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The Hill Center Student Achievement Study: 1995 - 2004

Prepared for

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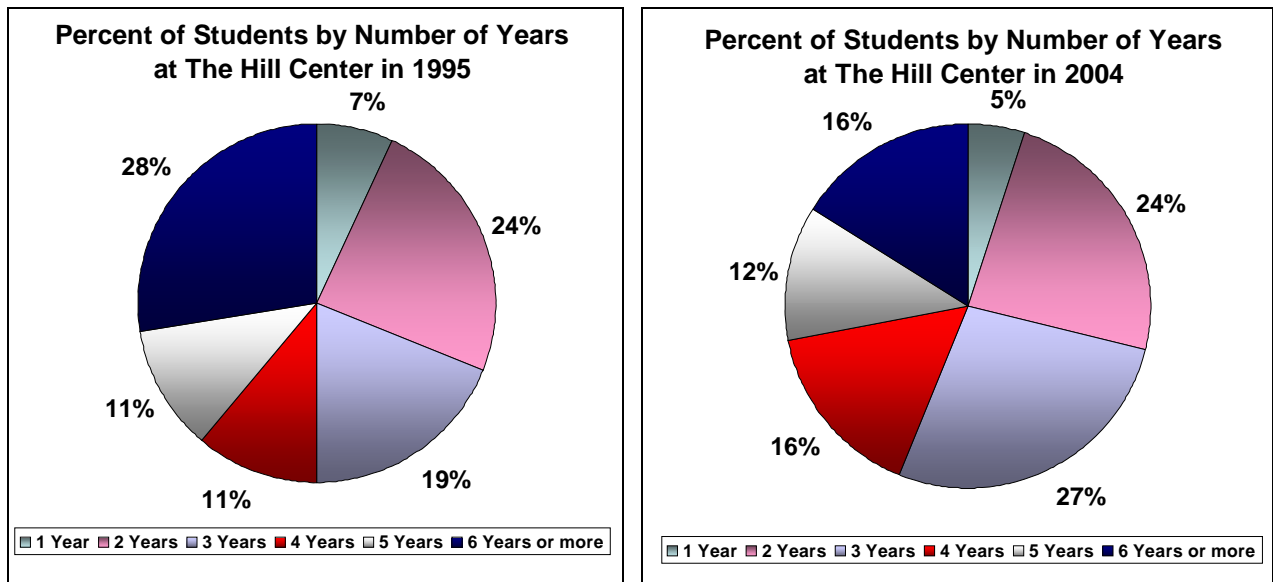
The mission of The Hill Center is to provide specialized multisensory instruction in a caring environment, enabling students with learning disabilities or attention deficit disorder to achieve their full potential. As a comprehensive resource center, The Hill Center also supports families, offers professional development opportunities, collaborates in clinical research, and promotes community outreach to help students become successful independent learners. The information in this document is based on 578 students who attended The Hill Center between 1995 and 2004.

In many ways, The Hill Center’s student population has been consistent over the past ten years. However, a closer examination of the demographics reveals that subtle changes have taken place in terms of the characteristics of students who attend and the duration of their attendance.

The Hill Center students are distributed evenly across grade levels. In 2004, 41% of the students were in high school (grades 9–12), 31% of the students were in middle school (grades 6–8), and 28% of the students were in elementary school (grades 1–5). These proportions have not changed over the past ten years.

While the majority of the population served is Caucasian (80% in 2004), over the past ten years there has been an increase in the minority population from 8% to 20%. African-American students represent the largest increase in this population. In 1995, only 5% of The Hill Center’s students were African-American; today, their numbers have reached 11%. Likewise, females represented only 20% of the school’s population in 1995, compared to 30% in 2004.

In 2004, most students attended The Hill Center for a two or three year time period. During the past ten years, the length of time that students have remained at The Hill Center has been stable, with a slight decrease in the number of students who stay for 6 or more years and a slight increase in the number of students who stay for three and four years.¹



¹ All students enrolled at any time during 1995 to 2004 were included in the data presented on this page.

Changes in Achievement While Attending The Hill Center

Explanation of Standard Score

This report is based on standard scores, which are generally used when studying changes over time. For example, standard scores are used to determine the amount of student growth during the period of enrollment at The Hill Center. "Standard" simply means that the scores have been transformed from the raw scores for convenience in analysis and for ease and accuracy of interpretation.

Standard scores reported here are somewhat analogous to IQ scores in that a student who makes the amount of growth expected for a child of his/her age during a single year of school would have the same standard score during the second year (post-test) as during the first (pre-test). For example, if a person scores 115 on an IQ test at the age of 18 and then repeats the test ten years later, a score of 115 would be expected. The difference in the two scores would be zero. This does not mean the person hasn't grown, changed, or learned new things over time. It simply means that the person has accomplished those things that are expected of someone at that particular ability level.

As with IQ scores, the expected amount of change in a child's standard score from one year to the next would be zero. Any change above zero indicates the child is learning at a greater rate than expected for an average child at that age. Less than zero indicates the reverse: that the child is actually losing ground with respect to his/her peers. When scores for a number of students are averaged, anything above zero indicates the collective improvement of that group of students. The average standard score is 100, and scores between 90 and 110 are considered to be in the average range.

Differences between the Woodcock-Johnson R and Woodcock-Johnson III

Between 1995 and 2001 students at The Hill Center took the Woodcock-Johnson R test. In 2002, the Woodcock-Johnson III test was created, and from that time to the present students have taken this version. The Woodcock-Johnson III is a revised and expanded version of the Woodcock-Johnson R. One addition to the test is that the Woodcock-Johnson III measures fluency, which is important to students' success. Because the two tests are different, scores between them should not be compared. Unless otherwise noted, all of the graphs in this report only represent data from the Woodcock-Johnson R.

How do Hill Center students' reading, writing, and math skills change over time?

As the table below illustrates, data show that students improved their skills at a significantly faster rate than expected for the average student of the same age in all areas tested by the Woodcock-Johnson R and the Woodcock-Johnson III—Broad Math, Broad Reading, Broad Written Language, Math Fluency, Reading Fluency, and Writing Fluency—during their time at The Hill Center.² On the Woodcock-Johnson R, for Broad Math 85% of students improved their

² From this point on 30 students with IQ scores lower than 85 have been deleted from the data set because they are not representative of the typical Hill Center student. In addition, students who were enrolled during 1995–2004 who

skills at a faster rate than the average student, for Broad Reading 82% of students improved their skills at a faster rate than the average student, and for Broad Written Language 77% of students improved their skills at a faster rate than the average student.

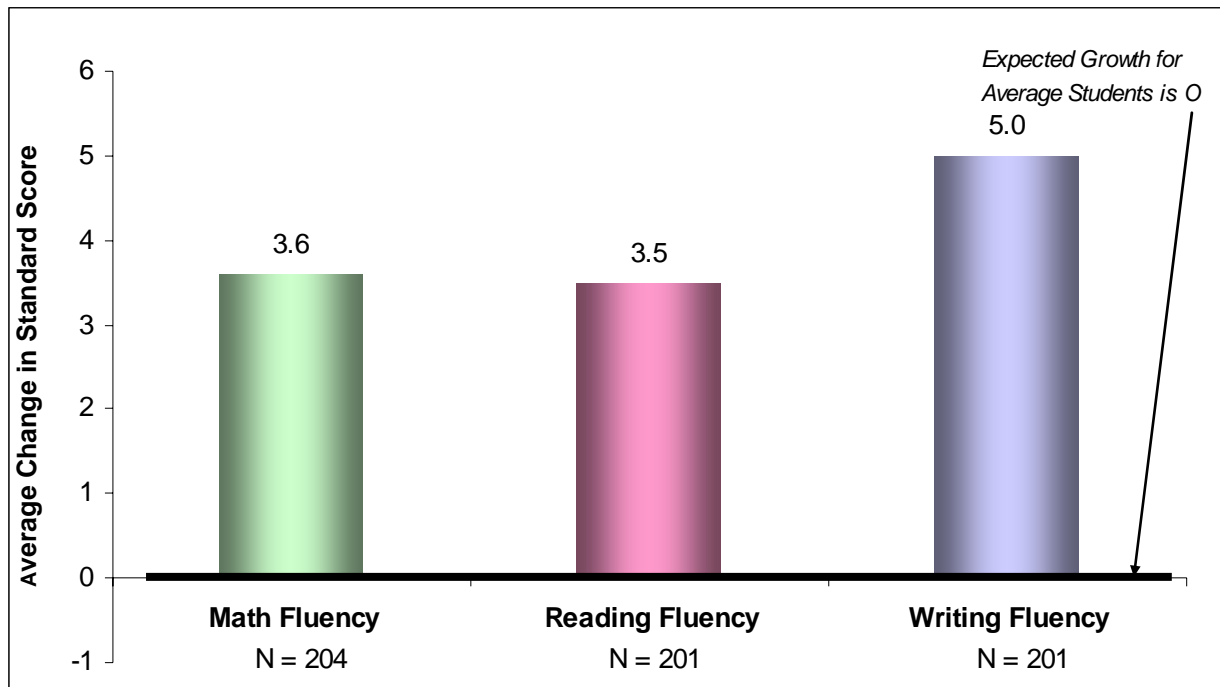
Change in Woodcock-Johnson Subtest Scores from Enrollment to 2004

Achievement Subtests	Woodcock-Johnson R (1995–2001)		Woodcock-Johnson III (2002–2004)	
	Change in Standard Score	Total Number of Students	Change in Standard Score	Total Number of Students
Broad Math	12.9	287	3.5	203
Broad Reading	9.5	288	3.4	202
Broad Written Language	7.7	287	3.6	204
Math Fluency	NA	NA	3.6	204
Reading Fluency	NA	NA	3.5	201
Writing Fluency	NA	NA	5.0	201

There are no fluency tests for the Woodcock-Johnson R.

The graph below illustrates that students attending The Hill Center improved more than expected of the average student on their fluency in math, reading, and writing. Fluency is a critical skill; for example, reading fluency is a critical component of a student’s ability to comprehend material at higher levels.

Improvement on the Woodcock-Johnson III Fluency Scores from Enrollment to 2004



began attending The Hill Center before 1995 were also deleted from the data set in order to represent students’ growth beginning from the time they began attending The Hill Center.

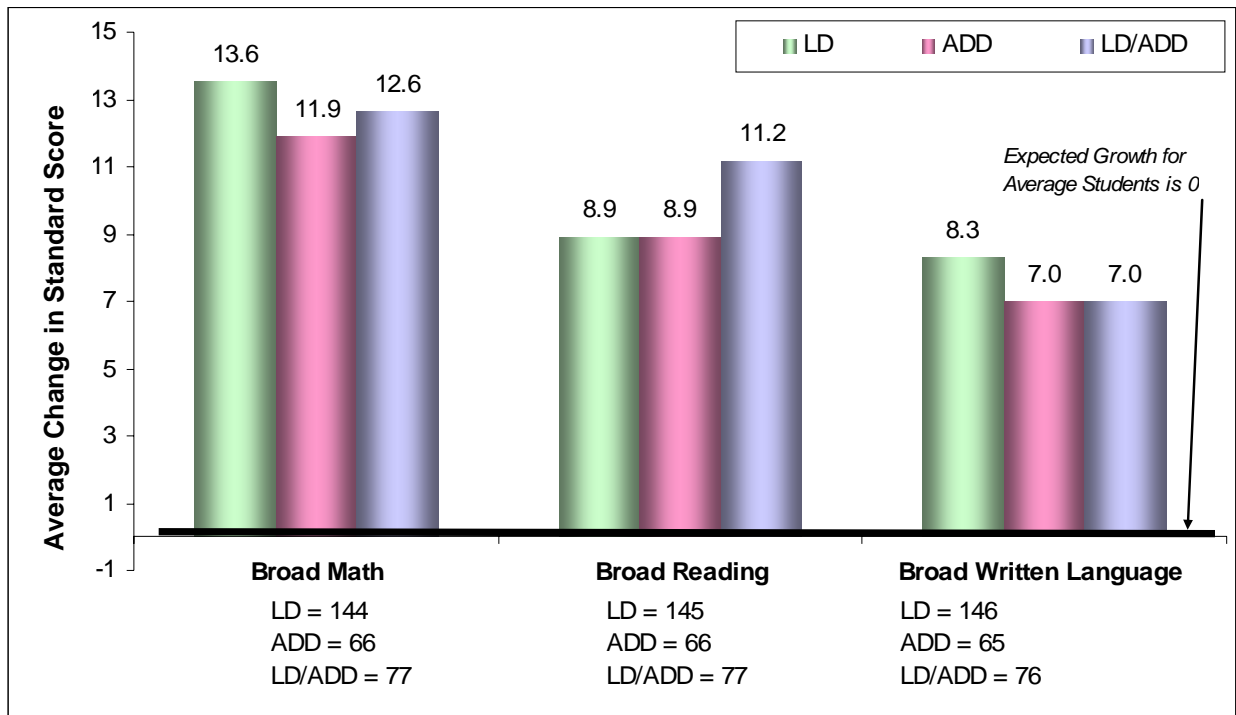
Does The Hill Center Help Some Groups of Children More Than Others?

In the next section, we explore whether some groups of children are helped more by The Hill Center than other groups of children. We compare students divided into groups by type of disability, IQ, initial achievement level (their score on the Woodcock-Johnson test when they enrolled at The Hill Center), gender, and race/ethnicity. The only difference found in these analyses was based on a student's initial achievement level; students with below average initial achievement improved more on the Woodcock-Johnson R than students with average initial achievement who, in turn, improved more than students with above average initial achievement. All of the other tests we conducted show that The Hill Center is equally effective for students with a wide range of characteristics.

Does the type of disability make a difference in academic achievement?

As can be seen in the graph below, The Hill Center methodology works equally well for students with learning disabilities (LD), attention deficit disorder (ADD), and LD/ADD.³ Improvement at a rate faster than expected of the average student is demonstrated by all three groups of students on all subtests of the Woodcock-Johnson R.

Improvement on the Woodcock-Johnson R from Enrollment to 2001 by Disability



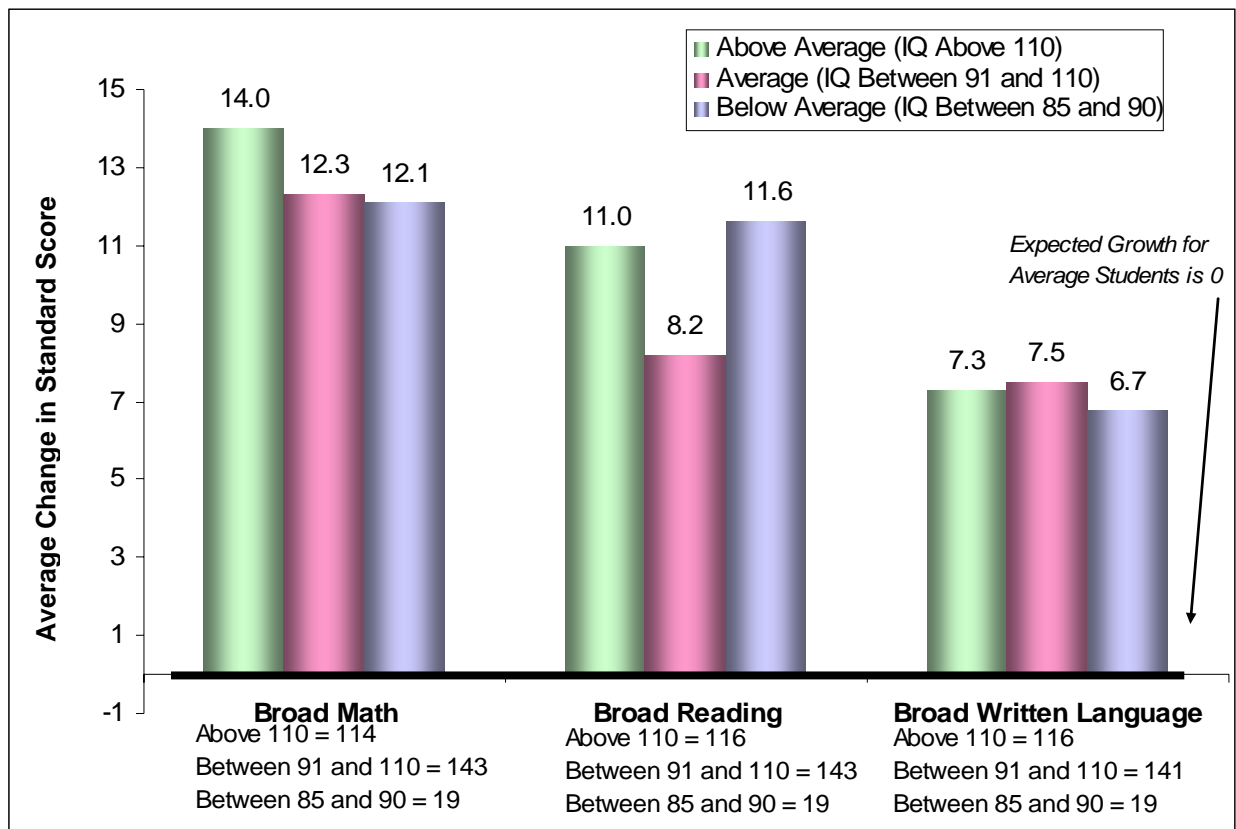
³ Starting 2002 the Woodcock-Johnson III was administered, which cannot be compared directly with the Woodcock-Johnson R that was administered until 2001. Thus, students who were only enrolled from 2002 and beyond are not included in any graphs throughout the rest of this report.

Are students' IQ levels related to students' academic gains?

The Hill Center methodology is beneficial for students with LD or ADD at most IQ levels (while some students at The Hill Center are considered to have a below average IQ, very few of them have IQ scores below 85). There are no significant differences in the amount of improvement in achievement scores based on the student's IQ. Students at all IQ levels improved at rates faster than those expected of the average student.

Students with below average IQs initially scored below the average range (91 – 110) in Broad Math (87.5) and Broad Written Language (84.2) but improved enough during their time at The Hill Center to score in the average range (Broad Math = 99.6, Broad Written Language = 90.9). These students also initially scored at the bottom of the average range in Broad Reading (90.1) but increased to a score of 101.7 (an increase of 11.6 points) by the time they left The Hill Center. Students with average IQs initially scored in the middle of the average range in Broad Math (98.1) and improved enough to score at the top of the average range (110.4). Students with average IQs also initially scored below the average range in Broad Written Language (86.2) but improved enough to score within the average range (93.7). Student with above average IQs initially scored in the average range in Broad Reading (106.2) but improved enough to score above the average range (117.2).

Improvement on the Woodcock-Johnson R from Enrollment to 2001 by IQ

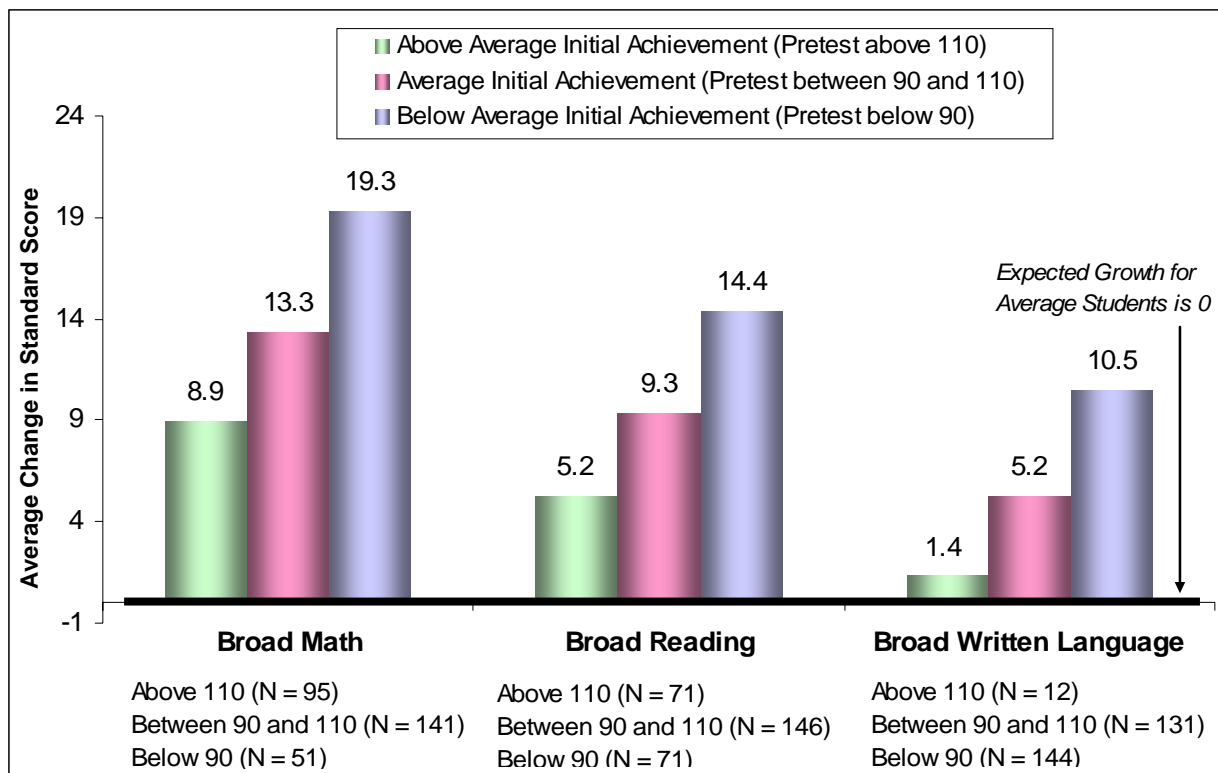


How does initial achievement level affect students' academic gains while at The Hill Center?

All students showed improvement greater than that expected of the average student regardless of their initial achievement level at enrollment (with the exception of students with above average initial scores in Broad Written Language). However, on the Broad Math and Broad Reading assessments, students with below average initial achievement showed faster improvement than students with average initial achievement, who, in turn, showed faster improvement than students with above average initial achievement. In Broad Written Language students with below average initial achievement improved faster than students with both above average and below average achievement. Generally, students who begin the program at higher levels of achievement have less room to improve compared to students who begin at lower levels of achievement.

For all three subject areas, students with below average initial achievement scored below the range for average students (90–110), but by time they left The Hill Center, their scores improved enough to move them well into the average range (pre-test score math = 80.8, post-test score math = 100.0; pre-test score reading = 81.5, post-test score reading = 95.8; pre-test score written language = 80.2, post-test score written language = 90.1). For Broad Written Language, students with below average initial achievement scored below the average range (80.2) and improved enough to score in the average range (90.7).

Improvement in Woodcock-Johnson R from Enrollment to 2001 by Woodcock-Johnson R Score at Enrollment

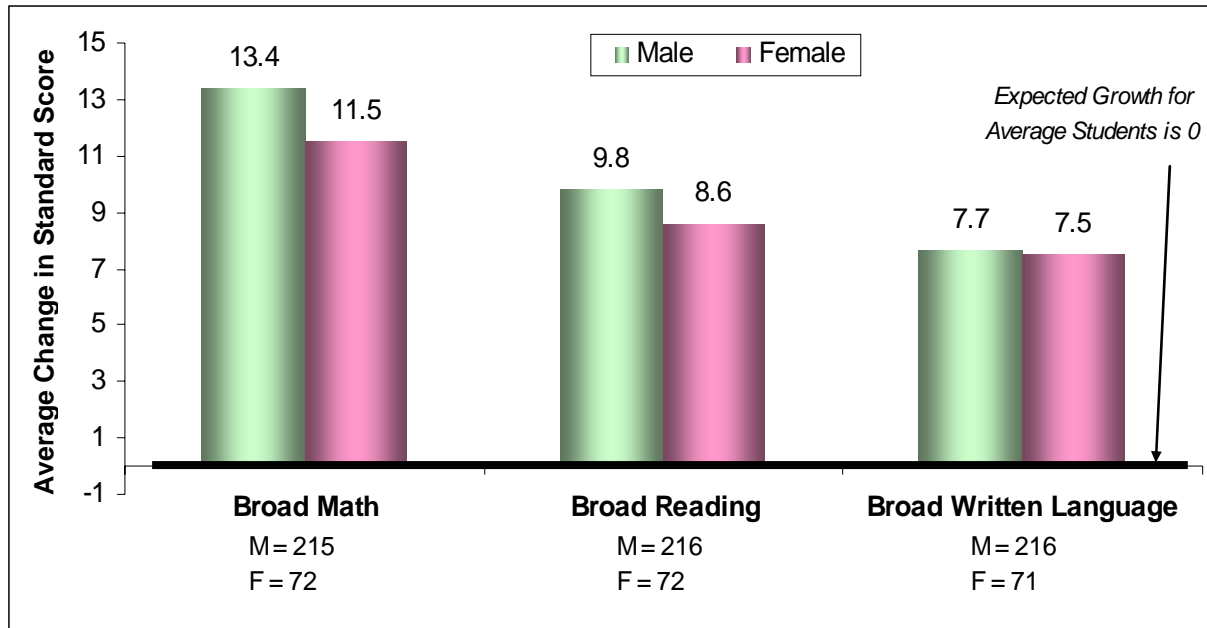


Are there differences in academic achievement based on gender?

As can be seen in the graph below, boys and girls are equally successful in their work at The Hill Center. Both boys and girls improved at rates faster than those expected of the average student.

Boys initially scored within the average range in Broad Mathematics (104.6) and improved enough to score above the average range (118.0). Girls also scored within the average range in Broad Mathematics (99.4) and improved enough to score above the average range (110.9).

Improvement on the Woodcock-Johnson R from Enrollment to 2001 by Gender

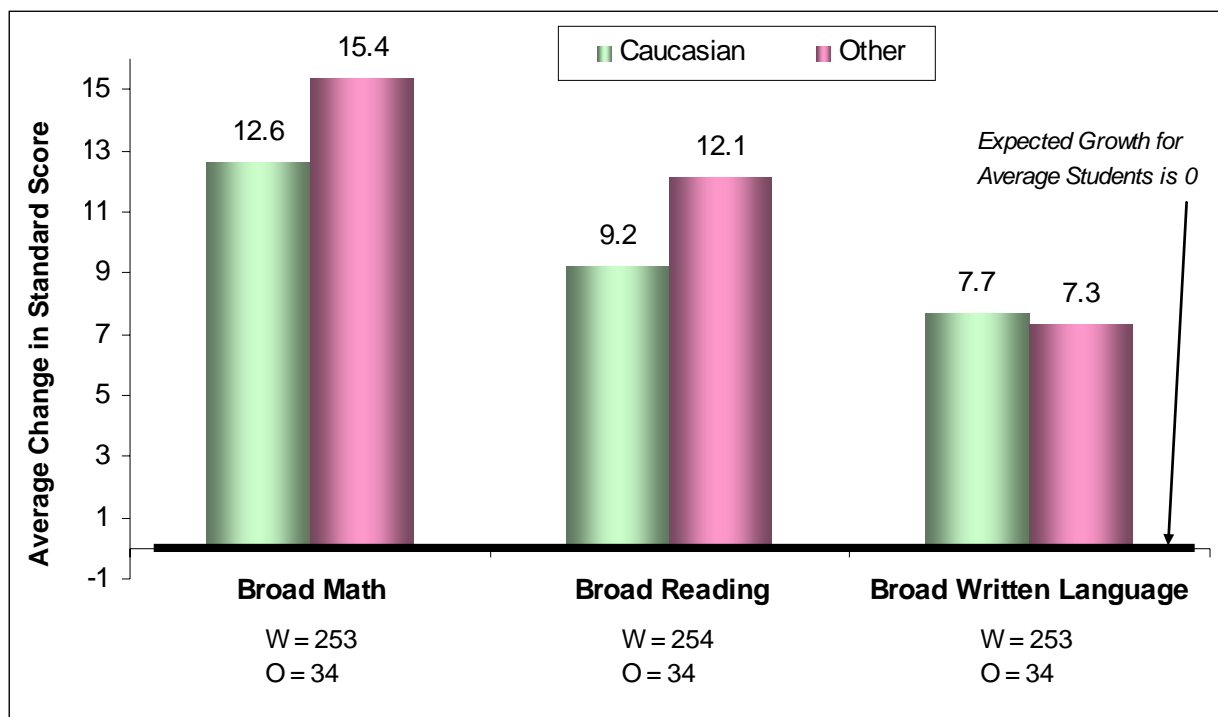


Are there differences in academic achievement based on race/ethnicity?

Data show that The Hill Center program is equally beneficial for students of all races/ethnicities. As the graph below illustrates, achievement levels on the Woodcock-Johnson R for students of all races/ethnicities grew at a greater rate than that expected of the average student.

Caucasian students initially scored within the average range in Broad Mathematics (103.7) and improved enough to score above the average range (116.3). Students of other ethnicities also initially scored within the average range (100.6) in Broad Mathematics and improved enough to score above the average range (116.0). Students of other ethnicities also initially scored in the below average range (86.3) in Broad Written Language and improved enough to score within the average range (93.6).

Improvement on the Woodcock-Johnson R from Enrollment to 2001 by Race/Ethnicity



Do students benefit by attending The Hill Center for more than one year?

The next section presents changes in students' scores over time. The first three graphs divide the students by the number of years that they were enrolled at The Hill Center, and the second three graphs divide students by their achievement level at the time they entered The Hill Center. Once again, for all the graphs, a score of 100 is the score that we expect from an average student. The shaded range between 90 and 110 represents the range of points that is considered "average."⁴

How do the achievement scores of students at The Hill Center change based on number of years enrolled there and by initial achievement level?

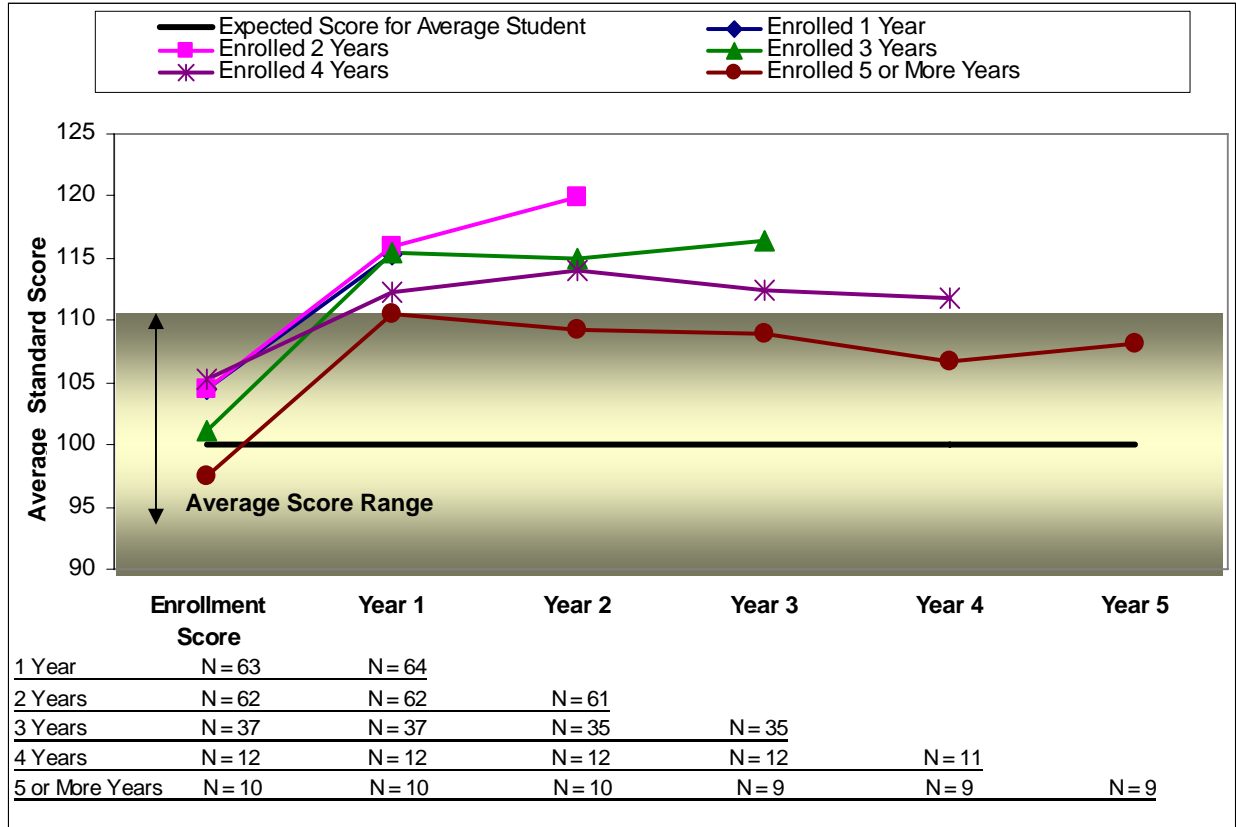
The following three graphs show the change in standard scores based on the number of years a student has attended The Hill Center.

⁴ In order to examine the relationship between students' scores and the number of years that they stay at The Hill Center we only included students whose full period of attendance at The Hill Center fell between 1995 and 2001.

Key Points for the Broad Math Subtest:

- All students scored with the average range when they enrolled in The Hill Center.
- After one year, all students scored above the average range.
- All students made the most progress during their first year (between 9 and 13 points).
- Students who had the highest scores early on tend to stay at The Hill Center for shorter amounts of time (3 or fewer years).

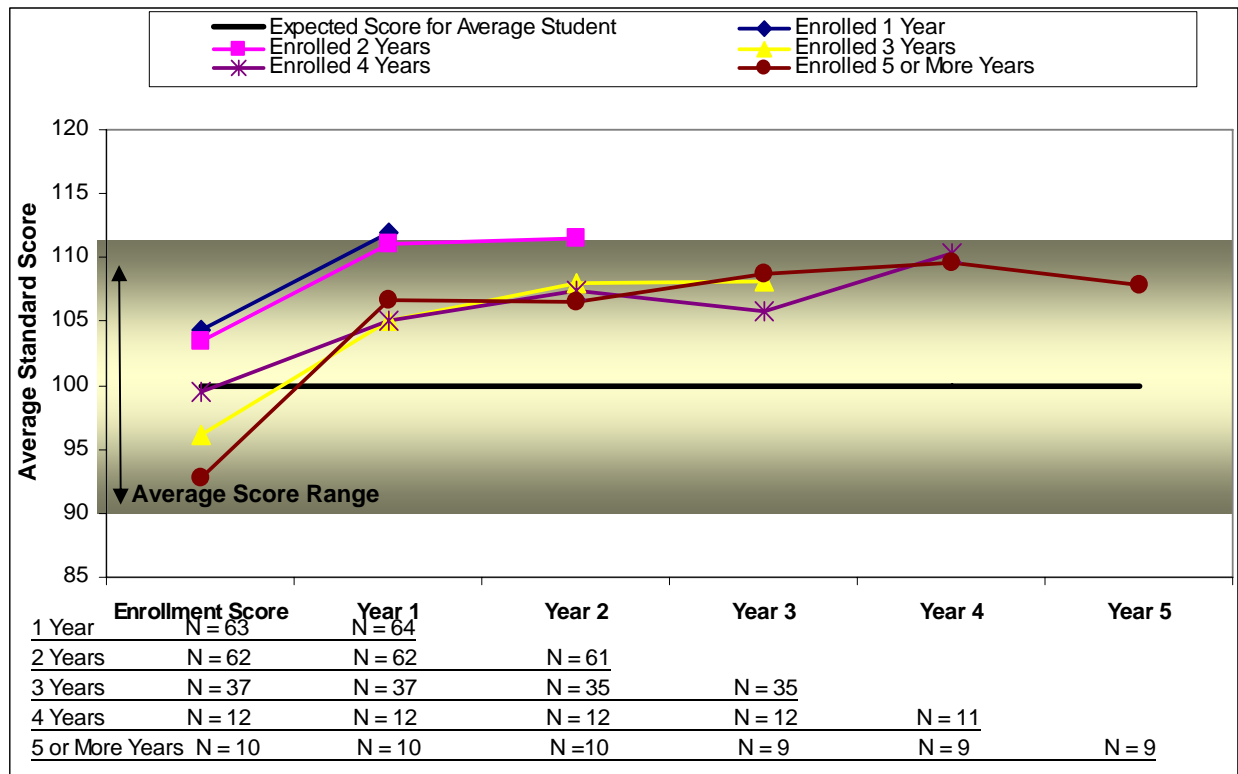
Broad Math Standard Score by Number of Years of Enrollment



Key Points for the Broad Reading Subtest:

- All students scored within the average range when they enrolled in The Hill Center.
- After one year, students who were enrolled for one or two years scored just above the average range
- All students made the most progress during their first year (between 8 and 14 points)

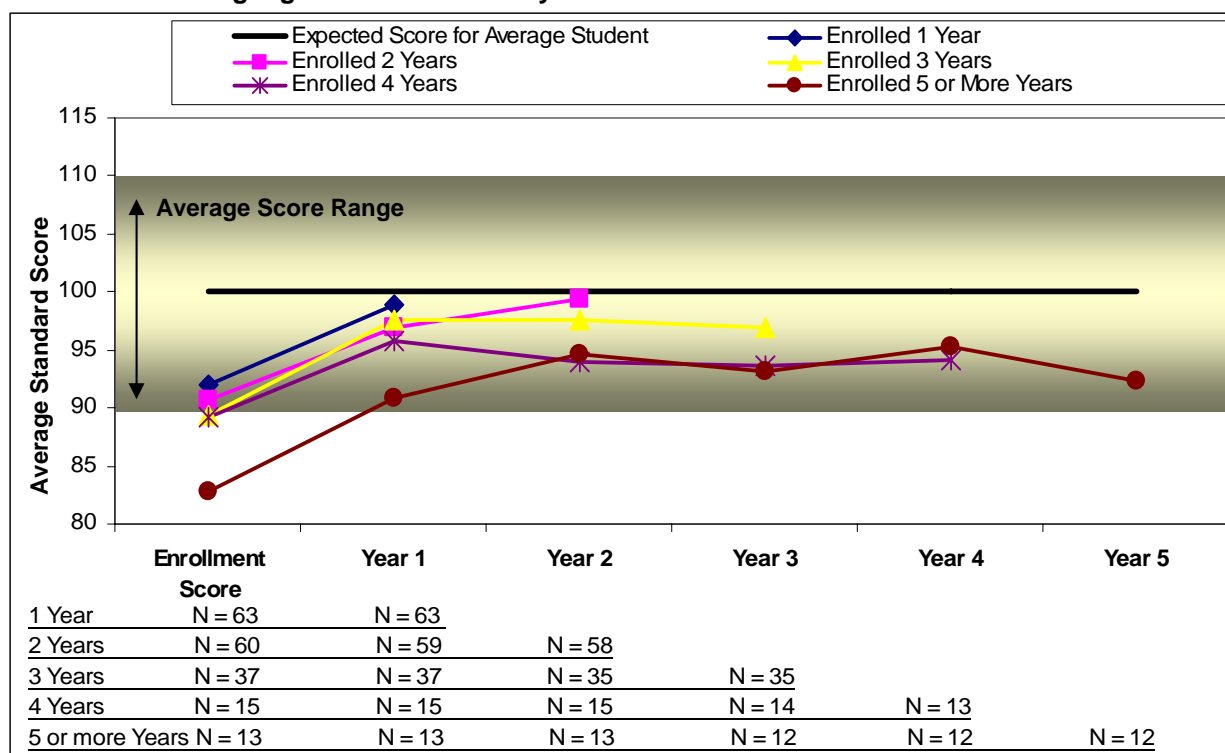
Broad Reading Standard Score by Number of Years of Enrollment



Key Points for the Broad Written Language Subtest:

- Students enrolled for one to four years scored at the bottom of the average range when they enrolled in The Hill Center.
- After one year, all students scored within the average range.
- All students made the most progress during their first year (between 6 and 8 points)
- Students who had the highest scores early on tend to stay at The Hill Center for the shorter amounts of time (1 or 2 years).

Broad Written Language Standard Score by Number of Years of Enrollment



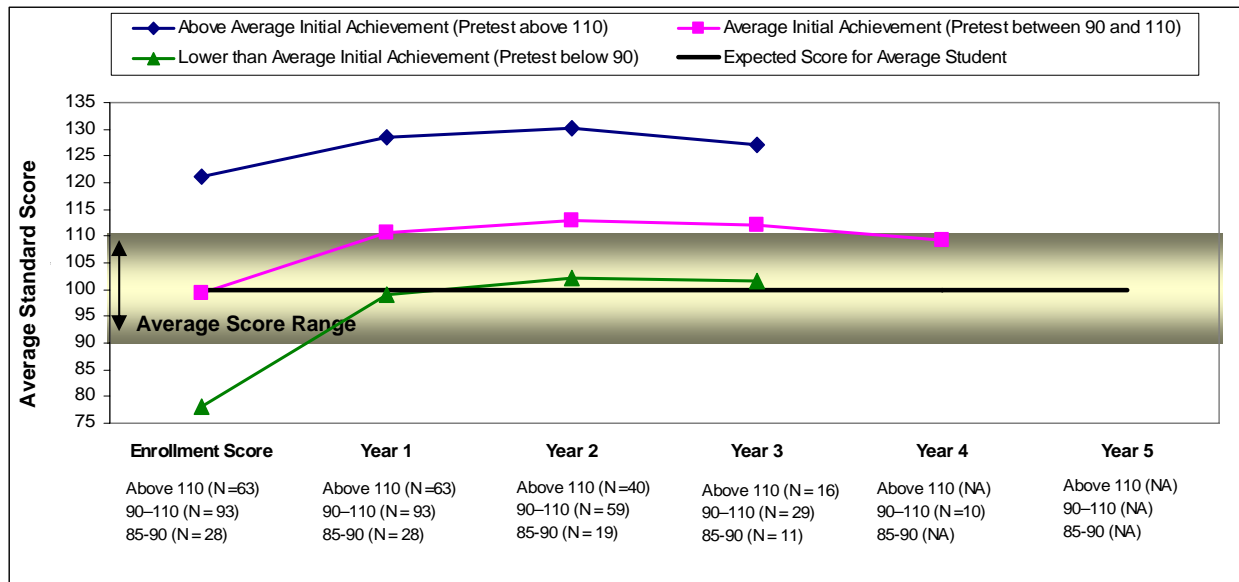
How do the achievement scores of students at The Hill Center change based on number of years enrolled there and by initial achievement level?

The following graphs show changes over time in students' achievement scores when students are divided into three groups based on their initial achievement level (above average initial achievement, average initial achievement, and below average initial achievement). One thing to notice is that the number of students (N) decreases with each year. This is due to the fact that different students stay at The Hill Center for different lengths of time. Overall, students show a great deal of improvement early on and tend to maintain that improvement through at least their third year. As the number of students decrease, we expect some decline in average test scores simply because the students who have improved the most tend to no longer be enrolled at The Hill Center. Scores that decline over time may reflect a tendency for students to leave The Hill Center once their scores have improved rather than a lack of benefit from staying longer at The Hill Center.

Key Points for the Broad Math Subtest:

- Regardless of their initial math achievement, all students made the most progress during their first year at The Hill Center, and for the most part, maintained those gains through subsequent years.
- Students whose initial achievement scores were below average moved into the average range after one year at The Hill Center and stayed in that range.

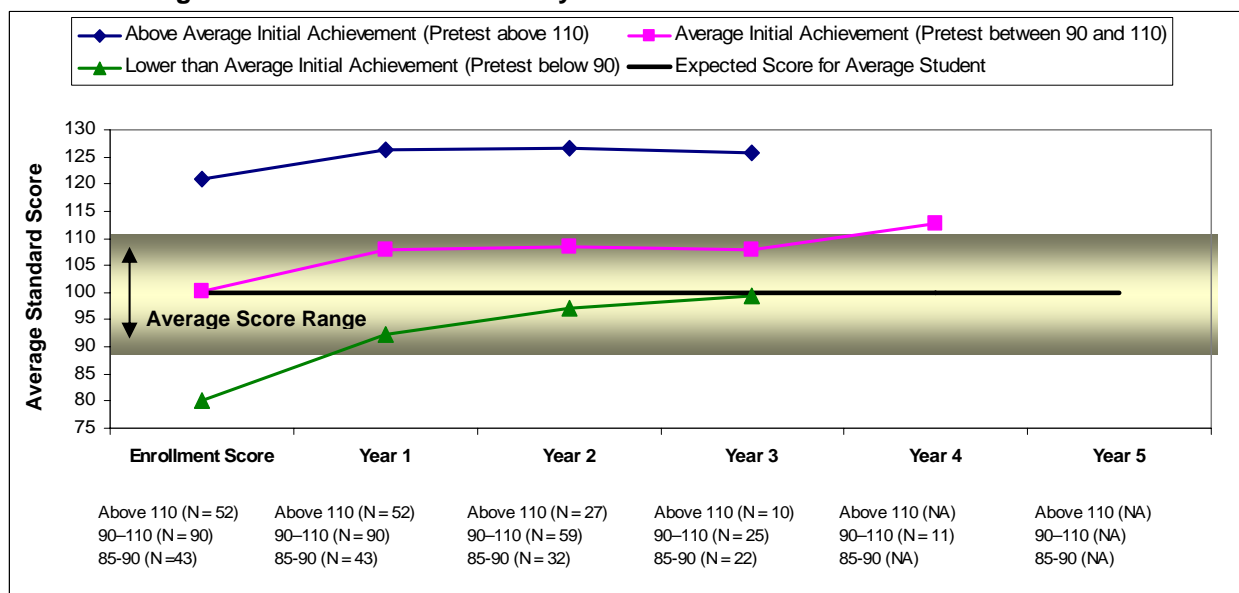
Broad Math Standard Score Over Time by Woodcock-Johnson R Score at Enrollment



Key Points for the Broad Reading Subtest:

- Regardless of their initial achievement level in reading, all students made the most progress during their first year at The Hill Center, although students with below average initial achievement made substantial progress during their second year at The Hill Center as well.
- Students whose initial achievement scores were below average moved into the average range after one year at The Hill Center and continued to increase after that.

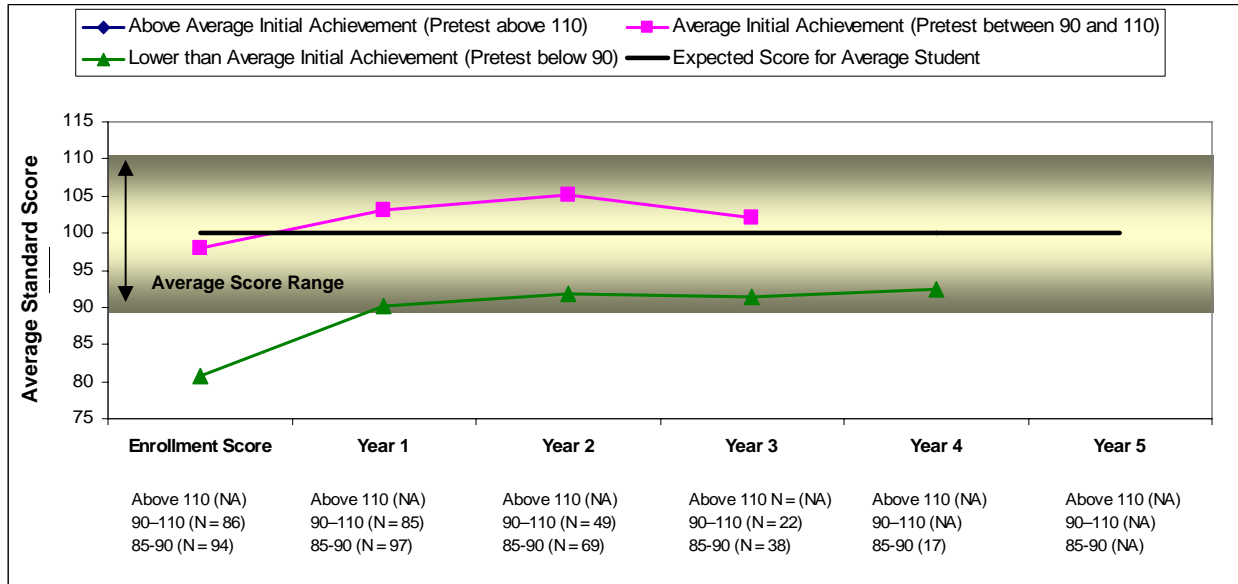
Broad Reading Standard Score Over Time by Woodcock-Johnson R Score at Enrollment



Key Points for the Broad Written Language Subtest:

- For written language, the scores of students with both average and below average initial achievement increased the most during their first year at The Hill Center.
- Students with below average initial achievement moved into the average range after one year at The Hill Center and maintained that increase throughout their time at The Hill Center.

Broad Written Language Standard Score Over Time by Woodcock-Johnson R Score at Enrollment



Summary

Achievement data collected over the past ten years indicate that, from the time they enroll at The Hill Center until the time they leave, students significantly improve their achievement in math, reading, and written language. They improve their skills in these areas at a rate that is faster than expected for average students of the same age who do not have a diagnosed learning difference.

The Hill Center's student population has been fairly consistent over the past ten years in terms of demographic characteristics and length of time at The Hill Center. However, a close examination of the demographic data reveals that a few subtle changes have taken place in the student population and the duration of student attendance. Over the past ten years there has been an increase in the minority population from 8% to 20%. Likewise, females represented only 20% of the school's population in 1995 compared to 30% in 2004. Over the past ten years, students attended The Hill Center on average for two or three years, with a slight decrease in the percentage of students staying 6 years or more, and a slight increase in the percentage of students staying three and four years.

The Hill Center helps a wide variety of students improve their academic achievement. In math, reading, and written language, boys and girls improve equally well, and students of different races/ethnicities, when viewed collectively, also improve equally well. In addition, students with a learning disability, attention deficit disorder, or both, improve at equal rates, and students with slightly below average, average, and above average IQs improve at equal rates. In math and reading, students who had below average achievement when they enrolled at The Hill Center improve at a faster rate than students with average achievement upon enrollment, who, in turn, improve at a faster rate than students with above average achievement upon enrollment.

In math, reading, and written language, students make the most improvement during their first year at The Hill Center and tend to maintain this increase in subsequent years. Students who have below average achievement scores when they enroll at The Hill Center typically improve their scores so that they have average achievement scores in all three subject areas after one year.

Thus, data examined for “The Hill Center Student Achievement Study: 1995-2004” show that over ten years, regardless of gender, race/ethnicity, or type of disability, students enrolled at The Hill Center showed significant improvement in achievement scores and that improvement was greater than would normally be expected from students of the same age who do not have a diagnosed learning difference.

Developed by RTI International
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