The impact of early screening on preschool children attending Camden City Head Start

Beverly M. Clement
Rowan University

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THE IMPACT OF EARLY SCREENING ON PRESCHOOL CHILDREN ATTENDING CAMDEN CITY HEAD START

by Beverly M. Clement

A Thesis
Submitted in partial fulfillment of the requirements of the Master of Arts Degree of The Graduate School at Rowan University May, 1999

Approved by __________________________ Professor

Date Approved ___________________________ July 21, 1999
Extensive published research supports comprehensive preschool programs for children and their families, especially for "At Risk" populations often found within inner cities. Programs such as Head Start prepare children for school entrance, provide them with a caring and nurturing environment and empower families with the skills and resources necessary for successful living.

The Camden County Council On Economic Opportunity (CCCOEO, Inc.), grantee for the Camden County, New Jersey Head Start Program, provides comprehensive services for "At Risk" preschool children, ages three to five.

Starting in September 1998 to March 1999, sixty-seven preschoolers attending various CCCOEO Head Start Centers were given the BRIGANCE® Preschool Screen for three and four year olds. Children scoring below suggested cutoff scores, were rescreened. Scores were compared to the suggested cutoff scores, and recommendations were made. A pre-test/post-test format compared
returning four year olds BRIGANCE® scores with four year old children who had never attended a Head Start program. Children having scores that fell below the recommended cutoff, were rescreened by Special Needs teachers, within two to six months of the original screening date. Children with appropriate scores were not rescreened. Results were compiled into a data base and statistically analyzed by two Nonparametric tests, and presented visually by graphs and charts. Three hypothesis were confirmed by the statistics presented. Analysis of the median and mode scores, and proof through Nonparametric tests shows the overall average for new and returning students as different, with new students being lower, for the entire data set and for the data set with LD excluded, proving Head Start as a beneficial program for “At Risk” Preschoolers.

Further analysis of the data reveals 22 students detected by the BRIGANCE® Screen, as having probable developmental disabilities or academic delay. Twelve are referred, evaluated and positively identified as students with learning disabilities. Accuracy of detection and identification equals 100 percent for the first twelve students, leading to the assumption of positive identification of learning disabilities for the remaining ten students, once properly referred and evaluated.
MINI-ABSTRACT

Beverly M. Clement

THE IMPACT OF EARLY SCREENING ON PRESCHOOL CHILDREN ATTENDING CAMDEN CITY HEAD START

1999

Dr. Stanley Urban: Thesis Advisor
Master of Arts Degree Program in Learning Disabilities and LDT/C Certification of The Graduate School at Rowan University

Head Start Programs prepare children for school entrance. The Camden County Council On Economic Opportunity (CCCOEO, Inc.), provides comprehensive services for “At Risk” preschool children, ages three to five, through its’ Head Start Program. Sixty-seven preschoolers attending Head Start Centers were given the BRIGANCE® Preschool Screen for three and four year olds. A pre-test/post-test format compared scores of returning four year olds with four year old children never attending Head Start. Results were compiled analyzed by Nonparametric tests. Three hypothesis were confirmed. Overall averages for new and returning students showed new student averages being lower, proving Head Start as beneficial. Accurate detection and identification, by the BRIGANCE®, of 12 out of 22 students, referred and evaluated for learning disabilities is accomplished. It is assumed positive identification of learning disabilities for the remaining ten will also be accurate.
ACKNOWLEDGMENTS

I'd like to take this opportunity to thank all who have helped, encouraged, proofed, edited, supported and pushed me towards the completion of this project, over the past few months. Without your understanding, endurance and constant words of prayer, completion of this project would never have come to be.

Thank You all and God Bless.

Dr. Stanley Urban
My mother Marie Larson
My husband Greg and daughters Jenny, Jessie and Julie
Co-Workers: Lenore, Lauren, Leigh, Doreen, Rosa, Vicki and Kaye
Jon and Jane Dalton
and especially Ellen Salvatore for giving the time and teaching necessary to be statistically correct.
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THE IMPACT OF EARLY SCREENING ON PRESCHOOL CHILDREN ATTENDING CAMDEN CITY HEAD START

CHAPTER I

INTRODUCTION

There has been much controversy over the past few years as to whether preschool, day care or nursery school programs benefit or hinder the development of young children. Many believe that young children are better off at home where a nurturing caring parent will assume the role as their child’s first teacher. In today’s hard economic times, two income families are more of the norm than ever. Within our inner cities, Welfare to Work, has impacted single parent homes, and left no other option, but to place children in all day programs. Head Start Programs are one option that has been utilized successfully by these families.

The purpose of this study is to demonstrate that developmental preschool programs such as “Head Start,” are advantageous to the overall growth, development and advancement of the “At Risk” preschool aged child in acquiring the skills necessary for the beginning of their formal education. The data presented will show that four year old children who have attended a Head Start Program for approximately one school year, will score higher on developmental preschool screens than four year old children just beginning a Head Start Program.

The practice of using a developmental screening instrument, such as the
BRIGANCE® Preschool Screen for three and four year olds, will prove to be an accurate instrument when used appropriately for the initial detection of developmental disabilities or academic delay, in young children.

BACKGROUND AND HISTORY OF HEAD START

"Head Start, first enacted as part of the Johnson administration's War on Poverty, is an early childhood program for low-income children and their families that was recently reauthorized through fiscal 1998. Head Start is administered by Agency for Children, Youth and Families (ACYF) of the Department of Health and Human Services."

— President Lyndon Johnson, May 1965

("Head Start Fact Sheet", Administration for Children and Families, 1998.)

Born during the "War on Poverty," Head Start best exemplified the nation's philosophy regarding any war — wage war on the institution, not the people. The program began with a simple objective, based on the idea that children deserve the opportunity to enter school ready to learn. This readiness was defined as: 1) having been exposed to appropriate educational experiences, 2) being healthy physically and mentally, and 3) having families that have been provided with the basic social supports needed to be actively involved in their children's lives and development. (Resource Paper: "A Cost-Benefit Approach to Understanding Why Head Start is the Nation's Pride")

This national federally funded program has provided comprehensive
developmental services to low-income families and preschool aged children, ages three to five, since 1965. Services focus on education, nutrition, health services and family socio-emotional well being. Through these services, each child participates in a developmental program that focuses on the building of strengths through various experiences socially, intellectually, physically and emotionally. This antipoverty program funds community-based agencies either public or private non-profit organizations through Head Start Grants. There are Head Start programs all across the country and in the District of Columbia. ("Head Start Fact Sheet", Administration for Children and Families, 1998.)

Head Start’s success can be directly attributed to the role the community plays in each program’s development, and in the direct involvement of parent volunteers. Parents may serve on policy councils and have a vote on decisions effecting the Management and Administration of their child’s program. Early Childhood Research has shown that the more parents are involved in the education of their children, the greater cognitive and non-cognitive benefits their children will receive. (Conklin and Cotton, "Research on Early Childhood Education", School Improvement Research Series, #3, Jan. 1989.)

Eighty percent of the program is federally funded and twenty percent is supported through in-kind donations, parent involvement hours or community service donations. In 1996, almost 751,000 children were enrolled in Head Start Programs. Approximately thirteen percent of the children enrolled were children with disabilities. ("Head Start Fact Sheet", Administration for Children and Families, 1998.)
The Camden County Council On Economic Opportunity (CCCOEO, Inc.) Head Start Program is a child development program funded primarily by the Department of Agency for Children, Youth and Families. Other funding sources are, the United States Department of Agriculture, Camden City Board of Education and the Department of Health and Human Services. Services are provided for children ages three to five. CCCOEO, Inc. Head Start has a collaborative contract with the Camden Board of Education that focuses specifically on providing services for four year olds in the areas of self confidence and good health, to ready them for entry into school.

Children and their families are provided with a comprehensive program that will help to meet their needs educationally, socially, nutritionally, psychologically and help to provide the knowledge necessary to maintain good health.

The Camden County program began in October of 1968 with 60 preschool children. This Head Start Program's current funded enrollment is 1153. This includes 108 Camden City children who receive funding through the Camden Board of Education. (Head Start Parent Handbook, 1998, p.2.) Head Start must reapply each year for federal funding.

THEORY

Children attending comprehensive preschool programs are more prepared for school entry, ready to learn, than those who attend regular day care, nursery programs, regular preschool programs, or have not attended any preparation
program prior to their first year of formal schooling. Programs such as Head Start prepare children for school entrance, provide them with a caring and nurturing environment, and empower families with the skills and resources necessary for successful living. Head Start has a multi-generational focus, which is not apparent in other preschool or day care programs. A continuum of health, educational and social services are offered to every family participating in Head Start Programs. Mandatory requirements, (physical and dental examinations, income levels, blood screens, volunteer hours, etc.) must also be satisfied to be eligible for and to remain in any Head Start Program.

Screening instruments, such as the BRIGANCE® Preschool Screen for three and four year olds, can aid in the early detection and eventual referral and evaluation of children in need of early intervention services.

An accurate preschool screening instrument covers academic, language, motor and socio-emotional skill areas of early childhood development. The screening process should be quick, economical, accurate and fun for the child. The manual must be easy to read and the skills covered must be closely related to school curriculum. Children who are screened should obtain similar scores from different examiners, therefore reliability across examiners, must be high. Results must be closely related to diagnostic outcomes and detect 70 to 80 percent of those children "At Risk". Similarly, the normal developmental level of children should be indicated with the same level of accuracy. ("Frequently Asked Questions about Curriculum Associates' Screens", 1996.)
NEED FOR THE STUDY

This study will provide evidence of the positive contributions and effects Head Start and other comprehensive preschool programs have on the development of "At Risk" children, in readying them for formal schooling. It will also show the necessity for preschool screening with instruments, like the BRIGANCE® developmental screen for three and four year olds, and its' use in detecting children with possible developmental disabilities or academic delays, and the advantages of early referral.

VALUE

This research project has been designed to confirm the importance of screening young children attending preschool, comprehensive or child care programs, once entering in the Fall and again in the Spring, for each year the child attends the program. This study will affirm the necessity for the availability of comprehensive developmental preschool programs for "At Risk" populations.

RESEARCH QUESTION

Is there a significant difference in the scores obtained by four year old Pre-Schoolers on the BRIGANCE® Pre-School Screen, for those children attending a Camden City Head Start Program for one year, and four year old children who have never attended a Head Start Program?

SUB-QUESTIONS

1 Is the prediction of 75% of student scores falling below the appropriate cut-off score an accurate predictor of detecting students with
Developmental Disabilities or Academic Delay?

2 What % of students referred for further evaluation are determined to be children with Developmental Disabilities or Academic Delay?

3 Are developmental preschool programs such as “Head Start” advantageous to the overall growth, development and advancement of the “At Risk” preschool aged child in acquiring the skills necessary for their beginning formal education?

DEFINITIONS

Screening is a process used to identify children who may be “At Risk” for difficulty with academic learning in school. It is designed to detect children who may have special needs, talents or handicapping conditions, that may require enhanced instruction, remediation or intervention to maximize learning. (“The ZERO TO THREE”: New Visions for Parents Work Group, Washington D.C., )

A Developmental Screening is a brief check to identify children who need further evaluation to determine the presence of disabilities. It provides information in three major developmental areas: visual/motor, language and cognition, and gross motor/body awareness for use along with observational data, parent reports and home visit information. When appropriate standardized instruments exist, they must be used. (45 CFR 1304 Head Start Performance Standards, 1308.6(b)(3), 1996.)

“The BRIGANCE® Screens were developed as a simple and effective method for identifying children who need further assessment to determine their
eligibility for special programs, stimulation, or extra assistance in preschool, kindergarten or first grade."

"The BRIGANCE® Screens are sensitive to risk factors for academic difficulties: children score lower if they have not participated in preschool programs, if their parents have less education, and if their families have limited incomes." (“A Validation Study and the Psychometric Properties of the BRIGANCE® Screens”, pg. 7, 1996.)

Referral is a process by which a child is directed to a multi-disciplinary team, after detection of possible developmental disabilities, academic delays or physical impairments. Trained professionals will use screening and assessment instruments to assess or evaluate all areas of learning and development. The team can consist of a: psychologist, learning consultant, speech and language specialist, school social worker and any other personnel required for a fair evaluation of the child’s strengths and weaknesses. The child’s classroom teacher and parent/guardian(s) are required to be part of the multi-disciplinary team. (“The ZERO TO THREE” : New Visions for Parents Work Group, Washington D.C.)

An Assessment is a diagnostic measure used to gather information about children with suspected developmental disabilities or academic delay, by a multi-disciplinary team in the areas of: cognitive, physical, language, speech, psychosocial and self-help skills. An assessment should show what a child can do, their overall strengths and progress; and not just the weakest areas of
development. The primary use of assessment should be to plan for instruction for the benefit of groups or individual children and, for communicating with parents. The program itself should be assessed periodically to determine how well it is meeting its' goals. Assessment procedures should never be used to classify children who are learning a second language, who have cultural, religious or racial differences, as disabled or delayed. ("Guidelines for Appropriate Curriculum Content and Assessment in Programs Serving Children Ages 3 Through 8", NAEYC, 1990.)

**Evaluation** is the procedure used to determine a child's eligibility for Special Education Services. It is diagnostic in nature, and performed by a multi-disciplinary team usually referred to as the Child Study Team.

**Eligibility** is determined by specific criteria of developmental delay that meets the eligibility level needed for publicly funded services. This criteria is unique to each state. Children with a diagnosed mental, physical or developmentally delaying condition are qualified for these services. Some states also serve children “at risk” for developmental delay by offering early intervention services. ("The ZERO TO THREE": New Visions for Parents Work Group, Washington D.C.)

**Standardization** is a systematic sample of performance data obtained under prescribed conditions, which is scored according to definite rules. This system allows professionals to compare one child’s performance to every other child who takes the same test. ("The ZERO TO THREE": New Visions for
**Parents Work Group, Washington D.C.**

**Norms** are a pattern or average regarded as typical for a specific group.

A **Criterion-referenced** test is a test that measures a specific level of performance or a specific degree of mastery. This type of test allows each child to be assessed as an individual and then compared with age appropriate developmental milestones or benchmarks. Intervention and remediation can then be specifically personalized for each child. ("Assessment of Preschool Children", **ERIC Digest**, Vacc, Nicholas A., Ritter, Sandra H., ERIC Clearinghouse on Counseling and Student Services, Greensboro, NC, 1995.)

A **Curriculum Referenced** test or procedure is one that measures the extent to which an individual has acquired or mastered material presented, from established guidelines, within the classroom.

**Reliability** is the extent to which a test is consistent in measuring what it was designed to measure.

**Internal Consistency** is "the extent to which individual items correlate with each other."

"For the 1995 validation study, Guttman scalability coefficients were produced for total **BRIGANCE®** Screens for each form of the test. The coefficients serve as an indicator that each form and its items are hierarchical, unidimensional, homogeneous measures of academic and readiness skills. The standard errors of measurement (SEm) provide a confidence band around the derived score that accounts for fluctuations in reliability due to measurement..."
error. SEms are both added to and subtracted from each child's total

BRIGANCE® Screen score in order to provide a theoretical, error-free indicator of true performance. For example, a two-year-old who receives a 77 should have her total score reported a 77 + 1.88, which if rounded to 2, produces a score that has a 95% of chance of falling between 75-79.\" (\"A Validation Study and the Psychometric Properties of the BRIGANCE® Screens\", pg. 10, 1996.) Standard Error of Measurement for three year old screen = 1.43, for the four year old screen = 1.29, and for the Kindergarten screen = 1.26.

Validity is the extent to which a test or observation measures what it is intended to measure.

Content Validity is how well a test samples the various developmental skill areas.

Concurrent Validity is the correlation established with other highly recognized criterion measures used for diagnostic purposes.

Construct Validity, by way of correlations, shows how well items of one measure compare to similar items of another measure.

Predictive or Criterion-related Validity is the ability of a test to identify children who will have difficulties in school, or to be a predictor of future academic achievement and performance.

Accuracy is shown by the percentage of children who score below cutoff scores that are correctly identified as children with problems, and as the percentage of children who score above the cutoff score who are identified...
correctly as children without problems.

The **Sensitivity** of the BRIGANCE® screens is the percentage of children with problems identified correctly by scores falling below the cutoff, which the Technical Report claims to be 80%.

This means that of all the children screened, if ten percent of these children have learning disabilities, at least eighty percent of this group of children, should fail the screen.

The **Specificity** of the BRIGANCE® screens is the percentage of children without problems identified correctly by scores falling above the cutoff, which the Technical Report claims to be almost 80%. When used with teacher's rating scales or judgements, the specificity is considered to be as high as 82%. This percentage of children should pass the screen.

The **Cut-off Score** is the optimal score attained out of a possible 100 scored points that would identify children who are "At Risk" for possible school failure, or are in need of specialized services. Those students with higher scores may qualify for gifted and talented programs. Scores should increase as the child ages. Those who fall below the average of students the same age, can be easily detected. (For the purpose of this study, the information contained in the following table will be for the three year old child, four year old child and the Kindergarten child.)
### Cutoff Scores, Specificity, and Sensitivity for Age-Appropriate Basic Assessments of the BRIGANCE® Screens in Detecting Children with Delays.

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<td>3-5 to 3-8</td>
<td>&lt;87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four year old child</td>
<td>3-9 to 4-2</td>
<td>&lt;73</td>
<td>31/42</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>4-3 to 4-8</td>
<td>&lt;88</td>
<td>31/42</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>(4-9+)*</td>
<td>(94)*</td>
<td>(38/54)*</td>
<td>(70)*</td>
</tr>
<tr>
<td>Kindergarten child</td>
<td>4-9 to 5-2</td>
<td>&lt;83</td>
<td>36/48</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>5-3 to 5-8</td>
<td>&lt;92</td>
<td>36/48</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>(5-9+)*</td>
<td>(94)*</td>
<td>(54/73)*</td>
<td>(74)*</td>
</tr>
<tr>
<td></td>
<td>(4-9+)*</td>
<td>(&lt;94)*</td>
<td>(31/44)*</td>
<td>(70)*</td>
</tr>
</tbody>
</table>

* "The Four Year Old Child and Kindergarten Child Basic Assessments of the BRIGANCE® Screens may be administered to students above the recommended ages (as shown in italics), However, this is less advisable than use of the age-appropriate forms. Old-for-grade students have a high rate of undiagnosed disabilities (30%-60%). Yet, they are especially difficult to identify - especially at the beginning of the school year when they may compare favorably, although often temporarily, with younger, typically developing students. By the end of the year, their lack of progress becomes more apparent, but they will have missed critical opportunities for needed intervention. To adjust for this, it is recommended the old-for-grade students receive rescreening 4-6 months later with the age appropriate Basic Assessments in the BRIGANCE® Screen in order
to assess whether they are making progress or whether further evaluations are needed.”

("A Validation Study and the Psychometric Properties of the BRIGANCE® Screens", Frances Page Glasgoe, pg. 13, 1996.)

A **Growth Indicator** is a measure of learning and progress from the beginning to the end of the school year. For the BRIGANCE Screens, when children are screened on a form that is just above their age level, they will score, on the average, 17 points lower than on the form that is appropriate for their age. (The exception is the Two-and-a-Half-Year-Old to Three-Year-Old Child Basic Assessments for which the difference is eight points.) ("BRIGANCE® Preschool Screen", Albert H. Brigance, Curriculum Associates, Inc., North Billerica, MA. Pg. 56, 1985, 1998.) For example, a child who scores an 88 on the four-year-old screen, should score a 71 (projected score) on the Kindergarten screen, which is the next level higher. To see the amount of growth from the previous school year, subtract the projected Fall score from the actual score of the screen administered. The difference in scores is the actual gain achieved. ("A Validation Study and the Psychometric Properties of the BRIGANCE® Screens", Frances Page Glasgoe, pg. 7, 1996.) Most children will gain from six to twenty-eight points over a school year. “Children who gain fewer than six points appear to be learning more slowly than average, while those who gain more than twenty-eight points appear to be learning more quickly than average.” ("BRIGANCE® Preschool Screen", Albert H. Brigance, Curriculum Associates, Inc., North
Billerica, MA. Pg. 56, 1985, 1998.) Growth indicators are helpful in determining if children are benefiting from their current classroom placement and instruction.

**GROWTH INDICATORS WHEN CHANGING BRIGANCE® SCREEN LEVELS DURING OR ACROSS YEARS.**

*(Sample Chart of Basic Assessments Comparisons)*

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>If score on previous Basic Assessments is: (pretest)</td>
<td>Score on next highest Basic Assessments would have been:</td>
<td>Enter below actual score from most recent testing (post test)</td>
<td>Growth Indicator: Subtract Column 2 from Column 3</td>
</tr>
<tr>
<td>17</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>†</td>
<td>†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>54</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A **Data Sheet** is the record-keeping system used with the BRIGANCE® screens. The record sheets come in triplicate, so that the information found can be shared with parents, principals or for usage determined by the school, teacher and/or assessor.

**Developmental delay/disabilities** is a term used when a child (up to the age of five) has not achieved the skills or abilities of children the same age in the areas of: physical, social, emotional, cognitive, speech, language and self-help or adaptive behavioral skills. (These are sometimes referred to as “developmental milestones or benchmarks” for infants or toddlers, as it describes
a memorable accomplishment on the part of the child. )The term also includes children with a physical or mental condition that has a high probability of resulting in a developmental delay. ("The ZERO TO THREE": New Visions for Parents Work Group, Washington D.C.)

The “At Risk” Child will have one or more risk factors that have been associated with learning difficulties and fewer long range accomplishments throughout life. This child may be unable to meet the academic expectations that will be encountered, upon entering school. Only small motor development has been found not to be effected by any of these factors. The greater the number of risk factors present in a young child’s life, the higher probability the child’s overall accomplishments will be lower, and the difficulties encountered will be greater. ("Approaching Kindergarten: A Look at Preschoolers in the United States", National Household Education Survey, 1995.)

There are three categories that encompass the “At Risk” child. These are: established risk, biological/medical risk and environmental risk. ("The ZERO TO THREE": New Visions for Parents Work Group, Washington D.C.)

An Established risk is a condition that is diagnosed of physical or mental impairment that has a high probability of resulting in a developmental delay.

A Biological/medical risk is a medical, biological condition or event that has a higher chance in resulting in a developmental delay or disability than most of the general population of children.

An Environmental risk can affect a family or child care situation by being
subject to: poverty, substance abuse, child abuse or neglect, low income or education level, disability of a parent or dysfunction within a family unit. These factors have a greater chance of causing a child a delay, than those children of the general population. Research has shown there are five reoccurring environmental high risk factors that can jeopardize a child’s ability to achieve maximum educational potential: these include, a family income below the official poverty line, low maternal education of less than high school level, minority-language status where the mother’s primary language is one other than English, and family structure of a one parent home with the mother unmarried at the time of the child’s birth. (“Approaching Kindergarten: A Look at Preschoolers in the United States”, National Household Education Survey, 1995.)

An Individualized Education Program (IEP) “is a written plan developed at a meeting according to N.J.A.C. 6A:14-2.3 (h) 2 which sets forth present levels of performance, measurable annual goals and short-term objectives or benchmarks and describes an integrated, sequential program of individually designed instructional activities and related services necessary to achieve the stated goals and objectives. This plan shall establish the rationale for the student’s educational placement, serve as the basis for program implementation and comply with mandates set forth in” Chapter 14 of the Special Education Administrative Code. (Chapter 14 of the New Jersey Department of Education, Special Education Administrative Code, 6A:14-1.3 “Definitions”, Nov. 1998.)

The Least Restrictive Environment (LRE) is a placement in which a
student with a disability should be educated to the maximum extent appropriate
with children who are not disabled, with the use of appropriate aids and related
services, and attend the school he or she would normally attend if there were no
disability. Placement is determined annually and according to the child's IEP.
(Chapter 14 of the New Jersey Department of Education, Special Education
Administrative Code, 6 A:14-4.2 "Placement in the least restrictive environment",
Nov. 1998.)

LIMITATIONS

Multiple screeners may promote a lack of consistency in screening.

Too much prompting, or too little assistance may skew or inflate scores or
discourage the student.

A wrong attitude of the examiner could deflate a child's score or cause
frustration.

Children who learn the test after one or two screenings may test overly
high. Alternate forms for retesting, could help with this problem.

Not using the test correctly or incorrectly following directions can give
inaccurate scores.

The use of an inappropriate aged screen for children above the
recommended age may not detect difficulties that would be revealed when
with the appropriate aged screen. ("BRIGANCE® Preschool Screen",
Vii, 1985, 1998.)
A seemingly over abundance of referrals due to new cutoff scores may cause alarm if explanations are not made available.

Unfamiliarity with new normed standardized cutoff scores for screening, could cause a child to be missed, who may have been detected with the appropriate cutoff scores.

**REASONS FOR LOW SCORES**

Once a child has been screened and found to have a score below the recommended cutoff, there are several things the examiner must do. First is to decide why the child performed poorly. Next the child’s probable weak areas should be determined, and finally the appropriate follow-up should be decided upon and carried out in a plan.

Poor performance could be attributed to several factors. A child may refuse or be reluctant to participate in the screening process. He may feel the experience is threatening. This child should be rescreened by an experienced examiner. Children with speech problems may have low scores due to articulation problems or due to a sensitiveness of their poor speech. Environmental factors such as, poor room lighting, a too hot or cold room can also be a factor contributing to poor performance. Other reasons for poor performance on the screen may include, educational deficit, cultural barriers, poor vision or hearing, a recent illness, poor nutrition, imbalance in body chemistry, lethargy or hyperactivity, physical disability or a language barrier. After ruling out the above factors, the most probable reason for a low screen score is either an undiagnosed

OVERVIEW

The BRIGANCE® Preschool Screen has been the instrument of choice for CCCOEO, Inc. Head Start for the past few years. It is economical, requires little training and is consistent, when the standards are followed, with various trainers and examiners. The screen can be administered quickly and accurately, and it is enjoyable for the children. Most preschoolers engage easily and will try to do their best when tested. It has proved to be an accurate detection measure for developmental disabilities or academic delay at Head Start. The research and facts gathered during this study will be used to support the statements above.
CHAPTER II

REVIEW OF THE LITERATURE

"By the year 2000, all children in America will start school ready to learn."

("Goal #1 of the National Goals" : Thirteenth Annual Report to Congress, 1991, p. 84.)

"However, we believe that the future of our children is, at least, as important as the future of our military readiness. If children are not ready for school at age 5, then young adults at age 18 will not have the chance to attain the skills needed to become self-sufficient contributors to the economy and well-being of this nation." (Resource Paper: “A Cost-Benefit Approach to Understanding Why Head Start is the Nation’s Pride”.)

THE LAW

THE INDIVIDUALS WITH DISABILITIES EDUCATION ACT:

PL. 94 - 142 (IDEA)

IDEA provides for:

➤ A free and appropriate education for all children, regardless of disability.
➤ The local district must provide or obtain services for all children between the ages of 3 and 21.
➤ School aged children must be educated in the Least Restrictive Environment, (LRE), with their non-disabled peers.
➤ Support services must be available in the areas of transportation, Speech Therapy, Counseling and learning aids.
The major changes that took place in 1997, to amend IDEA are listed below:

- Funding for Early Intervention and Pre-School Programs have been increased.
- Services for infants and toddlers are to take place in natural environments whenever possible.
- Transition coordination is improved for Early Intervention to Pre-School Programs, by participation of the Local Education Association. (LEA)

A child with developmental delay as defined by IDEA Part H is, any child age 3 to 5, who is experiencing a delay in one or more of the following areas:

- physical development
- cognitive development
- social or emotional development
- adaptive development

A child who fits into these categories may be in need of special education and/or related services.

THE REHABILITATION ACT OF 1973: PL. 93 - 112 SECTION 504

Section 504 prohibits discrimination on the basis of a physical or mental disability. This nationally mandated law provides for the elimination of discrimination against individuals with disabilities.

THE AMERICANS WITH DISABILITIES ACT: PL. 101- 336 (ADA)

The ADA provides civil rights protection to individuals with disabilities in
the areas of:

- Title I - employment
- Title II - public accommodations
- Title III - state and local government services
- Title IV - telecommunications

A person with a disability as defined by the ADA is any person who:
- has a physical or mental impairment which substantially limits one or more of that person's major life activities,
- has a record of such an impairment,
- is regarded as having such an impairment.

Major life activities include, caring for oneself, performing manual tasks, walking, seeing, hearing, breathing, learning or working.

**EDUCATION OF THE HANDICAPPED ACT (EHA):**

**PL - 99-457, 1986 AMENDMENT TO EHA**

**HANDICAPPED INFANTS AND TODDLERS PROGRAM - PART H OF EHA**

**PRESCHOOL GRANTS PROGRAM,**

**SECTION 619 - OF PART H**

"Early intervention services are critical if we want to ensure that children with disabilities are able to reach first grade ready to learn. Such services may reduce the need for and cost of special education later for children who receive services early. In 1986, the Congress passed landmark legislation, Public Law 99-457, which established a program for States to develop a comprehensive,
coordinated, multi-disciplinary system to provide infants and toddlers with disabilities and their families early intervention services. This approach was revolutionary in the delivery of human services because it made States coordinate and pool funding sources in order to provide services to infants and toddlers with disabilities and their families." (Representative Bill Goodling (R., PA) Congressional Record, September 11, 1991, p. H6405.) The passage of this Act extended IDEA rights to preschool children, ages three to five, and to adolescents age 18 to 21.

**HEAD START PERFORMANCE STANDARDS:**

45 Catalog of Federal Regulations (CFR) 1304

The Head Start Performance Standards are the federal regulations for all Head Start Programs. Head Start must include children with disabilities, at least ten percent, in every operating program.

**Head Start Screening and Assessment Process**

"Grantees must provide for developmental, hearing and vision screenings of all Early Head Start and Head Start children within 45 days of the child's entry into the program." (45 CFR 1304 Head Start Performance Standards, 1308.6 Assessment of Children, 1996.) Early screening is recommended to take place, as soon as possible from the child's entry date, as the referral and possible evaluation process, can be a time consuming and lengthy process, before needed special services can begin.

The assessment process for Head Start has three steps. All children
enrolled in any Head Start Program are screened, as a first step in the assessment process. This consists of a developmental screening, including speech, hearing, vision, and a standardized health screening. This screening is used to detect children who may need further assessment. It may not be used to determine the presence of a disability. (45 CFR 1304 Head Start Performance Standards, 1308.6 “Assessment of Children”, 1996.)

The second step is the developmental assessment, in which children are screened in the following areas: gross and fine motor skills, perceptual discrimination, cognition, attention skills, self-help, and social skills. Receptive and expressive language skills are also assessed. (45 CFR 1304 Head Start Performance Standards, 1308.6 “Assessment of Children”, 1996.) On-going developmental assessment is carried out by various staff throughout the program year, to determine progress, plan activities and determine areas in need of extra attention or individualization.

Only children identified by the first two steps as possibly having a disability, will progress to the third step of Head Start’s assessment plan. The disabilities coordinator will arrange for a formal Child Study Team evaluation to take place by the Local Education Association. (LEA) Evaluation and referral procedures must follow the laws and regulations as determined by IDEA, and in New Jersey, by Chapter 14 of the New Jersey Department of Education, Special Education Administrative Code. (Revised Nov. 1998.)

The Individual Education Program (IEP) is a written statement for a child with disabilities, developed by the public agency responsible for providing a free
and appropriate education for a child. It outlines and describes the special education plan and related services to be provided for an individual child. (45 CFR 1304 Head Start Performance Standards, 1308.3 “Definitions”, 1996.) Parents and staff cooperatively plan a child's IEP to determine what goals and objectives will best serve the child's strengths and weaknesses, for each school year.

Health Plans

Parents of children within Head Start who have identified Health needs are encouraged to participate in the facilitation and implementation of follow-up Health Plans. Assistance is given in obtaining medical services, finding places to obtain medication and instruction through workshops is available on how to administer preventative care at home.

Diagnostic Categories

Each child included in the Special Needs Program for Head Start must have “a definite diagnosis made by professionals who are trained to identify children with handicapping conditions.” (Head Start Parent Handbook, 1998, p.12)

Inclusion

Accommodations for the included child are provided for any child with a disability, in all Head Start programs. The percent of the Head Start population must be children with disabilities or chronic health conditions, that may impede learning.
Transition

The process in which children move from one program to another is called transition. For most children involved in Head Start, this would be the time a child leaves their preschool program and progresses to a formal public or private education program, usually kindergarten.

Mental Health Requirements

Within the service area of Early Childhood Development and Health Services is an area dealing with the development and maintenance of children's and families positive mental health. Each Mental Health Specialist regularly consults with staff and parents at Head Start sites. The Mental Health Specialist will design and implement various practices in response to behavioral and mental health concerns of individuals or groups of children. Positive mental health awareness is provided to parents, staff and children through educational means. Mental Health Specialists provide assistance in the provision of special help for children with behavioral concerns. Through referral and consultation with community mental health resources, Head Start families receive quality Mental Health care. (45 CFR 1304 Head Start Performance Standards, 1304.24 “Child Mental Health”, 1996.)

THE MISSION STATEMENT

“The staff, parents, community representatives and volunteers of the Camden County OEO Head Start Program, join together in the Mission to Provide a network of integrated community resources and services responsive to the
needs of all families, focusing on the empowerment of families to advocate for their own individual needs, health care, education, safety and well being.” (Head Start Parent Handbook, 1998, p.3)

The Handbook goes on to state the following:

“We are dedicated to giving our families, staff, and the community a HEAD START in:

- developing positive self-esteem
- providing opportunities for personal growth and leadership
- enhancing creative ways to solve problems
- Promoting caring families and work environments
- appreciating diverse multi-cultural backgrounds
- accomplishing goals for becoming productive and successful members of the community and society


NECESSITY FOR THE PROGRAM

Head Start has served over 15.3 million children and families since 1965. It has played a major role in facilitating the need for quality child-care programs and in the extension of local and state services needed in the community. "It was determined from a study involving past Head Start children in the Philadelphia
School District that Head Start children avoided serious school problems more frequently than their non-Head Start peers. In addition, Head Start children were less likely to be retained during their elementary school years." (Copple, Cline, & Smith, 1987) "Head Start children are more likely to be assessed for developmental, vision, speech, and hearing deficits and receive treatment and follow-up evaluations at a higher rate than their non-Head Start peers. In addition, Head Start children show greater improvements in developmental, speech, and vision problems after participating in Head Start." (Brown & Bernard, 1984)

Extensive research into preschool programs such as Head Start has shown improvement in children's cognitive performance, success in school, and generally less involvement in criminal activity later in life. There is further evidence that any crimes committed by past Head Start participants, are of a less serious nature, than crimes committed by non-Head Start participants. ("Research Bites", Cohen, 1988.) High quality programs provide positive long-range results, to those families struggling with the damaging effects of poverty. ("The Future of Children", Richard E. Behrman, M.D., ed.)

General objectives for the Camden County OEO Head Start Program are as follows:

1. To establish and maintain a safe and healthy learning environment for children in centers located in close proximity to their homes.

2. To provide activities which foster positive development of self-concept and individual strengths of the enrolled children.

3. To support the role of parents as the primary educators of their children.
4. To advance the physical and intellectual competence of enrolled children.

5. To provide opportunities for members of the Head Start family to increase their educational or economic level. (Head Start Parent Handbook, 1998, p.5)

REGISTRATION

Children are required to be up to date on all required immunizations and to have a physical and dental examination prior to entry into any Head Start Program. Each child is required to have a blood screening to check for high blood lead levels which can cause lead poisoning, and for a low hematocrit, indicating possible anemia. Head Start provides follow-up care and resource referrals for various health screens, laboratory tests and general health care.

The documentation required to finish the registration process is:

- Child's Birth Certificate
- Social Security Card
- Immunization Record
- Proof of Income
- Proof of Health Insurance or Medicaid
- Proof of Address

ELIGIBILITY AND POPULATION SERVED

Head Start is available for children between the ages of three and five whose families meet the Federal poverty guidelines. Individual communities establish priorities for enrollment based on needs and availability of funding. Ten
percent of the children enrolled can be over the income level guidelines, and ten percent of the children offered enrollment are required to be children with disabilities. In 1994, Early Head Start began to serve pregnant women and low-income families with toddlers and infants.

"The Head Start combination of direct intensive services to children and referrals to supplemental services reflect the best research and evaluation of how to achieve effective and long-term results for children and their families."

("Evaluation of the Comprehensive Child Development Program", Updated, Jan. 1998.) It is predicted that in 1998, Head Start will benefit 830,000 children and their families. The goal for the year 2002 is to reach out to and enroll 1 million children in Head Start or Early Head Start Programs. ("Evaluation of the Comprehensive Child Development Program", Updated, Jan. 1998.)

HEAD START PERFORMANCE STANDARDS - 45 CFR 1304

The Head Start Performance Standards are the Federal Regulations under which all Head Start and Early Head Start Programs must operate and comply. The current standards were approved and in effect on July 1, 1998. Each program is reviewed by the State every three years in the five service areas outlined in the Performance Standards for the Operation of Head Start Programs. These areas are as follows:

General (Subpart A)

General purpose of the program

Early Childhood Development and Health Services (Subpart B)
Health, Education, Special Needs, Nutrition, Mental Health and Safety Services

Family and Community Partnerships (Subpart C)
Linking the family with community services

Program Design and Management (Subpart D)
Governance, procedures and management of the program

Implementation and Enforcement (Subpart E)
Quality improvement and program monitoring


"The Head Start Performance Measures are intended to be a set of criteria for assessing how well the Head Start program as a whole is fulfilling its primary mission of increasing the social competence to young children from low-income families nationwide, as well as the related objective of assisting low-income families to attain their general educational, economic, and child rearing goals."

("The Head Start Quality Research Agenda": Performance Measures, the Quality Research Consortium (QRC), and the Family and Child Experiences Survey.)

"The overall goal of Head Start is to bring about a greater degree of social competence in children of low income families. Social competence is the child’s everyday effectiveness in dealing with both the present environment and later responsibilities in school and life. Head Start’s comprehensive services are at the core of the program’s success for over 38 years." ("The Head Start Experience", Mallory and GoldSmith, 1990.)
Head Start is now entering a time period of change, to improve not only the quality of services offered but, also to expand existing services by mandate of the Head Start Act of 1994. Ongoing assessment through longitudinal research studies, will allow for examination of children’s developmental progress, during and following their participation in Head Start programs. One role for the Head Start of the future, will be to serve “...as a national laboratory for the best practices in early childhood and family support services in the low-income communities.” (“The Head Start Quality Research Agenda” : Performance Measures, the Quality Research Consortium (QRC), and the Family and Child Experiences Survey.)

PRESCHOOL SCREENING

“The period of early childhood development, from conception through at least age three, is critical to a child’s development.” (“Targeted Early Intervention Programs and Their Benefits”, Investing in Our Children, pp. 33-34.) Mother-infant bonding, emotional development, and basic language development, are just some of the basic foundations established during the early years of childhood. This unique time of growth and development, can be significantly influenced both positively and negatively by biological and environmental factors.

Lack of parental involvement or emotion, can lead to behavioral problems later on in a child’s life. Low-income or lack of health care can affect a child’s development early on, and in later years. Multiple risk factors can place a child in a situation of even greater disadvantage, that may have permanent damaging or
even detrimental effects on a child's development or IQ. ("Investing in Our Children", ) Multiple risk factors may cause lower levels of accomplishment and a higher number of difficulties for children. When compared to children coming from families with no risk factors, four year olds with three or more risk factors have nearly a twenty percent chance more of being restless, or having a short attention span. Ten percent of at-risk children have speech or language problems and almost twenty percent of the at-risk population are in poor health. ("Approaching Kindergarten: A Look at Preschoolers in the United States", National Center for Education Statistics, Executive Summary, Oct. 1995.)

As the year 2000 approaches, "preschoolers represent the fastest growing segment of the special education population." ("Building Knowledge for a Nation of Learners: A Framework for Education Research", Early Childhood Learning, 1997.) Studies have shown that although preschool programs show cognitive benefits, they may not aid in the areas of speech and behavior or health and emotional well-being for the "At Risk" child. The need for more effective early intervention programming has been recognized at the federal level. ("Approaching Kindergarten: A Look at Preschoolers in the United States", National Center for Education Statistics, Executive Summary, Oct. 1995.) "Early detection and prevention of learning difficulties is effective, and less expensive in the long run, than remediation." ("Research on Early Childhood Education", Conklin and Cotton, School Improvement Research Series, #3, Jan. 1989.)

There are two types of early detection or screening instruments used for preschool children ages three to five. One measure tests for school readiness.
(An instrument used to determine whether a child has gathered enough general knowledge to be prepared for entering school, ready to learn.) The second, developmental screening, provides a broad sample of information on what the child knows, and presents a picture of his or her ability to acquire new knowledge and skills. A sampling of developmental areas include: intellectual and perceptual skills, language use and acquisition, gross and fine motor skills and socio-emotional domains. The latter is included as different behavioral aspects may affect school performance later on. One test should not be substituted for the other as each provides differing information and profiles of a child. (ERIC Document Reproduction Service, “Screening for School Entry”, Hills, Tynette Wilson, 1987.)

ADVANTAGES

There are many advantages to the early screening of Preschool children, one of which is to help in the identification of children “At Risk” for developmental disabilities or academic delay. Children detected by an early screening instrument can be referred for assessment, intervention and remediation prior to beginning formal education. Early intervention can alleviate or reduce the amount of Special Education Services needed upon entering school, help to facilitate a child in acquiring independence and decision making skills and help the child who is slightly delayed, an opportunity to catch up to his peers, so as not to lose another year while awaiting Kindergarten or first grade referral. (Hills, 1987.) Screening may also help to keep instruction and curricula appropriate for optimal learning,
which will give teachers an edge when customizing instruction for individual learning activities. Screening also aids in obtaining a child's current level of function. Lastly, it has been shown that teaching to a child's strengths rather than deficits has a greater positive effect for increased growth, development and enhanced learning.

**DRAWBACKS**

Screening instruments can be used inappropriately when: they are used to exclude children from programs they may be eligible for, when the screening tools are culturally or gender biased or when the tools used actually impede a child's performance by testing in their mode of deficiency. (An example would be in the identification of numbers, printed in small type, for a child with a visual impairment.) Preschool screening instruments should never be used as a single assessment or test instrument. Tests of this nature are meant solely for the purpose of detection, not diagnosis. Lastly, screening tests for "readiness" should never be used for the exclusive purpose of tracking or labeling of students. ("Guidelines for Appropriate Curriculum Content and Assessment in Programs Serving Children Ages 3 Through 8", NAEYC, 1990.)

**RESEARCH**

**SCREENING AND ASSESSMENT STUDIES**

**A VALIDATION STUDY AND THE PSYCHOMETRIC PROPERTIES OF THE BRIGANCE® SCREENS, 1996**

In 1994, Curriculum Associates commissioned Dr. Glascoe to conduct a
research study that would validate and norm three BRIGANCE® screens; the Early Preschool Screen, the Preschool Screen and the K & 1 Screen. Four sites (North, South, East and West) reflecting the make-up of young children residing in the United States, ages two to six, were selected for the study. The 408 children participating in the study were tested on the appropriate level screen. Scores were then compared to other well known instruments that are used in early childhood education. (BRIGANCE®, 1996.)

Five objectives were to be determined by the Validation study.

- To find a range of young children's scores in varying geographic regions and socio-economic status.
- Assess concurrent validity and compare with other criterion tests.
- Identify cut-off scores for "At Risk" children.
- Identify any unique performance patterns evident for detecting gifted children.
- Determine three types of reliability:
  - Internal consistency
  - Test-retest
  - Inter-examiner reliability. (BRIGANCE®, 1996.)

VALIDATION STUDY OF THE BRIGANCE® SCREENS

Dr. Frances Glascoe is a professor at Vanderbilt University. For the past fourteen years she has been a faculty member of the Department of Pediatrics who teaches doctors how to detect developmental problems. As a former
classroom teacher of ten years, she has vast experiences in the area of early childhood special education. This interest led to her most recent project of the Validation Study of the BRIGANCE® Screens.

"Using appropriate cutoff scores, nearly 75% of the children who need further assessment will be spotted." "...Almost 80% of the children who need no further assessment should past the screen." (BRIGANCE®, 1996, pg. 4.) Being both criterion and norm-referenced, the BRIGANCE® Screens show mastery of readiness skills and provides for comparison with the performance of other children. The average performance for children from four different geographic regions is shown. New cutoff scores which vary by age should be used when the screens are administered and the next highest age form should be used at the end of the year when rescreening and analyzing growth indicators.

(BRIGANCE®, 1996, pg. 4.) "The BRIGANCE® Screens along with teachers' judgements, can identify the majority (82%) of those who are gifted and talented."

(BRIGANCE®, 1996, pg. 5.)

According to the findings of the Technical Report, "The BRIGANCE® Screens appear superior to other widely used instruments including the Battelle Developmental Inventory Screen, the FirstSTEP, the DIAL-R, the Denver-ll, the Early Screening Profile (ESP), and the Gesell Readiness Test." (BRIGANCE®, 1996, pg. 5.) There are many studies which support the findings of the Technical Report. Other information included in the report are help for parents to provide proper developmental opportunities, forms to help identify "At Risk" children, and
age equivalents for instances when a percentage of delay is required for state reports.

**EARLY TRAINING PROJECT**

One of the first studies on early intervention was launched in the 1960's. This project, the Early Training Project was directed by Susan Gray in Murfreesboro, Tennessee. Sixty-five black children considered educationally and economically disadvantaged, and from poor housing environments were targeted for academic intervention to enhance their cognitive performance and achievement orientation. The children participated in a 10 week, weekly home visit program during the summer, for two or three consecutive summers, or were assigned to a control group. Assessment was on-going during the three year period of the project, from 1962 to 1965, and afterwards during the years of 1965, '66, '68 and '75. The final assessment was in 1978, at which time the participants were approximately 19 years old. Eighty percent of the original participants were available for the long-term outcome.

Early on results were significant. There was a marked difference in the IQ of the treatment group and the control group. In 1965, while the children were in first grade the treatment group scored higher on three out of four subtests of the Metropolitan Achievement Tests. By 1968, fourth grade significant differences were no longer apparent.

Positive findings of this study were, the control group had less placements in Special Education classes, especially "EMR" classes, a slightly lower drop-out
rate and of those teens who became pregnant before finishing High School, experimental group teens were more likely to return to school and graduate with a diploma. ("Targeted Early Intervention Programs and Their Benefits", *Investing in Our Children*, pg. 33-34.)

**HIGH/SCOPE PERRY PRESCHOOL PROJECT**

Another Early Intervention Project with low-income children targeted was the High/Scope Perry Preschool Project in Ypsilanti, Michigan. This was one of the longest assessments conducted. Children were enrolled in one to two years of preschool with cognitive and social skills targeted. Between the years of 1962 and 1967, 123 African American children and their parents were enrolled in the study. Criteria were to have a child of three years old, have a low score rating of socio-economic status and to have an IQ of less than 85 on the Stanford-Binet Intelligence Test. Participants were assigned to either the preschool or control group and were followed up annually through age 11 and again at age 14, 15, 19 and 27. At age 27, 117 of 121 participants were available to be interviewed.

At the end of the preschool intervention phase, preschool participants outscored the control group on IQ test by 11 points or more. These scores remained significantly higher through the age of 14. Differences upon final follow-up were, the preschool program participants were more likely to have graduated from High School, spent less time in Special Education and had better grades through-out their educational career. ("Targeted Early Intervention Programs and Their Benefits", pg. 35-36.)
This program is often closely associated with the Head Start Program, because of its' design for comprehensive intervention services.

**PROJECT HEAD START**

Project Head Start, is perhaps the most well-known of the Early Intervention Programs. Established in 1965, it is one of the largest programs of its' type. Project Head Start grew out of an ever growing concern for children living in poverty in the US. Two child development experts, Julius Richmond and Edward Zigler were crucial to the projects' development. New theories in child development and an excess in the federal budget also helped to launch this program.

A model program was developed, aided by the expert psychologist Urie Bronfenbrenner, who was working on his theory of ecological child development and a childs’ interactions with environment and society.

Project Head Start was implemented as an eight-week experimental pilot project in 1965. Twenty-five hundred communities participated and 500,000 four and five year old children and their families became a part of this program. The program was comprehensive in nature, as it remains today.

Since 1965, Head Start has served over 15 million children and their families. A review of the literature shows nearly 600 citations and documents on Head Start since its' beginning. (“Targeted Early Intervention Programs and Their Benefits”, pg. 37-41.)

Effects of the first Head Start experiment showed an increase in IQ scores
of nearly 10 points. These children were better prepared for school, but the effects were short lived. As time and the experiment progressed and the program developed, children enrolled in the Head Start Program were shown to perform better on Readiness tests, and that Head Start families were better equipped to handle the day to day struggles of living within their environment. ("Targeted Early Intervention Programs and Their Benefits", pg. 42-43.)

**STATE COMES UP SHORT**

A recent study in North Carolina found that nearly 80 percent of the child care in the state was inadequate. Of even more concern was infant care. The 1995 study evaluated 400 child care centers and found that, "most centers not only failed to promote preschoolers' intellectual and emotional development, but they actually interfered with it." ("State Come Up Short in Elements of Good Care", Sheehan & Simmons, *The News Observer*, Feb. 16, 1997.) The children were found to be in low quality programs, and were not getting the basics needed for learning.

**5 MEASURES OF CARE**

As a result of the study, five measures of care were established for North Carolina Day Care. The first was *consistency*. With a large turnover of staff, and an average stay of seven months for workers, the long-term nurturing relationship needed by a developing child was not established. Consistency gives a child the security he needs to feel safe enough to explore his environment. Second, there were no educational requirements for day care staff. More than 1/3 did not have a
high school diploma. Studies have shown that **classes in early childhood development** greatly enhance teaching, and awareness of state day care regulations. Next was an establishment of a **smaller group size**. Previous laws would allow groups up to one dozen for one and two year olds, per adult staff. To many children promotes chaos and inhibits learning. The fourth measure is a **low child-to-adult ratio**. Many studies have shown that this has a positive impact on learning just for the reasons that each adult has more time for each individual child. Lastly, and probably most important, was the establishment of a **nurturing environment**. This is crucial to social and emotional development. A child under stress from lack of care, cannot lay down the pathways in the brain that will lead to normal development.” (“State Come Up Short in Elements of Good Care”, Sheehan & Simmons, *The News Observer*, Feb. 16, 1997.)

Researchers concluded that just as poor care can be detrimental to a child’s growth and development, a caring and nurturing environment can promote healthy development. Children in high quality care programs scored higher on tests of intelligence and social skills. These positive effects were shown to be carried through into high school and adulthood. One high quality program studied, where the children attended from birth to age five, showed a 16 point higher IQ score at age three, than the control group. These gains continued year after year, and throughout high school. In another study by High/Scope Educational Research Foundation in Michigan, children in quality care, who were followed until the age of 27, were four times more likely to earn more than $2000 a month,
and three times more likely to own a home.” ("State Come Up Short in Elements of Good Care", Sheehan & Simmons, The News Observer, Feb. 16, 1997.) For the control group only half as many had successful marriages. This group was found to be five times more likely to have been arrested five times or more. With the dramatic effect quality care can make on these young lives, it is reasonable to assume the devastating long lasting effects, poor care may contribute.

CURRENT RESEARCH

EARLY HEAD START RESEARCH & EVALUATION PROJECT

The Early Head Start Research and Evaluation Project has been implemented in response to the “quiet crisis” now facing today’s families with children of infant and toddler age. The Administration on Children Youth and Families (ACYF) designed this special project in response to the Head Start reauthorization in 1994. Funds have been set aside in support of a new comprehensive program that will support children and their families from in-utero to the end of the child’s third year of life.

FOUR DOMAINS

Four domains will be addressed in this Early Head Start Program. These include: 1- child development, 2- family development, 3- staff development and 4- community development. Over 290 programs have been funded between the years of 1995 and the end of 1998. ( "Overview of the Early Head Start Research and Evaluation Project", Love and Kisker, Mathematica Policy Research, Inc., Princeton, NJ., 1998.) The study will provide information on program
implementation, identify and explore variations in different programs, find ways of providing quality services, examine the needs and types of services low-income families of infants and toddlers require and investigate community participation and contributions to the programs. Just as the Early Head Start Program has benefited from earlier studies, such as the Comprehensive Child Development Program (CCPD), it is hoped that future child care programs will benefit from the research gathered from the on-going Early Head Start Research and Evaluation Project. Researchers feel there is just as much to learn from the implementation of the project as there will be from the final outcome and follow-up. ("Overview of the Early Head Start Research and Evaluation Project", Love and Kisker, Mathematica Policy Research, Inc., Princeton, NJ., 1998.)

SUPPORTIVE COMPREHENSIVE SERVICES

Successful child development programs are comprehensive, flexible and responsive to family needs. Their main objective should be to increase the number of children who succeed in elementary schools through a complete supportive program. Programs need to be flexible, willing to expand, push the boundaries of their job descriptions and be available when needed. The roots of a quality program are established within the community, not just one generation, but two or three. The staff in a quality program will strive to build a bond of trust and respect with the children and families they work with. Interpersonal relationships have been found to be essential to the total function of such programs. ("Collaborating to Support Students", City Schools, Lisbeth B. Schorr,
Six strategies for success are recommended for the development of quality, nurturing, comprehensive programs. First is to apply the research found to be effective to programs. Programs such as Head Start must retain their quality, but in a year long format. Pre-natal care, home visits, immunizations, parent support and quality child care should remain as program priorities. Second, training should be provided by professionals to stay informed of current educational trends. Bureaucracy needs to be eliminated so that large institutions can become more responsive to the needs of the individual family. Outcomes should focus on the mission, not necessarily the stringent rules of the large institution. "At risk" populations need high quality services and supports available not only to individuals or families but to the entire community that is "At Risk". Lastly partnerships that enlist parents collaboratively with the schools, will give children reasons to learn and to strive for success in their school careers.


**POSITIVE EFFECTS OF EARLY CHILDHOOD EDUCATION**

In a study conducted by Head Start in 1993, the developmental focus was to screen four and five year old children in the areas of, physical and mental health, speech, hearing, vision, and overall wellness. A pre-program and post-program test model was used. Of the over 2,000 children screened all showed a gain in score of six out of a possible twenty points, with the greatest gains shown
in the areas of Socio/Emotional and Language domains with a gain of nine out of twenty possible points. Special Needs children with learning disabilities gained an average of eleven points.

"Researchers hope that rather than treating all preschoolers alike, preschool professionals will identify strengths and weaknesses of each child early in the school year in order to individually tailor the experience to best fit and facilitate each child's optimum growth and development." ("Developmental Screening & Assessment", Meier, John H., 2nd National Head Start Research Conference, Washington, DC, November 4-7, 1993.)

**EARLY INTERVENTION**

A child’s learning, growth and development begins right from the moment of birth, through the interaction of those who are around him and the child’s interaction with the environment. A child who is identified early in life as having a possible developmental delay, or for being “At Risk,” will have a greater chance of minimizing, eliminating or even preventing the problem with an effective early intervention program. The Early Intervention Collaborative Study of 1990 found that children made developmental gains after only one year of early intervention services. Children who receive early intervention services have a greater chance of developing their skills to a level which will promote competence and independence throughout their lives. These children have an excellent probability of developing to their maximum potential. ("Helping Our Nation's Infants and Toddlers with Disabilities and Their Families", A Briefing Paper on Part H of the
DAY CARE AND BRAIN BUILDING

"A child's potential is determined in the early years..... These are the years when we create the promise of a child's future." ("Brain Research Manifests Importance of First Years", Simmons & Sheehan, The News & Observer Publishing Company. Too Little Too Late, Raleigh, North Carolina, February 16, 1997.) According to scientists, brain development does not begin in Kindergarten. A child's potential adult vocabulary has been basically established by the age of three. Neural pathways for math processes are well established before the age of four. A child's emotions and their stability are greatly affected by how the brain develops during the first two years of life. Child nurturing and experiences are not predetermined as once thought. The extent to which a child is allowed to safely explore and experience his early environment, will impact on how the young brain chooses to wire itself for life. (Simmons & Sheehan)

Today with more mothers entering the work force and requiring child care, day care is no longer just a service. "It is a place where children build their brains." (Simmons & Sheehan) By the time a child reaches the age of three, there are trillions of pathways and connections established in the brain. At no other time in our lives, does the brain master such a multitude of tasks, with so little effort. During these critical periods, neurons that carry electrical impulses, grow to create the network on which a child will build and rely on for the rest of his life.
Each day, from a child's first day of life, thousands of connections are made as the brain keys in on every sound, voice and syllable. Children deprived of proper environmental stimulation, nurture or primary senses, during the most critical developmental period, approximately six months to two years of age, may have normal development profoundly or adversely affected. Potential for continued normal development is greatly reduced during that growth period and for the future. ("School Readiness Considered From a Neuro-Cognitive Perspective", Rita W. Peterson, Early Education and Development, April 1994, Vol. 5, Number 2.) Prevention of the adverse affects from deprived environments, is just one of the objectives Head Start strives to overcome.

MORE AID URGED FOR URBAN KIDS

According to a recently published article describing research conducted by the Center for Early Education at Rutgers University, children in New Jersey's urban school districts are unprepared to start school. Many of these children are unable to recite the alphabet, count to 20, or identify primary colors. The research from this study shows that when three and four year old preschoolers attend full-day preschools, these programs can help to close the gap made by adverse home and economic conditions. The Camden City School District is just one of 28 urban school districts in NJ. Additional spending for full-day preschool programs could cut the rising expenses that are being realized in these districts for Special Education and Remedial Programs. The Supreme Court has ordered the state of New Jersey to fund preschool programs for three and four year olds.
in urban school districts by September of 1999. ("More Aid Urged for Urban Kids", The Courier Post, pg. 1 & 4, Jan. 6, 1999.)
CHAPTER III

DESIGN OF THE STUDY

According to the Head Start Performance Standards, children entering any Head Start Program must be assessed with a developmental screening instrument each year within 45 days of entry into the program. Choice of screening instrument is decided individually by each program. The instrument of choice for the Camden County CCCOEO, Inc. Head Start Program is the BRIGANCE® Developmental Screen for 3 and 4 year old children. Reasoning for the selection of this particular screen are: the ease of use and training, simplicity of design, accuracy evidenced with multiple testers, portable between locations with few materials needed, economical when large numbers of children are to be screened, it does not take long to administer, and most important, the children usually enjoy the screening session.

Two groups of children shall be studied for the purpose of this report. They are four year olds just entering the Head Start program for the '98 -'99 school year, and four year olds who are returning for their second year at Head Start, '98 -'99. Each four year child will be assessed with the BRIGANCE® Developmental Screen for 3 and 4 year old Preschoolers, early in the school year. Children having scores that fall below the recommended cutoff will be rescreened with the age appropriate form two to six months later, in the Spring of '99. Scores for each group will be compared in the Fall of '98, and again in the Spring of '99 to determine advantages and disadvantages for screening inner city preschool...
children, to find those children "At Risk" for developmental disabilities or academic delay, and to determine the positive effects of comprehensive preschool programs upon the lives of inner-city preschool children.

**POPULATION**

The children in the study are all inner city Camden County New Jersey residents between four and five years of age. The majority of these children are black males and females, coming from economically disadvantaged neighborhoods. Many of the children attending the Camden City Head Start Centers are from single parent homes, where the nurturing parent is the mother. Children of Hispanic descent represent another group of Camden City children, with other cultural groups being represented by one to two percent of the population served.

**DESCRIPTION OF CHILDREN STUDIED**

Many of the children come from economically and educationally disadvantaged homes, where the main care-taker may be a single, young, unwed or divorced mother, an occasional father with custody, a caring Grandmother or Grandfather as guardian, or the main care-taker may be a Foster parent. Children may have a lengthy medical history of pre and post-pregnancy complications, history of ear infections, Asthma or other medical conditions, or a past consisting of neglect or abuse. There are also children who come from families without significant problems or medical history.
METHOD OF SAMPLE SELECTION

Criteria for inclusion in the study are:

to live within the City limits of Camden, NJ,

to be a child attending Head Start at one of the Camden City Centers,

to be four years old, at some time during the ‘98 - ‘99 school year,

to be screened upon entry in the Fall of ‘98 and rescreened if score falls below cutoff scores, in the Spring of ‘99.

MEASUREMENT

The Fall ‘98 and Spring ‘99 BRIGANCE® Developmental Screens will be compared and analyzed for:

The detection of “At Risk” children.

The detection of possible developmental disabilities or academic delay.

The differences in the scores of new and returning students in two formats.

One including all Head Start children in the study, and a second excluding students with development disabilities or those suspected of having developmental disabilities.

INSTRUMENTATION

“The BRIGANCE® Screens were developed as a simple and effective method for identifying children who need further assessment to determine their
eligibility for special programs, stimulation, or extra assistance in preschool, kindergarten, or first grade." ("A Validation Study and the Psychometric Properties of the BRIGANCE® Screens", 1996.) These screening instruments, developed by Albert Brigance in 1979, contain elements in the areas of language, motor, cognitive, self-help, academic and readiness skills. Items were selected from the BRIGANCE® Diagnostic Inventory of Early Development (IED). These items were compiled into several forms for use with two year old toddlers, to children ending their first grade year of schooling, approximately seven years of age. The BRIGANCE® Screens can also be used to locate children who may be academically gifted or talented, so they can also benefit from early intervention instruction and programs. (BRIGANCE®, 1996)

HYPOTHESIS

HYPOTHESIS I- Four year old children who have attended a Head Start Program for approximately one school year, will score higher on the age appropriate level of the BRIGANCE® Preschool Screen, than four year old children who have never attended a Head Start Program.

HYPOTHESIS II- The BRIGANCE® Preschool Screen for three and four year olds will be at least 75% accurate in initially detecting preschool students with probable Developmental Disabilities or Academic Delays.

HYPOTHESIS III- Children detected initially with scores below the suggested cutoff by the BRIGANCE® Preschool Screen, will be rescreened within two to six months and appropriate recommendations will be made. After rescreening, a
percentage of students whose scores fall below the suggested cutoff for the second time, will be found to have Developmental Disabilities or Academic Delay after the appropriate referrals, evaluations and follow-ups are made. Hypothesis III states that between 85 and 90 percent of the children referred for further study, will be found to have Developmental Disabilities or Academic Delays.

**HYPOTHESIS IV** - “At Risk” preschool aged children enrolled in Head Start will show the appropriate developmental skills necessary for beginning their formal education.

**SCORING**

Scoring and chronological age of each child will be tabulated by the preschool teacher who administered the screen. Each score sheet will be checked for accuracy of score and age calculation, and for any possible missing information or inaccuracies.

**COLLECTION OF DATA**

Each child's score sheet will be collected and copied by the Special Needs Teachers who are currently employed by CCCOE, Inc., Head Start. Children whose scores fall below the recommended cut-offs, will have their sheets set aside for further study, recommendations and/or rescreening.

**RESEARCH STRATEGY**

Children in Camden City Head Start classrooms will be screened by either their regular classroom teacher, or classroom assistant teacher. Children who are already considered to be Special Needs children are screened either by the
Special Needs Teachers or by the Special Needs Teacher Associates. In the Spring, those children who fall within the required criteria of the study, will be rescreened with the appropriate BRIGANCE® developmental preschool screen.

**RESEARCH DESIGN AND ANALYSIS OF DATA**

Upon completion of registration and acceptance into the Head Start Program children are placed in a classroom with their peers. There is an initial "phase in" period of approximately six weeks in which children become accustomed to the classroom setting, and its' routine. Each child registered in the Head Start Program, must have a developmental screening within 45 days of entry, regardless of their month of entry. Children who enter in December, must be screened the same as those who enter in September.

For the design of this study, a pre-test/post test format will be used. Returning four year olds BRIGANCE® scores will be compared with four year old children who have never attended a Head Start program. Children having scores that fall below the recommended cutoff scores, as established by the BRIGANCE® screen, will be rescreened by the Special Needs teachers, within two to six months of the original screening date, with the age appropriate screen. Children having scores that fall at or above the recommended cutoffs, will not be rescreened. The results will be analyzed and compared to aid in the detection of children with developmental disabilities and academic delays. Results of children who are returning to Head Start for a second year will be compared with the results of children attending Head Start for the first time, to determine benefits.
and/or drawbacks of the program.

The results will be compiled into a statistical format, analyzed, interpreted and discussed in Chapter Four.

(Each four year old child used for the study will be assigned a reference number, to maintain confidentiality. Head Start Centers attended will be assigned letters A, B, C, or D. Therefore, each child's BRIGANCE® result will have a combined letter and number ID, that will not be repeated for any other child.)

DATA

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<td></td>
</tr>
<tr>
<td>21</td>
<td>c</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Absent for rescreen</td>
<td></td>
</tr>
<tr>
<td>Child #</td>
<td>Center</td>
<td>Month of Screen</td>
<td>Post-Test Score</td>
<td>Form Level</td>
<td>Cutoff score</td>
<td>Below Cutoff</td>
<td>Results and comments</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>------------</td>
<td>--------------</td>
<td>--------------</td>
<td>----------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>d</td>
<td>3</td>
<td>67</td>
<td>K</td>
<td>83</td>
<td>yes</td>
<td>CST rec.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Classified PSD '97</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Classified PSD '98</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Classified PSD '98</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>d</td>
<td>3</td>
<td>68</td>
<td>4</td>
<td>88</td>
<td>yes</td>
<td>CST rec.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>d</td>
<td>11</td>
<td>83</td>
<td>4</td>
<td>88</td>
<td>yes</td>
<td>No concern</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Child dropped</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Classified PSD '99</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No rescreen</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>d</td>
<td>2</td>
<td>68</td>
<td>4</td>
<td>88</td>
<td>yes</td>
<td>Bilingual/monitor</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

Over the course of the past seven months, September 1998 to March 1999, preschoolers attending various Camden City, New Jersey Head Start Centers were given the BRIGANCE® Preschool Screen for three and four year olds, within 45 days of entry into the program. Screening of Head Start children is a requirement of the program, and is described in the Head Start Performance Standards, 45 CFR 1304. Children who scored below the suggested cutoff score, were rescreened within two to six months with the age appropriate screen. At this time it could be determined, along with the input from classroom teachers and parents, if the child should be referred for more in depth testing from a child study team, whether the child should be further monitored with continued intervention or if another course of action may be required. It could also be determined that a child is making adequate progress in his present placement, and that no further testing or intervention is required at this time.

RESTATEMENT OF HYPOTHESIS

1- Four year old children who have attended a Head Start Program for approximately one school year, will score higher on average, on the age appropriate level of the BRIGANCE® Preschool Screen for three and four year olds, than four year old children never attending a Head Start Program.

2- The BRIGANCE® Preschool Screen for three and four year olds will be at least 75% accurate in initially detecting preschool students with probable Developmental Disabilities or Academic Delays.
3- Children detected initially with scores below the suggested cutoff by the BRIGANCE® Preschool Screen, and after rescreening within two to six months still have scores below the suggested cutoff, will be found to have Developmental Disabilities or Academic Delays at a 90 percent accuracy rate, after the appropriate referrals, evaluations and follow-ups are made.

4- Developmental preschool programs such as "Head Start", are advantageous to the overall growth, development and advancement of the "At Risk" preschool aged child in acquiring the skills necessary for the beginning of their formal education, ready to learn. This will be shown with the BRIGANCE® Preschool Screen for three and four year olds, by the higher on average scores of four year old children attending Head Start for their second school year, than the on average scores of four year old children just beginning a Head Start Program. Children with excluded scores are: children already found to have Developmental Disabilities or Academic Delay, children referred for Child Study awaiting evaluation and children who are suspected of Developmental Disabilities or Academic Delay, for which the referral process has not been initiated to date.

RESULTS

1- Four year old children who have attended a Head Start Program for approximately one school year, will score higher on average, on the age appropriate level of the BRIGANCE® Preschool Screen for three and four year olds, than four year old children never attending a Head Start Program.

The following Frequency Histogram Chart (Frequency Histogram Chart One *), reflects the difference shown between the actual score and the cutoff
score for all new and returning Head Start children combined, attending classes in four Camden City Head Start centers. A bell curve, as shown on the graph, represents a normal distribution for this sample of 67 children. The number of children scoring at each level, is reflected on the left-vertical axis of the chart. The point difference in cutoff scores is located on the bottom horizontal axis. Negative numbers reflect scores below the suggested cutoff, and positive numbers reflect scores above. This chart does not establish any differences between new and returning children.

* See Frequency Histogram Chart One

* All charts are displayed in the Appendix, at the end of the study.

The second overall chart shown is a Box-and-Whisker-Plot Chart. (Box-and-Whisker-Plot Chart Two*) This chart displays, the average median score, for all children screened, the middle 50% of data, the lowest and highest point difference from the cutoff score, and the range of point deviation for the data set.

Variable:
Sample size 67
Average -5.65672
Median -3
Mode -2
Geometric mean -32768
Variance 185.774
Standard deviation 13.6299
Standard error 1.66516
Minimum -44
Maximum 23
Range 67
Lower quartile -15
Upper quartile 5
Interquartile range 20
Skewness -0.578692
Standardized skewness -1.93379
Kurtosis 0.0702297
Standardized kurtosis 0.117342
Coeff. of variation -240.951
Sum -379

It is important to note that the overall average difference between the suggested cutoff score and actual score is greater than negative five, the median score is negative three and the mode score is negative two.

* See Box and Whisker Chart Two

Chart Three, is also a Box-and-Whisker Plot Chart*. This chart displays a comparison between the cutoff score deviation for new, (Vertical Axis One) and returning children. (Vertical Axis Two)

<table>
<thead>
<tr>
<th>Variable:</th>
<th>student EQ 1</th>
<th>student EQ 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>16</td>
<td>51</td>
</tr>
<tr>
<td>Average</td>
<td>-11.625</td>
<td>-3.78431</td>
</tr>
<tr>
<td>Median</td>
<td>-15</td>
<td>-2</td>
</tr>
<tr>
<td>Mode</td>
<td>-19</td>
<td>-2</td>
</tr>
<tr>
<td>Geometric mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variance</td>
<td>176.383</td>
<td>177.333</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>13.2809</td>
<td>13.3166</td>
</tr>
<tr>
<td>Standard error</td>
<td>3.32023</td>
<td>1.8647</td>
</tr>
<tr>
<td>Minimum</td>
<td>-36</td>
<td>-44</td>
</tr>
<tr>
<td>Maximum</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Range</td>
<td>47</td>
<td>67</td>
</tr>
<tr>
<td>Lower quartile</td>
<td>-19</td>
<td>-11</td>
</tr>
<tr>
<td>Upper quartile</td>
<td>-2.5</td>
<td>6</td>
</tr>
<tr>
<td>Interquartile range</td>
<td>16.5</td>
<td>17</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.099288</td>
<td>-0.848378</td>
</tr>
<tr>
<td>Standardized skewness</td>
<td>-0.162137</td>
<td>-2.47343</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-0.566239</td>
<td>0.912418</td>
</tr>
<tr>
<td>Standardized kurtosis</td>
<td>-0.462332</td>
<td>1.33007</td>
</tr>
<tr>
<td>Coeff. of variation</td>
<td>-114.245</td>
<td>-351.89</td>
</tr>
<tr>
<td>Sum</td>
<td>-186</td>
<td>-193</td>
</tr>
</tbody>
</table>

The overall average difference between the suggested cutoff score and actual score for new students is greater than negative eleven. The overall
average difference between the suggested cutoff score and actual score for returning students is greater than negative four. On average, the new Head Start students scored eight points less than those returning to Head Start for a second year.

* See Box and Whisker Chart Three

In order to validate the assumptions for Hypothesis One the data samples for new and returning Head Start students must be normally distributed. For normally distributed samples, a parametric test can be run to compare the samples. Samples that do not display a bell curve on the Frequency Histogram Chart must be compared nonparametrically.

* See Frequency Histogram Chart Four and Five

Chart Four* cutoff score results for returning students displays a Bell curve. Chart Five* cutoff score results for new students does not display a Bell curve. (With a larger sample of new students a normal distribution of students might be seen.) Since the assumptions are not met, nonparametric testing is considered appropriate for Hypothesis One.

COMPARISON OF TWO SAMPLES, NEW AND RETURNING DEVIATION SCORES, NONPARAMETRIC TEST

Null Hypothesis → The means of the two samples (new verses returning) are equivalent.

Alternative Hypothesis → The means of the two samples (new verses returning) are not equivalent.

Approach → Compute test statistic from sample data:
What’s the probability of getting a value at least as large as the test statistic? (.026746 = p. value)

*Degree of confidence* = 1 - p. value = 1 - .026746 = .973254 or 97 %

*Decision* → Reject the Null Hypothesis of equality between means with a 97 % degree of confidence.

*Interpretations* → New student sample has a different mean from returning student sample.

Sample 1 : EQ 1 = New  
Sample 2 : EQ 2 = Returning

Test : Unpaired

Average rank of first group = 24.5625 based on 16 values  
Average rank of second group = 36.9608 based on 51 values  
Large sample test statistic Z = 2.2152  
Two-tailed probability of equaling or exceeding Z = 0.026746

67 total observations
COMPARISON OF TWO SAMPLES,  
NEW AND RETURNING DEVIATION SCORES,  
KOLOMOGOROV-SMIRNOV, NONPARAMETRIC TEST

*Decision* \(\rightarrow\) Reject the Null Hypothesis of equality with a \(1 - .0568184 = .9431816\)  

(94 % degree of confidence)

Sample 1 : EQ 1 = New  
Sample 2 : EQ 2 = Returning

Estimated overall statistic DN = 0.382353  
Approximate significance level = 0.0568184

As shown by the nonparametric tests, the average score value obtained by the Head Start new student is different and significantly lower than the average score value for returning Head Start students, therefore confirming Hypothesis One. In the table below the mean for all students tested is greater than negative seven, whereas new students is greater than negative eleven and returning greater than negative three. At a 95 percent confidence level, it is relatively certain that the new and returning student deviation from the suggested cutoff, represents a true score.

Also of significant interest is the average range of cutoff scores, and the differences shown in these ranges between new and returning students.
TABLE OF LEAST SQUARES MEANS FOR NEW AND RETURNING, DEVIATION SCORES

<table>
<thead>
<tr>
<th>Level</th>
<th>Count</th>
<th>Average</th>
<th>Stnd. Error</th>
<th>95 Percent Confidence for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAND MEAN</td>
<td>67</td>
<td>-7.704657</td>
<td>1.9067254</td>
<td>-11.513513 -3.8958008</td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>-11.625000</td>
<td>3.3270999</td>
<td>-18.271182 -4.9788178</td>
</tr>
<tr>
<td>2</td>
<td>51</td>
<td>-3.784314</td>
<td>1.88635487</td>
<td>-7.506920 -.0617071</td>
</tr>
</tbody>
</table>

*See Table of Least Squares Chart Six*

2- The BRIGANCE® Preschool Screen for three and four year olds will be at least 75% accurate in initially detecting preschool students with probable Developmental Disabilities or Academic Delays.

Due to the lack of time available for the study of Hypothesis Two, and the lack of long range data, the scope of this question cannot be dealt with at this time. Follow-up study over a time frame of two years or more, would be necessary to adequately research and prove this hypothesis.

3- Children detected initially with scores below the suggested cutoff by the BRIGANCE® Preschool Screen, and after rescreening within two to six months still have scores below the suggested cutoff, will be found to have Developmental Disabilities or Academic Delays at a 90 percent accuracy rate, after the appropriate referrals, evaluations and follow-ups are made.

Out of a sample of 67 preschoolers, 22 were identified as children with potential developmental disabilities or academic delay. Of these 22 children 12 had been through the entire process of identification, appropriate referral,
evaluation and follow-up at the time of this writing. Ten children were in the beginning or middle of the referral process, or parents had not given consent. All twelve children who had been through the referral and evaluation process were found to be eligible for special education services due to developmental disabilities or academic delay. At this level, detection of children eligible for special education services due to developmental disabilities or academic delay, is 100%. It is not known at this writing, how many of the ten unprocessed children may also be found eligible. It could be reasonably assumed that the percentage of these ten students found to be eligible for services could be as high as the 100% correct detection of the first twelve.

Statistically Hypothesis Three looks as written below:

- 22/67 Potential students with developmental disabilities = 30%
- 12/22 Processed students with developmental disabilities = 60%
- 10/22 Unprocessed students = 40%
- 12/12 Processed and identified students with developmental disabilities = 100%

.: The probability of the remaining 10 unprocessed students of being identified with developmental disabilities, after the appropriate referrals, evaluations and follow-ups, equals 100%.

A statistical hypothesis test could not be conducted because the
underlying assumptions necessary for the test were not met.

\[ p = .85 \% \]
\[ q = .15 \% \]
\[ (np > 5 \text{ and } nq > 5) \]

4- Developmental preschool programs such as "Head Start," are advantageous to the overall growth, development and advancement of the "At Risk" preschool aged child in acquiring the skills necessary for the beginning of their formal education, ready to learn. This will be shown with the BRIGANCE® Preschool Screen for three and four year olds, by the higher on average scores of four year old children attending Head Start for their second school year, than the on average scores of four year old children just beginning a Head Start Program. Children with excluded scores are: children already found to have Developmental Disabilities or Academic Delay, children referred for Child Study awaiting evaluation and children who are suspected of Developmental Disabilities or Academic Delay, for which the referral process has not been initiated to date.

The next Frequency Histogram Chart (Frequency Histogram Chart Seven*), reflects the difference shown between the actual score and the cutoff score for all new and returning Head Start children combined, attending classes in four Camden City Head Start centers. A Bell curve, as shown on the graph, represents a normal distribution for this sample of children. Children already found to have Developmental Disabilities or Academic Delay, children referred for Child Study awaiting evaluation and children who are suspected of
Developmental Disabilities or Academic Delay, for which the referral process has not been initiated to date, have been excluded from the statistics shown for this question. The number of children scoring at each level, is reflected on the left-vertical axis of the chart. The point difference in cutoff scores is located on the bottom horizontal axis. Negative numbers reflect scores below the suggested cutoff, and positive numbers reflect scores above. This chart does not establish any differences between new and returning children.

* See Frequency Histogram Chart Seven

The Box-and Whisker-Plot Chart for question four can be seen below.

(Box-and-Whisker-Plot Chart Eight*) As in question one, this chart displays, the average median score, for all children screened, the middle 50% of data, the lowest and highest point difference from the cutoff score, and the range of point deviation for the data set. (LD excluded)

<table>
<thead>
<tr>
<th>Variable</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>45</td>
</tr>
<tr>
<td>Average</td>
<td>-1.75556</td>
</tr>
<tr>
<td>Median</td>
<td>-1</td>
</tr>
<tr>
<td>Mode</td>
<td>5</td>
</tr>
<tr>
<td>Geometric mean</td>
<td>-32768</td>
</tr>
<tr>
<td>Variance</td>
<td>152.371</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>12.3439</td>
</tr>
<tr>
<td>Standard error</td>
<td>1.84011</td>
</tr>
<tr>
<td>Minimum</td>
<td>-36</td>
</tr>
<tr>
<td>Maximum</td>
<td>23</td>
</tr>
<tr>
<td>Range</td>
<td>59</td>
</tr>
<tr>
<td>Lower quartile</td>
<td>-7</td>
</tr>
<tr>
<td>Upper quartile</td>
<td>6</td>
</tr>
<tr>
<td>Interquartile range</td>
<td>13</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.792628</td>
</tr>
<tr>
<td>Standardized skewness</td>
<td>-2.1707</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.566946</td>
</tr>
<tr>
<td>Standardized kurtosis</td>
<td>0.776323</td>
</tr>
</tbody>
</table>
The average difference between the suggested cutoff score for this sample is > than negative one. Although still below the suggested cutoff, the overall average is higher than the negative five point difference shown for the entire student sample.

* See Box and Whisker Plot Chart Eight

The Box-and-Whisker-Plot Chart seen below, (Box-and-Whisker-Plot Chart Nine*) displays a comparison between the cutoff score deviation for new, (Vertical Axis One) and returning children, (Vertical Axis Two) excluding children with potential developmental disabilities and academic delay.

<table>
<thead>
<tr>
<th>Variable</th>
<th>student EQ 1</th>
<th>student EQ 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>Average</td>
<td>-10.5833</td>
<td>1.45455</td>
</tr>
<tr>
<td>Median</td>
<td>-8</td>
<td>1</td>
</tr>
<tr>
<td>Mode</td>
<td>-3</td>
<td>5</td>
</tr>
<tr>
<td>Geometric mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variance</td>
<td>226.447</td>
<td>91.8182</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>15.0482</td>
<td>9.58218</td>
</tr>
<tr>
<td>Standard error</td>
<td>4.34403</td>
<td>1.66804</td>
</tr>
<tr>
<td>Minimum</td>
<td>-36</td>
<td>-26</td>
</tr>
<tr>
<td>Maximum</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Range</td>
<td>47</td>
<td>49</td>
</tr>
<tr>
<td>Lower quartile</td>
<td>-22.5</td>
<td>-4</td>
</tr>
<tr>
<td>Upper quartile</td>
<td>-1</td>
<td>8</td>
</tr>
<tr>
<td>Interquartile range</td>
<td>21.5</td>
<td>12</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.136044</td>
<td>-0.514019</td>
</tr>
<tr>
<td>Standardized skewness</td>
<td>-0.192395</td>
<td>-1.20548</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-1.02917</td>
<td>1.14948</td>
</tr>
<tr>
<td>Standardized kurtosis</td>
<td>-0.727735</td>
<td>1.34788</td>
</tr>
<tr>
<td>Coeff. of variation</td>
<td>-142.187</td>
<td>658.775</td>
</tr>
<tr>
<td>Sum</td>
<td>-127</td>
<td>48</td>
</tr>
</tbody>
</table>
In the sample of new and returning students, minus the excluded students, the overall average difference between the suggested cutoff score and actual score for new students is greater than negative ten. The overall average difference between the suggested cutoff score and actual score for returning students is slightly greater than one. On average, the new Head Start students scored eleven points less than those returning to Head Start for a second year. With the students suspected of developmental disabilities and academic delay excluded. The average range difference of scores for new and returning students has increased from an eight point spread to an eleven point spread. New students scored on average ten points less than the suggested cutoff score, and returning students scored one plus, more than the suggested cutoff score. The median score for new students was negative eight, and the for returning students this score was plus one.

* See Box and Whisker Plot Chart Nine

In order to validate the assumptions for Hypothesis Four the data samples for new and returning Head Start students must be normally distributed. For normally distributed samples, a parametric test can be run to compare the samples. Samples that do not display a bell curve on the Frequency Histogram Chart must be compared nonparametrically.

* See Frequency Histogram Chart Ten and Eleven

Chart Ten* cutoff score results for returning students displays a Bell curve. Chart Eleven* cutoff score results for new students does not display a Bell curve. (With a larger sample of new students a normal distribution of students might be
seen.) Since the assumptions are not met, nonparametric testing is considered appropriate for Hypothesis Four.

**COMPARISON OF TWO SAMPLES,**

**NEW AND RETURNING DEVIATION SCORES,**

**LD EXCLUDED NONPARAMETRIC TEST**

*Null Hypothesis* → The means of the two samples (new verses returning) are equivalent.

*Alternative Hypothesis* → The means of the two samples (new verses returning) are not equivalent.

**Approach** → Compute test statistic from sample data:

What’s the probability of getting a value at least as large as the test statistic?

(.01628 = p. value)

*Degree of confidence* = 1 - p. value = 1 - .01628 = .98372 or 98%

*Decision* → Reject the Null Hypothesis of equality between means with a 98% degree of confidence.

*Interpretations* → New student sample has a different mean from returning student sample.

Sample 1 : EQ 1 = New

Sample 2 : EQ 2 = Returning

Test : Unpaired
Average rank of first group = 15.1667 based on 12 values
Average rank of second group = 25.8485 based on 33 values
Large sample test statistic $Z = 2.40258$
Two-tailed probability of equaling or exceeding $Z = 0.01628$
45 total observations

COMPARISON OF TWO SAMPLES,
NEW AND RETURNING DEVIATION SCORES, LD EXCLUDED
KOLOMOGOROV-SMIRNOV, NONPARAMETRIC TEST

Decision $\rightarrow$ Reject the Null Hypothesis of equality with a

$1 - .0362996 = .9637004$

(96 % degree of confidence)

Sample 1 : EQ 1 = New
Sample 2 : EQ 2 = Returning

Estimated overall statistic DN $= 0.477273$
Approximate significance level $= 0.0362996$

As shown by the nonparametric tests, the average score value obtained by
the Head Start new student is different and significantly lower than the average
score value for returning Head Start students, therefore confirming Hypothesis
Four. In the table below the mean for all students tested is greater than negative
four, whereas new students is greater than negative ten and returning greater
than positive one. At a 95 percent confidence level, it is relatively certain that the new and returning student deviation from the suggested cutoff, represents a true score. (LD excluded)

Also of significant interest is the average range of cutoff scores, and the differences shown in these ranges between new and returning students.

**TABLE OF LEAST SQUARES MEANS FOR NEW AND RETURNING,**

**DEVIATION SCORES (LD EXCLUDED)**

<table>
<thead>
<tr>
<th>Level</th>
<th>Count</th>
<th>Average</th>
<th>Stnd. Error</th>
<th>95 Percent Confidence for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAND MEAN</td>
<td>45</td>
<td>-4.564394</td>
<td>1.8939055</td>
<td>-8.384697 - .7440913</td>
</tr>
<tr>
<td>1</td>
<td>12</td>
<td>-10.583333</td>
<td>3.2436875</td>
<td>-17.126357 -4.0403099</td>
</tr>
<tr>
<td>2</td>
<td>33</td>
<td>1.454545</td>
<td>1.9560172</td>
<td>-2.491046 5.4001370</td>
</tr>
</tbody>
</table>

* See Table of Least Squares Chart Twelve

**SUMMARY OF RESULTS**

From September 1998 to March 1999, sixty-seven preschoolers attending various Camden City, New Jersey Head Start Centers were given the **BRIGANCE® Preschool Screen** for three and four year olds, within 45 days of their entry into the program. Children who scored below the suggested cutoff score, were rescreened within two to six months with the age appropriate screen. Scores were again compared to the suggested cutoff scores, and recommendations were made.

The research from this study has been used to statistically analyze four
hypothetical questions concerning Head Start and early screening with the

BRIGANCE® Preschool Screen for three and four year olds.

Question One assumes that four year old children returning to a Camden City Head Start Program for a second year will score higher on the BRIGANCE® Preschool Screen for three and four year olds, then four years beginning their first year at Head Start. Data was plotted into a Frequency Histogram Chart, which showed a normal distribution for the children sampled. Box and Whisker Charts are presented, one which shows the overall average difference for all students between the suggested cutoff score and the actual score. The second Box and Whisker Chart compares new and returning students and the deviation between each groups cutoff and suggested cutoff. Assumptions are validated by comparing new and returning student samples on a Frequency Histogram Chart. New student sample does not form a Bell curve, therefore the samples must be statistically tested with a nonparametric test. Two are preformed. Results show the average score value obtained by the Head Start new student is different and significantly lower than the average score value for returning Head Start students, therefore confirming Hypothesis One.

Hypothesis Four is researched with the same method and procedures, but twenty-two students with confirmed learning disabilities or suspected learning disabilities are excluded. Of these twenty-two, twelve had been identified and through the entire process of appropriate referral, evaluation and follow-up. Scores are put into charts and tested nonparametrically. Results show the average score value obtained by the Head Start new student is different and
significantly lower than the average score value for returning Head Start students, therefore confirming Hypothesis Four. Even with confirmed and suspected Learning Disabled students eliminated from the sample, students who return to Head Start for a second year, score higher on average from those who are just entering Head Start for the first time.

Hypothesis Two was not attempted for this study due to the lack of adequate time to properly acquire the necessary long range data.

Hypothesis Three asks for an analysis of confirmed and suspected students displaying Developmental Disabilities and Academic Delay. It is assumed that with an accuracy rate of 90 percent, those students detected by the BRIGANCE® Preschool Screen for three and four year olds, with scores below the suggested cutoff, will be found to have Learning Disabilities after appropriate referral, evaluation and follow-up. Of the original 67 students tested, 22 are found to have probable Developmental Disabilities or Academic Delay. Of the 12 students who have gone through the entire referral process, all are found to have been correctly identified. Barring any unusual circumstances, it can be assumed that the remaining ten detected students, will be found to have Developmental Disabilities or Academic Delay.
SUMMARY CONCLUSION AND RECOMMENDATIONS

SUMMARY

The Head Start Program was first enacted by Presidents Johnson’s “War on Poverty,” in May of 1965. This early childhood program, which is federally funded through the Department of Health and Human Services, targets low income families and their children in an effort to provide comprehensive services and to ready children for entry into Kindergarten. Preschool children ages three to five were originally served in the areas of Health, Education, Nutrition and family socio-emotional well being. The program has been expanded in recent years to service infants, toddlers and expectant mothers.

Eighty percent of the funding for Head Start is through federal programs. The remaining twenty percent is obtained through in-kind donations, parent involvement hours and community service donations.

The Camden County Council On Economic Opportunity (CCCOEO, Inc.), is the grantee for the Camden County, New Jersey Head Start Program. This program which began in October 1968, provides comprehensive services for preschool children ages three to five. There are also four newly formed Kindergarten classes. The current funded enrollment for the 1998-'99 school year is 1,153 children. One hundred eight of these children receive funding through the Camden City Board of Education. Ten percent of the enrollment for every Head Start Program is reserved for children with Disabilities. This number is approximately 115 preschoolers, for the CCCOEO Head Start Program.
There has been extensive research published supporting comprehensive preschool programs for children and their families, especially for the "At Risk" populations, often found within our inner cities. Programs such as Head Start prepare children for school entrance, provide them with a caring and nurturing environment and empower families with the skills and resources necessary for successful living. Each child in the program is required to have a developmental screen preformed within 45 days of entry. CCCOE0'S instrument of choice has been the BRIGANCE® Preschool Screen for three and four year olds, for the past several years. It has proved to be accurate in detecting children with developmental disabilities and academic delay, which was shown and statistically supported in this study.

Several past and current research studies are summarized to provide supportive documentation on the benefits of comprehensive preschool programs. The laws protecting those with disabilities are reviewed as are the Head Start Performance Standards, which set the rules and regulations for Head Start Programs across the country. The Validation Study of the BRIGANCE® Screens is also reviewed.

From September 1998 to March 1999, sixty-seven preschoolers attending various Camden City, New Jersey Head Start Centers were given the BRIGANCE® Preschool Screen for three and four year olds. Children who scored below the suggested cutoff score, were rescreened within two to six months with the age appropriate screen. Scores were compared to the suggested cutoff scores, and recommendations were made.
The children in the study were all inner city Camden County New Jersey residents between four and five years of age. The majority of these children were black males and females, coming from economically disadvantaged neighborhoods. Many of the children attending the Camden City Head Start Centers were from single parent homes, where the nurturing parent is the mother. Children of Hispanic descent represent another group of Camden City children. Other cultural groups were represented by one to two percent of the population served.

Some children had a lengthy medical history of pre and post-pregnancy complications, history of ear infections, asthma, other medical conditions, as well as incidences of neglect or abuse. Children from families without significant problems or medical history were represented by a smaller number of children.

For the design of this study, a pre-test/post test format was used. Returning four year olds BRIGANCE® scores were compared with four year old children who have never attended a Head Start program, until the 1998 - '99 school year. Children's scores that fell below the recommended cutoff scores, as established by the BRIGANCE® screen, were rescreened by Special Needs teachers, within two to six months of the original screening date. Children having scores that fell at or above the recommended cutoffs, were not rescreened.

The research from this study was used to statistically analyze the four hypothetical questions proposed concerning Head Start and early screening with the BRIGANCE® Preschool Screen for three and four year olds. Results were compiled into a data base and statistically analyzed by two nonparametric tests,
and then presented visually by various graphs and charts. Three of the four original hypothesis proposed for this study were confirmed by the statistics presented. During the course of analyzing the data collected, it was discovered that Hypothesis Two could not be proved or disproved, due to the significant time required for an extensive longitudinal study.

FINDINGS

The sample for the study consisted of 67 Head Start students, 51 of whom were returning for their second year with the Head Start Program and 16 who were new to the program. The overall average for the entire sample was greater than negative five below the suggested cutoff score. The median score was negative 3 below the suggested cutoff. A score of negative 44 below the cutoff was achieved by at least one student and a maximum score of 23 above the cutoff was achieved by at least one student. The range between the lowest and highest was 67 points. Chart One shows an overall normally distributed population of students, as is displayed by the typical Bell curve. Upon analysis of Chart Two, with zero being considered as the suggested cutoff score, over half of the students have scores below the suggested cutoff score. This information suggests three things. Many of the children in the data set sample may be new and have low scores. The children with low scores may have developmental disabilities or academic delay, or the overall population may be an "At Risk" population. With an overall standard error of measurement for this test of 1.66+ it can be assumed that the scores represented in the first two charts are accurate to within + or - two points.
Chart Three represents the deviation from the cutoff score and the differences between new and returning students. The average score for new Head Start students is greater than negative eleven points, and the average for returning students is greater than negative three. A difference of eight points is found between the new and returning populations, all in the negative end of the range of scores. The median score shows a larger spread with new students averaging negative fifteen and returning students averaging negative two. The difference here is thirteen points, again all in the negative range. The third difference to be considered is the mode score with new equaling negative nineteen and new equaling negative two, and the difference being seventeen. This chart shows that new children do score lower from the cutoff score than returning students, with the overall average of the returning student also being lower than the cutoff, but not by as much. As in Chart One and Two, children with low scores may have developmental disabilities or academic delay, or the overall population may be an "At Risk" population. The standard deviation for this test is slightly over 13. Upon analysis of the median and mode scores, there is just slightly under one standard deviation difference between new and returning students. The mode score is greater than one standard deviation difference. The lowest score represented on this chart is in the returning student sample, with a score of negative 44 below the suggested cutoff. A score this low suggests the possibility of a learning disability for this student, even though the student has been in the program for two years. This could be a student who has already been evaluated and found to have learning disabilities, or a student that was not
identified by the screening in the previous year.

Chart Four and Five analyze the samples for normal distribution. The data set sample for returning students shown in Chart Four is a normal distribution which is represented by the Bell curve. The data set sample for new students shown in chart five is not normally distributed, which can be seen by the dip in the center of the chart. Due to the new student sample, nonparametric tests must be preformed to prove Hypothesis One. Two nonparametric tests are preformed, both proving that the overall average for new and returning students is different, with new students being lower, which confirms Hypothesis One.

The Table of Least Squares is represented by Chart Six, which displays the range of scores for new and returning students with the left axis equaling new students and the right axis equaling returning students. The chart illustrates the stopping and starting points for each range, with new students being lower for all students tested. Returning student scores begin just above the highest new student score. This suggests that returning students have made gains by attending Head Start the previous year. The median score is represented by the short line in the center of each axis.

Hypothesis Three addresses the accuracy of the Brigance Screen for detecting students with probable developmental disabilities or academic delay. The data reveals that out of 67 students, 22 are detected as students with probable developmental disabilities or academic delay. Of these 22 students, twelve have been referred, evaluated and positively identified as students with learning disabilities. Of the remaining ten students, some are in the process of
being evaluated, others are awaiting parental consent. There are also students for which consent to evaluate has been denied. With a 100 percent accuracy of detection and identification for the first twelve students, it can be assumed but not proved that the remaining ten students would also be students with learning disabilities once properly referred and evaluated.

Hypothesis Four is similar to the first hypothesis, except the 22 students with identified or probable learning disabilities are excluded from the data set. Analysis of the entire sample shows a normal Bell shaped distribution as illustrated in Chart Seven. Chart Eight shows the overall average to be greater than negative one, the median to be negative one and the mode score to be five. The range of scores has decreased to 59, with a minimum score of negative 36 points from the suggested cutoff, to a positive score of 23 from the suggested cutoff. The maximum score of plus 23 does not change for both samples, but the minimum score increases by eight points. This suggests that many of the excluded students that were detected or eventually identified as students with learning disabilities were students whose scores have been excluded from this data set, therefore raising the overall average of the group. With an overall standard error of measurement for this test of 1.84+ it can be assumed that the scores represented on Charts Seven and Eight are accurate to within + or - two points.

Chart Nine compares new and returning student scores with the exclusion of identified and suspected learning disabled students. The average score for new students is greater than negative 10, and the average score for returning
students is greater than one. Median score for new students is negative eight and returning is one. Mode score is negative three for new students and five for returning students. Differences between these scores are eight to nine points overall. Minimum scores differ by ten points for new and returning, and maximum scores differ by twelve points. In each instance the new student scores are the lower scores. The differences in scores suggests that returning students have benefited from being in the Head Start Program during the previous year. The low minimum scores for some returning students can suggest the following: some students with developmental delay or academic disabilities may be masked at this time by poor attendance, health conditions, short attention span or environmental factors. An overall group performance may have been lower than their peers, but normal for that area or population. Chart Nine displays an overlap of low returning students with high new students by approximately four students on each scale. This overlap of scores can be accounted for by overall lower or higher functioning levels of the students tested. Students whose parents have worked with them at home, even if they are new, may score higher than returning students from a more deprived environment.

Charts Ten and Eleven analyze the samples for normal distribution. The data set sample for returning students shown in Chart Ten is a normal distribution which is represented by the Bell curve. The data set sample for new students shown in Chart Ten is not normally distributed, which can be seen by the total absence of scores in the center of the chart. Due to the new student sample, nonparametric tests must be preformed to prove Hypothesis Four. Two
nonparametric tests were performed, both showing that the overall average for new and returning students, with potential and identified learning disabled students excluded, is different, with new students being lower.

The Table of Least Squares is represented by Chart Twelve, which displays the range of scores for new and returning students with the left axis equaling new students and the right axis equaling returning students. The chart illustrates the stopping and starting points for each range, with new students being lower for all students tested. Returning student scores begin just below the suggested cutoff score. The highest new student score for this data set is negative six below the suggested cutoff. This suggests that returning students have made gains by attending Head Start the previous year, as there is a difference in low returning student scores and high new student scores of almost five points. The median score is represented by the short line in the center of each axis. This chart shows a significant difference in median scores with a returning median score of positive one, and a new median score of negative ten.

CONCLUSION AND DISCUSSION

Considering all of the data and statistical evidence presented it is clear that children who attend the Camden County Head Start Program, do benefit from their participation there. Average gains in overall BRIGANCE® scores are almost eight points over approximately one year's time. It can be assumed that the difference in new and returning child scores, is the actual gain a child would show over a year's time. Median score difference is 13 points, showing a greater difference and therefore greater benefit for children scoring near the middle of the
curve. There is some overlap of scores shown between new and returning students when the entire data set is included.

A normally distributed sample is needed to preform Parametric testing for statistical analysis. The returning student sample, the entire data set, and LD excluded, is normally distributed for all tests performed. The new student sample consistently shows distribution that is not normal. The two samples are not the same. The testing preformed on the new student sample test is lower for the entire data set, and for LD excluded. It can be assumed that without the benefit of the Head Start Program, new student scores would remain low, putting these children “At Risk” for school failure upon their entry to Kindergarten.

Analysis of the entire data set with LD excluded, shows a rise of the on average score to less than negative two, below the suggested cutoff. Median score is negative one below the suggested cutoff. Twenty-two students are excluded from the second data set due to suspected Learning Disabilities. With potential Learning Disabled students excluded the on average difference between returning and new Head Start student scores is greater than nine. On average scores have risen, possibly confirming the presence of Learning Disabilities for excluded students. Greater benefits are shown here for returning Head Start students. Those students with potential learning disabilities when excluded from the data set, cause the on average and median score to rise, showing a substantial gain for the returning student. The median score of one point more than the suggested cutoff, suggests that the once “At Risk” child, having never attended a Head Start Program in Camden County, is now at an equal starting
point with his or her non "At Risk" peers. Should this pattern of gain continue for
the child's second year of attending Camden County Head Start, it is conceivable
that Camden County Head Start children will certainly start their Kindergarten
year "ready to learn," and possibly "ready to excel."

**What could be done differently?** More concise time frames should be
utilized to ensure overall reliability of the data sets. For this study students were
retested two to six months from the original test date. Retesting all students with
low cutoff scores, after a three month wait period would eliminate the possible
effects of students who have learned more than their peers because of a longer
time frame between testing. Data gathered by this method would have less of a
tendency to become skewed.

The use of closer age groups, could yield more precise data when
compared to one another. Comparisons could be made within age groups where
the range is only two to three months difference, such as four years-four months,
to four years-six months. Results yielded from close age groups could be
considered significant, especially if score differences were large.

Original screenings and rescreenings should be done by same screener,
to eliminate differences in screeners and differences in methods used.

**POSITIVE IMPLICATIONS**

The advantage of early screening, proved to be beneficial, to access and
implement early intervention programs. This early referral and intervention
process, will allow many children to acquire the skills needed to start formal
schooling in a regular Kindergarten class along with their peers, with minimal
support systems. The overall differences in scores between the new and returning students, shows Head Start to be advantageous to "At Risk" children.

BAD OUTCOMES

The sample size between the new and returning students was not equivalent. The returning student sample was slightly too large, with relation to the new student sample and was not normally distributed, thus disallowing parametric testing for the statistical analysis.

At the beginning of the study the outcome could not be predicted for Hypothesis Two. The inability to prove this hypothesis due to time constraints, is regrettable.

The overall average scores were higher for returning students, but the scores were still below the suggested cutoff. This suggests that the "At Risk" student may be starting out at a disadvantage when compared to peers with no risk factors.

IMPLICATIONS FOR FUTURE RESEARCH

Comparisons between centers-results that could be shown with normally distributed samples and use of parametric test. Why is center three different? Why the large deviation of scores? What could be the cause?

The two tables below show important information on scores between centers, and scores between students. In both tables the average deviance from suggested cutoff score is significantly lower for center number three, than for center one, two and four. The confidence level for this table is 95 %. While all other centers have a range in their cutoff scores from a negative number for a
low and a positive number for a high, center number three never makes it out of
the negative range. This centers' highest score of a negative eight below the
cutoff, is nearly eleven points lower than the next centers' highest score of
positive three. When lowest scores between centers are compared center three
is greater than 10 points lower, with a negative twenty-one, than center number
one, with a negative eleven. The differences shown in center number three's
scores indicates interesting prospects for future research. The tables and charts
to follow yield interesting information, useful for follow-up studies.

TABLE OF LEAST SQUARES MEANS FOR DEVIATION FROM CUTOFF,
BETWEEN CENTERS, ALL STUDENTS

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* See Table of Least Squares Chart Thirteen and Fourteen
TABLE OF LEAST SQUARES MEANS FOR DEVIATION FROM CUTOFF, BETWEEN CENTERS, LD EXCLUDED

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* See Table of Least Squares Chart Fifteen and Sixteen

Suggestions for future research include:

A comparative study analyzing the similarities and differences between city and county centers.

A comparison of students with learning disabilities for whom services were not implemented, with students manifesting learning disabilities who received services.

A comparison of equal numbers of new and returning students with normally distributed samples.

If a larger sample of new students is studied, and the sample was still not normally distributed, to what factors could this be attributed?
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“The ZERO TO THREE” : New Visions for Parents Work Group, Washington D.C.

APPENDIX

CHARTS AND GRAPHS FOR CHAPTER FOUR AND FIVE

Frequency Histogram Chart One
Box and Whisker Plot Chart Two
Box and Whisker Plot Chart Three
Frequency Histogram Chart Four and Five
Table of Least Squares Chart Six
Frequency Histogram Chart Seven
Box and Whisker Plot Chart Eight
Box and Whisker Plot Chart Nine
Frequency Histogram Chart Ten and Eleven
Table of Least Squares Chart Twelve
Table of Least Squares Chart Thirteen and Fourteen
Table of Least Squares Chart Fifteen and Sixteen
Difference between Cutoff and Actual Score
Chart Two - All Test Results Combined

Box-and-Whisker Plot

Deviation
Chart Three

Multiple Box-and-Whisker Plot

1 = new student
2 = returning student
Chart Four - Test results for returning students

Difference between cutoff and actual score
Chart Five

Frequency Histogram: CHART 5
Test Results for New Students

Difference between cutoff and actual score
Chart Six

95 Percent LSD
Intervals for Factor Means

1 = new student  
2 = returning student
Chart Seven - All test results - LD Excluded

Frequency Histogram:

Difference between cutoff and actual score
Chart Eight - All test results combined - LD excluded

Box-and-Whisker Plot

Deviation
Chart Nine - All test results combined - LD excluded

Multiple Box-and-Whisker Plot

1 = new student
2 = returning student
Chart Ten - Returning results - LD excluded

Frequency Histogram:

Difference between cutoff and actual score
Chart Eleven - New results - LD excluded

Frequency Histogram
New Results w/ LD Excluded

Difference between cutoff and actual score
Chart Twelve

95 Percent LSD
Intervals for Factor Means

1 = new student  2 = returning student
Chart Thirteen

95 Percent LSD Intervals for Factor Means

1 = new student  2 = returning student
Chart Fourteen

95 Percent LSD
Intervals for Factor Means

Future research - Difference between Centers
Chart Fifteen

95 Percent LSD
Intervals for Factor Means

1 = new student
2 = returning student
Future research - Difference between Centers