208	52
Arts	171	16
Community	168	6
Waldorf Curriculum	78	12
Love of Learning	84	0
Academics	53	24
Music	73	2
Parent Involvement	64	10
Holistic Ed	56	2
Leadership	25	32
Relationships	47	6
Second Language	35	0
Discipline	7	18
Testing	10	6
Slow Pace	4	11
Media	4	4
Special Needs	1	6
TOTAL	1088	207

Two codes showed only positive comments: *love of learning* and *second language*, and only three codes had greater numbers of negative to positive codes: *leadership*, *discipline*, *special needs*, and *slow paced*. Examining the pattern of responding was used to validate the second phase of coding.

Second Coding: Auto-coding. The second coding consisted of analyzing the frequency of words using auto-codes (see Appendix III). Unlike the hand-coding where some subjective assessment of the comment will be used to assign a code, the use of auto-codes provides an unbiased analysis of word frequency. Auto-codes were selected based on the three themes that emerged through discussion of the hand-codes, *Parent-Student Relationships*, *Whole Child Learning* and *Academic Core*. Because both hand-codes and auto-codes were performed on the Waldorf schools, comparisons between the two allowed for internal validation of the accuracy of the chosen auto-codes. Comparing the responses in Table 6 and Table 7 it is possible to see that there is a similar pattern of positive and negative responses as in the hand-codes. This is true even though the hand-codes used actual counts, and the auto-codes used percents or proportional responses, something more appropriate when applying parametric statistical measures (Weber, 1990). Furthermore, the high level of concordance between the hand and auto-codes, supported the validity of the selected key-words as representing our hand-coded categories.

Responses from Waldorf and the comparison schools indicated several similarities between the two data sets (Table 7). For example, both Waldorf and comparison schools showed the greatest overall number of responses to the themes *teachers* and *leadership*. In addition, both had similar patterns of positive versus negative comments surrounding the themes. For *leadership*, there was a greater percentages of negative responding compared to positive responses for both Waldorf and comparison schools.

Factor Analysis & t-tests. We examined our data for alignment with our intended three factors: *Parent School Relations*, *Academic Core* and *Whole Child Education*. The use of a factor analysis is typical in basic content analysis (Weber, 1990) and although our absolute number of cases was small (N=50), the actual number of participant comments exceeded 1600 postings. Furthermore, there is some precedence for using a factor analysis with as few as 50 units of analysis (Arrindell & van der Ende, 1985). The rotated varimax output from our fourteen variables showed that our categories did not separate into their presumed groups. Setting eigenvalues at 1.1, a five factor model emerged that explained 71.25% of the variance. In this model none of the variable loadings were less than 0.5, and three were greater than 0.80. The use of a factor analysis with such high

explanatory value, and high factor loadings further supported this approach (Costello & Osborne, 2005). Therefore the five factor model was used to organize our table as well as to guide the interpretation of the data (see Table 7).

Five Factor Model. There were distinct differences between our Waldorf and non-Waldorf comments with regards to the five factors. Factor A and Factor B both showed higher rates of responding by non-Waldorf schools, whereas for Factors C-E, Waldorf schools had greater rates of responding. Interestingly, these higher rates of responding were seen in both negative and positive comments, indicating the greater presence of these themes overall, and that not all members of the community were in agreement on the value of each.

Independent t-tests. Using independent t-tests we then looked at differences between the frequency of responses across our 12 themes for positive and negative comments. Table 7 shows significant differences between Waldorf and comparison schools and these differences related to both significantly higher rates of responses (light orange shading), and significantly lower rates of responses (light blue shading). However, there were no significant differences for any negative comments. This might reflect the relatively few number of negative comments that contributed to the data set.

There were several response patterns between Waldorf and non-Waldorf schools that were unexpected and did not fit within our initial categories of related codes.

Parent-Involvement versus Community. We had initially assumed that parent involvement would be related to community in *Parent-School Relationships*, however, these did not load together in our factor analysis, and they showed distinct differences between Waldorf and non-Waldorf school comments. Waldorf schools show lower rates of responding around issues related to parent involvement, and higher rates of responding for community. The difference between community and parent-involvement suggests that community is supported by the holistic philosophy of Waldorf. Parent involvement may reflect a more independent activity than involvement through community. This difference should be further investigated with regards to effective parent engagement.

Curriculum versus Academics. We had also initially assumed curriculum and academics would be related under the theme of *Academic Core*, however, the factor analysis grouped these separately and again, there was a distinct difference between Waldorf and non-Waldorf schools responses. Waldorf school comments were higher for the term curriculum, while the term academics was more often seen in non-Waldorf school comments. Again, the difference between what is signified by a curriculum versus academics can be

Table 7
Percent Positive and Negative Responses Across 12 Codes

	Factor	NON-				POSITIVE		NEGATIVE	
		WALDORF	WALDORF	WALDORF	WALDORF	t-test	P-value	t-test	P-value
POS (Ns= 23, 27)	Loadings	POS	NEG	POS	NEG				
NEG (Ns=12, 14)									
Factor A									
Parent Involv.	.61	6%	3%	12%	8%	-1.57	<i>p</i> =0.11	-0.72	<i>p</i> =0.48
Leadership	.68	7%	30%	17%	56%	-2.75	<i>p</i> <0.01	-1.88	<i>p</i> =0.07
Teachers	.72	43%	47%	59%	69%	-2.77	<i>p</i> <0.01	-1.55	<i>p</i> =0.14
Factor B									
Academics	.82	9%	16%	16%	24%	-1.99	<i>p</i> =0.05	-0.47	<i>p</i> =0.64
Testing	.68	4%	10%	6%	12%	-0.97	<i>p</i> =0.34	-0.11	<i>p</i> =0.92
Factor C									
Curriculum	.66	17%	21%	9%	11%	1.95	<i>P</i> =0.06	0.77	<i>p</i> =0.45
Holistic Ed	.61	10%	3%	2%	0%	3.79	<i>p</i> <0.001	1.01	<i>p</i> =0.34
Second Language	.69	7%	0%	2%	0%	2.29	<i>p</i> <0.05	NA	NA
Factor D									
Arts & Music	.87	29%	1%	12%	7%	3.35	<i>p</i> <0.005	1.01	<i>p</i> =0.39
Love of Learning	.83	10%	0%	3%	0%	1.63	<i>p</i> =0.11	NA	NA
Factor E									
Community	.51	24%	4%	14%	0%	1.85	<i>p</i> =0.07	1.00	<i>p</i> =0.34
21C Skills	.65	4%	0%	1%	2%	2.13	<i>p</i> <0.05	-0.92	<i>p</i> =0.34
DAP	.65	6%	17%	1%	0%	2.78	<i>p</i> <0.01	1.48	<i>p</i> =0.17
World Citizen	.79	6%	<1%	4%	<1%	0.98	<i>p</i> =0.33	0.40	<i>p</i> =0.69

Note. Individual t-tests for Waldorf and comparison schools show several significant difference for positive responses only. There were no significant differences between groups for negative responses. Light blue = significantly less frequent from Waldorf. Light orange = significantly more frequent for Waldorf.

interpreted as potentially more holistic, and should be investigated further.

Second Language. Rudolf Steiner emphasized the early introduction of languages. “The earlier you begin, the more easily children learn foreign languages and the better their pronunciation. Beginning at seven, the ability to learn languages decreases with age. Thus, we must begin early.” (Steiner, 1966, p. 79). The fact that this aspect of Waldorf continues to be successful in the public sector is reflected in the parent comments. This point is important to validate the successful practice of Waldorf principles in the classrooms.

Limitations of QCA. Although Quantitative Content Analysis (QCA) is traditionally used for documents, there is a growing trend to mine data from blogs and internet sources (Berendt, 2010). The data presented here represent a select portion of the population of the attendees at the schools. These findings are considered supportive, but in no way are meant to be

conclusive. Future research using controlled surveys or interviews would be able to better address some of the issues that have been brought up in these data. QCA is not about making causal determinations; it is rather to look for trends and tendencies within written text. The tendencies reported here lead to some interesting hypothesis that frame questions and may suggest possible directions for further investigation of these schools using more direct survey methods.

Limitations of Qualitative Data Source. There is a need to recognize that the data collected here represent a unique population of participants. First, those who decided to post comments on GreatSchools.org represent only a few voices from the many members of the school community. Nonetheless, it is safe to say that although this group is not random, the perspectives may be more meaningful in that it required a certain degree of motivation to engage in the comment writing process. This motivation could reflect a bad experience, or it could

reflect school pride and enthusiasm. In their “Terms of Use” policy, GreatSchools.org makes a general disclaimer as to the accuracy of the information, stating “GreatSchools does not guarantee the accuracy or completeness of any information on the website.” Although there is no system by which the leadership of the school is able to delete comments, abusive comments, comments deemed to be incorrect, or posted maliciously and not by actual parents or other related members of the school community, can be challenged, and thereafter removed by a GreatSchools.org administrator if they are deemed to not follow the guidelines (www.greatschools.org/about/guidelines.page). Given this framework, the presence of negative and unflattering comments, so long as they fit within general guidelines, would be just as likely as positive comments. Although this data source could most certainly be considered a convenience source, the advantage of being hosed by a third party supports the notion of impartiality, as GreatSchools.org would have no particular interest in promoting one school versus the other.

Discussion

Federal Title I mandates of No Child Left Behind (NCLB, 2002) have created an accountability program in the educational system in the United States that relies heavily on performance on standardized tests. This emphasis on academic fact-based content knowledge presents challenges to holistic alternative education. The difficulty of undertaking a program such as Waldorf, in which academics are intentionally delayed, is one that requires a great deal of risk when school test scores requiring early academic achievement in reading and math determine whether a school is considered passing or may face entering program improvement (PI).

Not only do schools risk state interventions such as PI, but their reputation is impacted by rating scales based on test results. Even the most recent research indicates that parents generally base their perceptions of school quality almost entirely on student test scores (Gibbons & Silva, 2011). Waldorf schools must work against the culture of competition for the highest test scores and educate parents to the purposes of a more balanced developmental approach. The basic content analysis of parent comments performed here reflected potential difficulties in parent perceptions when creating an alignment of the school curriculum away from academics and towards a more holistic approach.

The unique pattern of performance by students in Waldorf education on standardized tests presented here suggested a trajectory of continued improvement in both cross-sectional as well as longitudinal data. The slower developmental approach of Waldorf, particularly with the delay in learning reading, is one that is misaligned with current test-based policies. Unfortunately, the high value society places on test scores along with the policy structures of NCLB effectively takes the focus away from

effective developmental and creative approaches resulting in a narrowed view of curriculum (Cawelti, 2006; Daly, 2009; Perlstein, 2010).

The question this data presents is whether there is any value at all of using test scores in determining the quality of education particularly in the early grades. These data do not intend to say that Waldorf as a pedagogical approach is better than the comparison schools. Comparison schools were some of the best in the state of California, with some utilizing incredibly progressive approaches. Rather these data should be interpreted with respect to their pattern of performance. Waldorf student outcomes at 8th grade are on par with those of some of the top schools in the state, while in the early grades Waldorf students fall below even the district averages. Since the current measure of school effectiveness, API and AYP do not differentiate between the various grades, the overall measure of student outcome in Waldorf schools are being grossly under-represented and further call into question the current use of standardized testing as an accurate measure of school quality. Our data and the work of others indicate that the costs of testing outweigh the benefits. Research examining the impact of early focus on academics, a by-product of early testing, has reported that the small initial benefits on academics seen in the early grades are followed by long term worsening of life outcomes (Nel, 2000; Schweinhart & Weikart, 1997). As such we must ask the question as to what are the consequences of not moving away from a system of school evaluation that is inaccurate and flawed. Research from the brain sciences suggest that the pressures on students and teachers to reach reading milestones early, may in fact, have a causal relationship to acquired learning disabilities. David Boulton calls the emotional damage caused by attempting to force a child to read before they are developmentally ready, *mind-shame* (Boulton, 2005). Given that early test scores appear not to hold any predictive value for a student’s ultimate academic success, at least for Waldorf, and there is no reason to suspect these children are biologically unique, it is important that we reconsider the utility of early grade testing at all.

Chauncey (2006) describes the challenge of evaluating Waldorf education using the traditional testing assessments. We wanted to move beyond examining standardized test performance as the sole means of assessing the quality of education being provided by public Waldorf schools. Examining qualitative data and moving beyond test scores required some ingenuity. We utilized self-initiated comments by parents of Waldorf and non-Waldorf comparison schools posted on a nationally recognized website. Through comparing code frequencies on critical issues, it was possible to reveal patterns in responses. Waldorf schools were associated with greater frequency of responses relating to aspects of holistic education when compared to demographically

similar charters and public schools. These findings suggest that a more holistic approach is possible in a public setting even in the era of accountability.

The difficulty of trying to fit Waldorf into the current standards-based culture can be seen in the parents' negative comments, particularly around issues of testing and academics. One parent stated:

While I appreciate the concept of 'teaching the whole child', I do not believe that this school has been able to successfully merge the Waldorf philosophy with the state-mandated standards for public schools. I feel that my child was taught some life skills, but not exposed to some of the experiences of a traditional school.

It is not possible to tell from these self-reported comments to what extent complaints regarding the Waldorf approach reflect the clash in cultural values versus the inability for Waldorf to maintain integrity in the public sphere. However, research reminds us that regardless of the growing number of whole child initiatives, the norm for many parents remains in support of early academics and higher test scores (Chingos, Henderson, & West, 2010).

Traditional Waldorf encompasses a spiritual dimension. The inclusion of ideas surrounding spiritual and soul development can often clash with the public agenda. Some have said that bringing Waldorf into the public sector was done too soon and in too much of a rush. There was the feeling that as a public school, Waldorf would not be able to fully maintain its philosophy, and that it would have to minimize or bury the spiritual components of the program (see Ruenzel, 2001). The question as to how a so called "de-spiritualized" form of Waldorf in the public education sector compares to private Waldorf deserves further investigation. In some cases the schools have already experienced difficulties in these areas with two public Waldorf schools having to go through the court system to prove they were not a religious school in order to receive state funding (Retrieved from: <http://www.waldorfanswers.com/Lawsuit.html>). The motion submitted by the agency PLANS (*People for Legal and Nonsectarian Schools*) was denied, but the issue of spirituality continues to be critical both for the parents and for the public at large. As such, Waldorf teachers participating in the Public School Institute in Sacramento learn the physical and emotional developmental aspects of Waldorf, rather than the spiritual dimension.

The challenge faced by Waldorf parents who misunderstand the tenets of the philosophy is further exacerbated by the existing policy structure. A delay in academics, as is prescribed by Waldorf, will necessarily bring about low test scores in the early grades. This will impact a school's rating on NCLB measures and can make parents worried that their child is being "left

behind" academically. It will be necessary not only to change public opinion but also change national policy of measuring a school based only on test scores if Waldorf is to be able to succeed in the public sector.

In an evaluation of the potential of bringing Waldorf into the mainstream in England, Woods, Ashley, and Woods (2005) make several recommendations. First, with regard to the use of a National Curriculum, Woods et al. (2005) recommend the "disapplication of Steiner schools from the requirements of the National curriculum" (p. 10). They further recommend the allowance for evaluation of schools based on measures other than National tests and assessments. These allowances would certainly go a long way towards creating opportunities for schools, such as Waldorf, to follow unique curricular and pedagogical practices that may hold significance for understanding alternative means of educating.

Our findings from the QCA suggest that public Waldorf schools are able to provide a more holistic experience for their students, while giving them the ability to be ultimately successful in academics over the course of a K-8 education. This study draws into question the value of early test scores as predictors for later performance for students in Waldorf schools. Based on our data, early test scores provide poor predictive value as to the quality of education of Waldorf students are receiving at least as measured by test scores and national rating scales. Even parents who spoke poorly about Waldorf in the later grades praised Waldorf for its treatment of early childhood and the early grades. This lack of correspondence of test scores to qualitative measures of schools performance should be a considerable concern for policy makers who support testing in the early grades. If we are to gauge schools based on test scores then these tests should at least be reliable measures of student outcomes in later grades. If not, then we must question the expense, time and stress of testing at all. Until reliable measures of school quality are available, the impact of testing should be minimized, especially in the lower grades.

The findings presented here were drawn from extant data, primarily from schools in California, and therefore generalizability of the data may be limited. Nonetheless, these results support further investigation into the Waldorf approach and indicate it may have potential for guiding pedagogy towards a more holistic approach in public education. Future research should examine the emergence of cognitive capacities such as creativity, flexibility, and innovation specifically in students participating in public Waldorf schools.

As holistic education grows in the public sector, there is the need to support the approach as reliable and valid. Perhaps the most significant support may come from an unlikely source, findings from the brain sciences. In their new book, *Educating the Whole Child for the*

Whole World, editors Suarez-Orozco and Sattin-Bajaj (2010) include a section on the emerging field of Mind, Brain and Education (MBE). MBE is a program co-founded by one of the central figures in modern holistic approaches to education, Howard Gardner. The primary goal of this initiative as defined by another of the founding members, Kurt Fischer is “to join biology, cognitive science, development, and education in order to create a sound grounding of education in research” (Fischer, 2009, p. 3).

MBE is a growing field that holds promise for holistic educators (Sousa, 2010; Tokuhama-Espinosa, 2011). A recently published report on Neuroeducation calls for the use of music and the arts, not as a means of enrichment, but as a means of building cortical circuits critical for success in writing, reading and mathematics (Hardiman, Magsamen, McKhann, & Eilber, 2009). There is also a long history of research speaking to the importance of play as the primary source of learning for young children with continued supporting evidence from the brain sciences (Singer, Golinkoff, & Hirsh-Pasek, 2006). Given this growing awareness from the brain science on the beneficial aspects of holistic practices, it is not surprising that the Waldorf curriculum with its full two year play-based kindergarten and fully integrated arts-based curriculum is gaining attention.

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APPENDIX I
Public Waldorf Schools

Alice Birney Waldorf^{a, b, c, d}
Sacramento, CA

Blue Oak Charter^{b, d}
Chico, CA

Coastal Grove Charter School^{a, b, c, d}
Arcata, CA

Desert Marigold School^{a, d}
Phoenix, AZ

Desert Star^d
Yavapai, AZ

Golden Valley Charter^{a, b}
Sacramento

Journey Charter School^{a, b, c, d}
Aliso Viejo, CA

Lighthouse School^{a, d}
North Bend, OR

Live Oak Charter^{a, b, c, d}
Petaluma, CA

Monterey Bay Charter School^{a, b, c, d}
Pacific Grove, CA

Mountain Mahogany^d
Albuquerque, NM

Mountain Oak School^{a, d}
Prescott, AZ

Novato Charter School^{a, b, c, d}
Novato, CA

Ocean Charter School^{a, b, c, d}
Los Angeles, CA

Pine Forest Charter School^{a, d}
Flagstaff, AZ

Portland Village School^d
Portland, OR

River Oak Charter School^{a, b, d}
Ukiah, CA

Sebastopol Independent Charter^{a, b, c, d}
Sebastopol, CA

Stone Bridge School^{a, b, c, d}
Napa, CA

SunRidge Charter School^{a, b, c, d}
Sebastopol, CA

The Urban Waldorf School^a
Milwaukee, WI

The Village School^{a, d}
Eugene, OR

Woodland Star Charter School^{a, b, c, d}
Sonoma, CA

Yuba River Charter School^{a, b, d}
Nevada City, CA

(a=Data Set A, b=Data Set B, c=Data Set C,
d=Qualitative Data Set)

APPENDIX II
Matched Comparison Schools

Academy for Academic Excellence_{c, d}
San Bernadino

Alder Grove Charter_{b, d}
Humboldt

Apple Blossom_{b, d}
Sonoma

Brook Haven Elementary_{b, d}
Sonoma

Forest Charter_{b, d}
Nevada

Hesby Oaks_{b, d}
Los Angeles

Hooker Oak Elementary_{b, d}
Butte

International School of Monterey_{b, c, d}
Monterey

Ivy Academia_{c, d}
Los Angeles Unified

Julian Charter_{c, d}
San Diego Unified

Las Flores Middle School_{b, d}
Capistrano Unified

Leonardo Da Vinci_{b, c, d}
Sacramento

Mendocino Elementary_{b, d}
Mendocino

Natomas Charter #19_{c, d}
Sacramento

Ottoman Way Elementary_{b, d}
Sacramento

Pleasant Valley Elementary_{b, d}
Marin

Ramona Community_{c, d}
San Diego

River Charter_{b, d}
Napa

Sanger Academy Charter_{c, d}
Fresno

Santa Rosa Charter_{b, c, d}
Sonoma

Sinaloa Middle_{b, d}
Marin

Sonoma Charter_{b, c, d}
Sonoma

Temecula Preparatory_{c, d}
Temecula Valley Unified

Tijeras Creek Elementary_{b, d}
Capistrano Unified

Twin Hills Middle_{b, d}
Sonoma

Vichy Elementary_{b, d}
Napa

(b=Data Set B, c=Data Set C, d=Qualitative Data Set)

APPENDIX III
Autocodes

21st CENTURY SKILLS – century skill, century learn, creativity, critical think, imagination, innovation, problem solv, solve problem, think critical

ACADEMICS –academic, homework, home work

ART & MUSIC-art, music

COMMUNITY –community, community

CURRICULUM-curricul, curicul, cirricul, ciricul

DEVELOPMENTALLY APPROPRIATE PRACTICE-develop, pace, rate of learn, speed

SECOND LANGUAGE – foreign lang, foriegn lang, French, Japanese, Spanish

HOLISTIC – whole child, holist, child centered, well (-) rounded

LEADERSHIP-admin, board, director, director, leader, organiz, principal

LOVES LEARNING – life(-)long learn, love(s) school, love(s) going to school, love(s) to learn, love(s) learn, love of learn

PARENT INVOLVEMENT-fund raising, fundraising, parent involv, parent participation, volunteer, volunter

TEACHERS –teacher, staff, faculty

TESTING – score, test

WORLD CITIZENS—citizen, citez, world, glob, future, societ, steward, environmental, earth, planet

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