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The Advantage of STEEP as a Method to Identify Elementary School Children who are At-Risk for Learning Disabilities

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Running Head: Advantage of STEEP

The Advantage of STEEP as a Method to Identify Elementary School Children who are
At-Risk for Learning Disabilities

Thesis Submitted to
The Graduate College of
Marshall University

In partial fulfillment of the
Requirements for the degree of
Education Specialist of
School Psychology

By

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July 29, 2004

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APPROVED ON: July 29, 2004

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Marshall University Graduate College
2004

Abstract

The purpose of the current study was to determine the relationship between the Screening to Enhance Equitable Placement (STEEP) and the Dyslexia Screening Instrument (DSI) to deem STEEP a valuable tool for identifying children who may be at-risk for a learning disability or dyslexia. The following research question was examined: What is the concurrent validity of STEEP, as a screening instrument for identifying at-risk students for learning disabilities by comparing it to the Dyslexia Screening Instrument? In this study, students in first through fourth grade classrooms at a rural Southeastern Ohio elementary school who were administered STEEP and obtained a Mastery/Instructional Math score and a Frustrational Reading score were identified and were administered the DSI. The results of the study indicate that the probability of a consistent score on the DSI and STEEP are zero. Conclusions and recommendations for further research were discussed.

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Introduction

Every year young children attend school and receive formal instruction in reading as they enter the primary grades. Some children acquire reading skills with ease and are proficient in reading, while others struggle at the most basic level when learning phonemes, the smallest units making up spoken language (National Reading Panel, n.d.). Approximately 40% of children in the United States cannot read at the basic level (United States Department of Education, n. d.). Reading is a skill that is imperative for success in latter grades. A child that has difficulty in the beginning stages of reading may have severe problems in decoding and comprehension further down the line (Berg & Stegeman, 2003). Literature also suggests that children who have not mastered the phonemic code by the age 10 may never successfully be able to decode words (Feifer & De Fina, 2000). Similarly, other research has found that failing to learn to read by the third grade can result in difficulty and possible failure in high school (Slavin, Karweit & Wasik, 1992).

Even today, some children enter high school without being able to read. However, with the No Child Left Behind (NCLB) Act of 2001, teachers are now being held accountable for their students and are required to improve and maintain student achievement in reading (USDE, n. d.). No Child Left Behind has forced educators to take responsibility for their students' achievement and identify effective ways to teach so that each student is on grade level. In order to effectively teach reading skills and keep children from being "left behind" it is imperative to identify children who may have a

learning disability that would make it more difficult for them to learn so remediation can be given to those students before it is too late.

Early identification will allow children with learning disabilities to receive the necessary interventions for acquiring effective reading skills.

The following literature review will examine the impact of the No Child Left Behind Act, High Stakes Testing, and Reading First on today's school systems. Also, this paper will address literature on early learning, the necessity of understanding learning disabilities, the importance of early identification, and the use of screening instruments for identifying children with learning disabilities. Finally, this paper will introduce STEEP (Screening To Enhance Equitable Placement) as a tool for identifying children who are at-risk for having a learning disability.

No Child Left Behind

For years, teachers used instruction in their classrooms with little or no consequences if their students did not learn the curriculum. This failure starts a vicious cycle for a student who does not achieve in the primary grades and continues through high school without learning basic reading and math skills. The No Child Left behind Act of 2001 put instruction in the spotlight and made educators take responsibility for their students' achievement. According to the US Department of Education, NCLB requires each state to measure *every* public schools' students' progress in math and reading from grades third through eighth (USDE, n. d.). This law mandates that all children must be included in the assessments of educational progress (Albrecht & Joles, 2003). The Individuals with Disabilities Education Act (IDEA) of 1997 was intended to make sure that students with

disabilities were included in the regular education setting to the maximum extent appropriate (Albrecht & Joles, 2003). This mandate for inclusion is now a part of the accountability to the NCLB Act and the 1997 Amendments to IDEA (Albrecht & Joles,).

In order to assess achievement in school, states must implement an assessment tool that will measure performance. These tools are sometimes referred to as “high-stakes tests” and are often used statewide. By 2001, 48 states had put high-stakes testing into action and were using statewide assessments in reading and math (Goertz & Duffy, 2003). High-stakes tests in reading and math will be given annually to students in grades third through eighth and during one year in high school starting in 2005-2006 (Abrams & Madaus, 2003). These tests are designed to measure students’ strengths and weaknesses and progress towards achieving the content of the curriculum. No Child Left Behind requires each state to meet adequate yearly progress (AYP) goals to guarantee the schools’ accountability for their students’ achievement on the high-stakes tests (Abrams & Madaus, 2003). High-stakes tests have put pressure on schools to align their curriculum in accordance with the tests and identify students who are struggling early in the year.

The NCLB Act has established Reading First as a new, evidence-based program for students. The law requires that by the year 2012, one hundred percent of students must be reading on grade level (McLester, 2003). The Reading First Program is designed to be used in the classroom and focuses on the following key interventions: Phonemic awareness, Phonics, Fluency, Vocabulary, and Comprehension (USDE, n. d.). The goal is to provide high quality reading instruction in kindergarten through third grade so that students can learn to read effectively. In order for states to implement the Reading First

Program, they must apply to the federal government for Reading First funds. If states choose not to implement the program and are not achieving adequate yearly progress (AYP) they must provide tutoring for under-performing students at the cost of the school district (McLester, 2003). Reading First is available in most states nationwide and is used to ensure that all students become successful early readers.

Early Learning and Identification

No Child Left Behind has forced educators to focus on the importance of early learning and early identification of students with learning disabilities. It is crucial to understand the process in which a child learns to read so that interventions can be put in place to assist those who have difficulty. A child is born with the instinct to speak language but not to read. Learning to read requires many steps. According to Sally and Bennett Shawitz's research on reading disabilities (2004), a person must convert print or text on a page into a linguistic code (phonetic code), the only code recognized and accepted by the language system. If a child cannot convert the printed text into the phonetic code, they cannot make sense of the letters or characters on the page and as a result, cannot read the text (Shaywitz & Shaywitz, 2004). This idea is in contrast with previous theories on reading and the assumption that reading difficulties were due to a deficit in visual perception (Catts & Hogan, 2003). However, most research is supporting the theory of phonemic awareness and the phonetic code. Phonemic awareness is defined as the ability to decode words and allows children to match sounds with letters (Catts & Hogan, 2003). According to Shaywitz and Shaywitz, children must learn that the words they hear can be broken into smaller pieces of sound (2004). As stated earlier, children

who do not develop phonemic awareness by the first grade will struggle with reading the rest of their lives.

To understand why children have difficulty reading and struggle with the basic skills of reading, one must be familiar with the definition of a reading disability. A reading disability, or developmental dyslexia, is defined as an unexpected difficulty in reading in children and adults who otherwise have the intact intelligence, motivation, and education necessary for developing reading skills (Shaywitz & Shaywitz, 2004). The term dyslexia has been used in the past to characterize children who reverse letters or words, but this is not the only indicator of dyslexia. Most recent research focuses on brain development and structure and the impact it has on reading. Brain development is not complete until the age of eight and between the ages of 4-6 the brain is making connections between the cells (D'Arcangelo, 2003). During the time that the brain is developing is the prime opportunity to teach children phonemic awareness since the child is more likely to retain the information as the brain is becoming more focused and taking shape (D'Arcangelo, 2003). The brain is much more plastic in younger children and potentially more malleable for the rerouting of neural circuits, thus making it more difficult to teach phonemic awareness to someone who has passed that window of opportunity when his/her brain has completed development (Shaywitz , 2003).

Other studies have focused on the importance of the brain and how it processes information. Studies show that non-readers process words differently than readers. The use of functional magnetic resonance imaging (fMRI) measures activity in particular brain regions during activities such as reading (Shaywitz & Shaywitz, 2004). The fMRI is safe and noninvasive as it uses no radiation, no ionizing, and no injections (Shaywitz &

Shaywitz,). Studies involving fMRI's have found that three regions are used during reading and all three regions are located on the left side of the brain. The brain is divided into 2 hemispheres: right and left hemisphere. Each hemisphere is divided into 4 lobes: frontal, parietal, temporal, and occipital. According to the book, *The Neuropsychology of Reading Disorders* (Feifer & De Fina, 2000), the right hemisphere excels in visualization and visual-spatial motor abilities and the left hemisphere performs virtually all parts of language expression. When reading, children use three regions located on the left side of the brain. The first area, in the front of the brain, is called Brocha's Area. The other two areas, located in the back of the brain, are called the parieto-temporal region and the occipito-temporal region (D'Arcangelo, 2003). These areas involve word articulation, word analysis, and fluent reading (Shaywitz & Shaywitz,). Good readers show activity in these three areas of the left hemisphere, whereas non-readers demonstrate relatively less inactivity in these areas (D'Arcangelo, 2003). This piece of research is crucial in understanding the difficulties children have in reading and also understanding that the problem is not something that they will "outgrow" or get rid of later on in life.

Skilled readers have mastered the process of reading fluency. Reading fluency is defined as rapid, automatic reading that does not require attention or effort (Shaywitz & Shaywitz, 2004). Fluency occurs after the child learns letters and sounds and has mastered phonemic awareness and phonics. According to a study conducted by Shaywitz, the region that makes skilled readers become fluent readers is the occipito-temporal region (Shaywitz & Shaywitz, 2004). Shaywitz also indicates that once a skilled reader has identified a word in the occipito-temporal region, they can then identify the same word without effort later on (2004). Their research establishes the importance of the

development of the occipito-temporal region in the left side of the brain since it is a key component in reading fluency.

The research on brain structure and development and its relationship to successful reading has influenced the process of identifying children at an early age for reading disabilities so that interventions can be employed before the child reaches third grade and as a result, prevent academic failure. Children that have language impairments or problems with phonological processing should be considered at-risk for potential reading difficulties (Catts & Hogan, 2003). Programs like Reading First are designed to help students who have been identified at an early age with deficiencies in reading. These programs target phonemic awareness and the process that will help the student become a more fluent reader. The key to successfully helping a child with a reading disability is early identification.

Screening Instruments

Screening instruments are used to identify students who may be at-risk for reading difficulties. Screening instruments are used as tools to identify students, not give a diagnosis. Once a student is deemed at-risk for a learning disability, further evaluation and assessment must be conducted to determine if a true learning disability exists.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) is a screening instrument published by the Institute for the Development of Educational Achievement at the University of Oregon. It used to identify students in the primary grades who might have deficiencies in reading. It is a standardized, criterion-referenced test that assesses how well a student has mastered specific criteria critical to establishing the components of effective and fluent reading. DIBELS is administered to individuals and they are

required to read for 1 minute for each measure. The DIBELS tests include: Initial Sounds Fluency, Phoneme Segmentation Fluency, Letter Naming Fluency, Nonsense Word Fluency, Oral Reading Fluency, and Word Use Fluency (DIBELS, 2003).

DIBELS is used to assess a student's proficiency in understanding the alphabet, phonological awareness, accuracy and fluency in reading. DIBELS also provides benchmark measures to assess the students in the fall, winter, and spring. These benchmarks are used to monitor progress for a child during a particular time of the year. Once a student is identified as low risk, some risk, or at-risk for reading disabilities, interventions can then be put into place so the student does not continue to fail. (DIBELS, 2003)

Another screening instrument used to identify students who are at-risk for learning disabilities is STEEP (Screening to Enhance Equitable Placement in Special Education). Dr. Joe Witt, a professor of School Psychology from Louisiana State University, developed STEEP in hopes of improving service to all children and decreasing the need for special education and other special services (2002). The focus of STEEP is to identify students who are at-risk for learning disabilities and those students who have been "left behind". Once the children are identified, interventions can be put into place, thus decreasing the likelihood that they will be placed in special education. STEEP also focuses on helping schools determine educational disadvantages and motivational problems (Witt, 2002).

The design of the STEEP screening instrument includes not only a reading, but also a math screening probe. Children are given the one-minute reading and two-minute math probes individually and are then placed in one of the three levels of proficiency. The

three levels include: Mastery, Instructional, and Frustrational. The Mastery level indicates that the child has no difficulty with reading or math. The Instructional level entails that the student may need some additional help with the reading or math. The Frustrational level indicates that the student is having difficulty in the area of reading or math. When a child is placed in the Frustrational level, they are given the probe a second time, but this time they are given an incentive to improve his or her score. This incentive will determine the “can do, won’t do” motivation factor (Witt, 2002).

By evaluating both math and reading, STEEP can better identify students that may be at-risk for a learning disability, since previous research indicates the discrepancy between the left hemisphere (reading) and the right hemisphere (math) could indicate a possible learning disability. If a student is screened and is Frustrational in reading and Mastery in Math, they are more likely to be at-risk for having a learning disability. So, the advantage to STEEP over DIBELS is the math component for identifying at-risk students for learning disabilities.

STEEP has other advantages as a screening tool. First, it is time efficient and teachers can screen the entire classroom in a small amount of time. Second, once a child is identified as being at-risk, certain interventions are implemented, thus reducing the risk of putting the child into special education services. Third, STEEP screening allows teachers to learn how every child in the classroom is performing so they can adjust their instructional planning. Finally, STEEP benefits schools by identifying at-risk students early in the year so that instructional mediation can be done for those students who might perform poorly on the High Stakes Tests (Witt, 2003). This is a crucial factor for schools with the implementation of NCLB.

Purpose of Study

The purpose of the current study was to determine the concurrent validity of STEEP, as a screening instrument for identifying at-risk students for learning disabilities by comparing it to the Dyslexia Screening Instrument, a norm-referenced test designed to identify students with dyslexia. The purpose was to deem STEEP as a superior screening instrument over DIBELS or other screening tools because it is cost efficient, time efficient, evaluates up to fifth grade, and contains an element for screening math. The results of this study may encourage educators to use STEEP as a classroom screening tool to identify students who are at-risk for learning disabilities.

Hypothesis

It is hypothesized that the frequency of occurrence of a “Passed” score on the Dyslexia Screening Instrument (DSI) will be zero of the students who were identified by STEEP and scored Mastery/Instructional in Math and Frustrational in Reading. This will suggest that STEEP is a valid measure for identifying students who are at-risk for learning disabilities.

Methods

Subjects

Twenty-six students from first through fourth grade classrooms at an elementary school located in a rural area of Southeastern Ohio were used for this study. Participants were selected per results on the STEEP reading and math probes. Students selected obtained a Mastery/Instructional score on the Math probes and a Frustrational score on the Reading probes. All participants were currently in regular education.

Instruments

In the Fall 2003, students were administered STEEP, using both Math and Reading probes in accordance to the standardized procedures. In the Spring 2004, teachers of the students who were identified at-risk from STEEP were given the Dyslexia Screening Instrument (DSI) to assess the degree to which the student displays characteristics associated with Dyslexia.

The DSI is a 5-point rating scale that is completed by a teacher who is familiar with the targeted student and is used to help identify students who demonstrate the characteristics often associated with dyslexia (Mental Measurement Yearbooks, 1994). The DSI is comprised of 33 statements, each of which describes a problem associated with Dyslexia (Mental Measurement Yearbooks, 1994). The possible results for the DSI are Passed, Failed, Inconclusive, and Cannot Be Scored. A Passed score indicates that the behavioral characteristics are not consistent with dyslexia. A Failed score indicates that the behavioral characteristics are consistent with dyslexia. An Inconclusive score indicates that the characteristics are not consistent with either group. A Cannot Be Scored score indicates that more than three questions were unanswered.

Procedure

Students in first through fourth grade at an elementary in Southeastern Ohio were administered STEEP in the Fall 2003. The results indicated which level (Mastery, Instructional, and Frustrational) the students were placed. The students who obtained Mastery/Instructional scores in Math and Frustrational scores in Reading were identified as being at-risk for learning disabilities. The school principal and the students' parents granted permission in order to administer the DSI. Teachers were then given the DSI to

complete on the students identified by STEEP. The results of the DSI were compared to the previous results of STEEP to determine the probability of receiving a Pass score on the DSI. A nonparametric Runs Test was used to obtain a Z-score to determine the randomness of the residuals or scores obtained on STEEP and the DSI.

Results

The objective of this study was to examine the concurrent validity between STEEP scores and the DSI scores. After identifying students in grades first through fourth in an elementary school in Southeastern Ohio who scored Mastery/Instructional on Math probes and Frustrational on Reading probes on STEEP, those targeted students were then administered the DSI that was completed by their teacher. The data from the STEEP results and the DSI results were then entered into the Comprehensive Statistical Software Program (SPSS) version 11.0. A nonparametric Runs Test was used to determine the randomness between the residuals. Results of the study indicate that there is no significant relationship between STEEP and the DSI ($Z=.000$) (see Figure 1). This study indicates that the concurrent validity between STEEP and the DSI is poor and the probability of obtaining consistent results on STEEP and the DSI are low.

Discussion

This study examined the relationship between STEEP math and reading results and the DSI results. The hypothesis of this study was that the frequency of occurrence of Passed scored on the DSI would be zero for the students identified by STEEP as having Mastery/Instructional math scores and Frustrational reading scores. The results of the study indicate that there is no significant relationship between the STEEP results and the

DSI results ($Z=.000$) (see Figure 1). This finding may be explained by the small number of subjects used in the study whereas a larger subject sample would provide a better opportunity for identifying a significant relationship between the two tests. Another explanation for the findings might be due to the lack of a STEEP control group to administer the DSI and compare the results. Finally, the difference in time between the STEEP results in the Fall 2003 and the DSI results in the Spring 2004, may be another variable that affected the results of the study.

Recommendations

Although this study did not consider the variables discussed earlier, this study can serve as a basis for future research involving STEEP and other instruments including the DSI to determine if STEEP is a valuable screening instrument for identifying students who are at-risk for learning disabilities.

Figure 1

Runs Test

	dsi_n	DST
Test Value ^a	1.50	.300
Cases < Test Value	13	13
Cases >= Test Value	13	15
Total Cases	26	28
Number of Runs	14	18
Z	.000	.996
Asymp. Sig. (2-tailed)	1.000	.319

a. Median

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