THE HIDDEN CHILDREN OF THE CLASSROOM: A VALIDATION STUDY USING ALTERNATIVE ASSESSMENTS TO UNCOVER THIRD-GRADE READERS WITH DYSLEXIA

Penny K. Soboleski

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Committee:

Cindy Hendricks, Advisor

Lessie Cochran

Craig Mertler
ABSTRACT

Cindy Hendricks, Advisor

Many children with dyslexia are successfully hiding behind sophisticated combinations of camouflage amongst fluent readers in classrooms around the country. Compensatory processing enables such readers to employ a number of cognitive processes to mask their inability to read. This study attempts to answer the question: Are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and the Developmental Reading Assessment (DRA) valid assessments for the early screening and identification of third-grade children with dyslexia? Sixty-eight third-grade students from a northwest Ohio school district were administered the Peabody Picture Vocabulary Test-III and their results were compared with existing test data from the Metropolitan Achievement Test (MAT 8th Edition), the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and the Developmental Reading Assessment (DRA).

The Pearson correlation coefficients between the MAT 8 and DIBELS and DRA were 0.58 and 0.79 respectively. A correlation coefficient of 0.68 was noted between the DIBELS and DRA. These moderate correlations indicate that the DIBELS and DRA assessments may be valid screening tools for uncovering hidden students with dyslexia. Statistical significance was not found between the DIBELS and PPVT-III ($r=.1$, df=64, $p<.05$). Four potential hidden children were identified in the study. Each student scored significantly higher on the MAT 8 Total Reading test than on the phonological assessments in the DIBELS instrument—the profile for early indications of dyslexia according to Stanovich et al. (1980, 1986, 1988,1994). The final analysis suggests that the DIBELS and DRA may be valid initial screening instruments for identifying readers with dyslexia.
Acknowledgements

“To learn to read is to light a fire; every syllable that is spelled out is a spark.” —Victor Hugo, Les Miserables

This thesis was written for those hidden readers who have feverishly tried to light sparks while learning to read one syllable at a time during their struggle with dyslexia. It is for you, the ‘hidden children in the classroom’ that I engaged in this study.

This is dedicated to my son, Aaron, who courageously never allowed his sparks to fade.

To my husband, Mike Soboleski, who tirelessly encouraged me to climb the mountain one step at a time.

To my sons, Adam, Joshua, Micah, and Jesse, who constantly reminded me, “You can do it, Mom!”

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CHAPTER I. INTRODUCTION

Years ago when my sons were between the ages of two and seven, my husband was transferred to Great Britain. I was left in Florida to pack the house and my five sons; my husband traveled ahead to try and secure a house large enough for our brood. Late in the afternoon on the second day of packing, it occurred to me that I had not seen my boys for quite sometime. I left the movers and started darting from room to room calling their names. “Chip! Bubba! Trey! Skip! Scoot!” No reply. I looked behind boxes, under stacks of furniture padding, and inside empty closets and cupboards—they were nowhere to be found. Where could they possibly be?

Bright, beautiful, warm June afternoons were too inviting to stay inside, so I thought they may have escaped the bedlam and boredom to play in their tree fort. I walked out the patio door and scanned our yard and the neighbors’ yards. No signs of anyone. Just as the knot in my stomach began forming and my throat began constricting and burning, I heard a little giggle. Then two little giggles. Where were they coming from? “BOYS, where are you!” I shouted, just short of a frantic squeal. My oldest son shouted, “You can’t see us because we are camouflaged! Try to find us!” Scanning the backyard once again, I spotted them. There were my five little boys peeking out of the hedge at the back of our yard—each one wearing his unique version of camouflage. Their combinations varied, yet were similar. Old fatigue shirts and T-shirts once worn by my military husband, hats with woodland black, olive drab green, and brown patterns, camouflaged pants and dark sweatpants, and my personal favorite—gobs of facial grease paint were covering my five little fellas. From the oldest to the youngest, they were “dressed for hiding”. Their green and black outfits allowed them to blend in almost unnoticeably with their environment. Chip was right—they were camouflaged and mixed in amongst the ‘real’ bushes.
Statement of the Problem

Reflecting on this, almost-forgotten incident, years later, it occurred to me that my son was once again “dressed for hiding”. The metaphor of camouflage describes well the hidden reader in the classroom who relies upon compensatory reading skills. For many years, he managed to “hide” in class after class as a non-reader. His strong compensation skills seemed to confuse everyone. Teachers would comment on his poor spelling and poor test performances (informal and formal), but never mentioned his inability to read fluently. As a student, he was cordial, the first to raise his hand and respond to questions, very sociable, loved to learn, and appeared to be quite comfortable in the classroom. His poor test performance was attributed to test anxiety and his poor spelling to ‘poor spelling’. He excelled in math, problem-solving activities, oral activities, and social skills. Excuses (immaturity; visual learner; auditory learner; ‘gifted, but just not in spelling and reading’) allowed him to remain hidden until he was ‘called out’ and totally exposed during an intense reading assessment at age 19: my son was dyslexic.

My experience with a well-hidden non-reader in the midst of readers who read fluently spurred this investigation. As I continued to learn more about reading acquisition and the developmental processes associated with reading, I began hypothesizing how my son could successfully camouflage himself as a reader year after year in classroom after classroom. Questions needed to be answered such as: How did he camouflage himself? How was his disability overlooked (not seen) for so long? Are there more hidden students in our classrooms needing to be discovered? If so, how do we do it?

According to The National Reading Panel (National Institute of Child Health and Human Development [NICHHD], 2000a), it is the mission of educators, government officials, and community members to ensure that we become a nation of fluent readers. Fluent readers were
defined as readers who “are able to read orally with speed, accuracy, and proper expression” (NICHHD, 2000a, p. 11). Most educators would agree that this general definition is only a partial definition. The purpose of reading is to construct meaning. Harris and Hodges (1995) provide a richer sense of reading with their definition of fluency: “[the] freedom from word identification problems that might hinder comprehension in silent reading or the expression of ideas in oral reading” (p. 85). In other words, a fluent reader is able to read a written passage smoothly, with expression that is appropriate to the text, and at the appropriate speed while understanding and constructing meaning simultaneously. Unfortunately, there are students with dyslexia hiding behind fluent readers in our classrooms dressed in clever and unique camouflage successfully hiding their inability to read.

The hedges in my backyard metaphorically represent classrooms of fluent readers. Desks are filled with students who almost effortlessly read the printed word and simultaneously construct meaning and understanding. Interspersed between them are students who are unable to make sense of printed letters, unable to differentiate the individual sounds in words, unable to decode words with automaticity, and quite possibly unable to recode simple monosyllabic words.

Poor readers have been assessed in a number of ways over the years. Day-to-day observations (casual assessments) are usually noted by classroom teachers, but not necessarily used for instruction changes or referrals. However, they are an important part of constructing a profile for students in question. Effective teachers assess their students with a variety of authentic and informal assessments. They examine students’ learning, reading levels, spelling development, and reading problems (Tompkins, 2003). Gillet, Temple, and Crawford (2004) suggest that reading teachers approach assessment for themselves and their students based on two fundamental objectives: “to gather information about students that will be of direct,
immediate usefulness to the teacher herself or himself to organize, plan, and evaluate the effectiveness of instruction” (p. 8) and to share these results “with students to show them their progress and help them to recognize their achievements and where they still need to continue working” (p. 8). Standardized or norm-referenced assessments are the final group of instruments used in reading assessment. Formal assessments are designed to be administered using precise procedures and prompts. Once scored, the results are compared with a norm-referenced group. It is puzzling to consider then, how a reading disabled student could possibly hide in classroom after classroom.

Hidden children in the classroom may be overlooked for a number of reasons. One may be the constructs currently used to identify students with reading disabilities. Initially, special education researchers believed that all such students suffered from a developmental lag—overall cognitive development was progressing, just slower than other children of the same age. Impaired cognitive processes (low Intelligence Quotient [IQ]) caused the students to develop, but at a much slower rate than their peers. Therefore, teachers were looking for significant disparities between IQ and reading performance.

During the 1980s, definitions and labels for reading disabilities were changing. Stanovich (1980, 1986, 1988) suggested that perhaps not all poor readers are alike. He delineated types of reading disabilities according to their source. Children with deficits specific to reading, e.g. phonological processing difficulties, rapid letter naming, were identified as dyslexic. Gough and Tunmer (1986), on the other hand, differentiated poor readers into three major groups: hyperlexics (poor comprehenders), dyslexics (poor word decoders), and ‘garden-variety’ (both poor readers and poor comprehenders). Stanovich contended that not all poor decoders have dyslexia. Some are developmentally slow (low IQ), but do not have phonological processing
difficulties. Dyslexics are poor decoders, but they have normal to above normal IQ, normal
general cognitive development, but phonological and/or linguistic processing disabilities
(Stanovich, 1988). Stanovich and Sigel (1994) introduced the phonological-core variable-
difference (PCVD) model to account for a number of poor readers who had relatively high IQs,
yet were unable to decode and read fluently.

The significance of this difference led Stanovich, Nathan, and Zolman (1988) to explore
assessment alternatives. Readers with poor reading skills in third-, fifth-, and seventh-grade were
given multivariate tests assessing comprehension and decoding skills. Broad reading tests were
combined with receptive vocabulary and phonological tests. Their results confirmed the PCVD
model and the delineation between developmental lag and developmental dyslexia.

The metaphor of camouflage nicely fits the profile of the third-grade reader with
dyslexia. Classrooms throughout the country have become hedges for boys and girls struggling
with reading. Such readers manage to camouflage themselves in a variety of ways so as to blend
in with their more fluent classmates; thus, they keep their location a secret. Readers with
dyslexia rely heavily on compensatory skills (Spear-Swerling & Sternberg, 1994; Stanovich,
1986) and other knowledge skills to help them decode and comprehend the written text. They
tend to rely on strong visual attentiveness, context and contextual clues, memory, behavior, and
oral communication skills to camouflage their limited reading skills (Laing, 2005; Salinger,
2003; Shaywitz, 2003). These compensatory skills serve as their camouflage in the classroom
allowing them to blend in with the fluent readers surrounding them, just as my sons managed to
blend in with the surrounding leaves of the hedge. Had my sons bunched themselves together,
they would have been easily identified. Their decision to space themselves out and mingle with
the branches provided a much better visual sense of congruity. The bushes and the boys became
Acknowledging the presence of readers with dyslexia hiding in the classroom compels reading teachers to find reliable screening assessments as early as possible. Teachers administer a number of tests designed to assess a number of different reading subskills or components. The question then arises as to which ones are more suitable in identifying reading reader with dyslexia. Stanovich, Stanovich, Nathan, and Vala-Rossi (1986) as well as Stanovich, Nathan, and Zolman (1988) revealed high correlations between the reading results of the Metropolitan Achievement Test (MAT 8th Edition) and the Peabody Picture Vocabulary Test, III (PPVT-III). Both of these tests are formal assessments that require large amounts of time and expense. Might there be informal assessments already taking place in classrooms that can be used as early screening tools to identify possible readers with dyslexia with comparable reliability? This validation study was designed to answer that question: Are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and the Developmental Reading Assessment (DRA) valid assessments for the early screening and identification of third-grade readers with dyslexia?

Rationale

According to Graves, Juhl, and Graves (2001):
Critical literacy requires much more than passively absorbing what is on the printed page. It requires attaining a deep understanding of what is read, remembering important information, linking newly learned information to existing schemata, knowing when and where to use that information, using it appropriately in varied contexts in and out of school, and communicating effectively with others. (p. 24)

If, in fact, one of the purposes of reading is to construct meaning and then use this acquired meaning to communicate effectively with others, it is imperative that researchers offer educators reliable and valid assessment tools to help them uncover hidden readers in their classrooms. Equally important is the need for educators to implement assessment practices that are efficient, effective, and applicable to better utilize their instruction time, public monies, and manpower. Therefore, this study examines the validity of alternative informal assessments—specifically the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and Developmental Reading Assessment (DRA)—that classroom teachers and/or reading specialists might be able to use as early screening tools.

**Definition of Terms**

Psychologists and educators have attempted to define and articulate learning disabilities for decades. A similar debate has entered the field of reading disabilities and continues to thrash through terms, definitions, and labels still today. For the purpose of this study, it is imperative to understand the term ‘dyslexia’ and how it is being defined. Gough and Tunmer (1986) separated children with reading disabilities into three categories: hyperlexics, dyslexics, and ‘garden-variety’ poor readers. Hyperlexics were those readers who were able to decode words, but were unable to comprehend the words they read. Dyslexics were good comprehenders, but they were unable to decode. The ‘garden-variety’ poor reader was a combination—poor comprehender and
poor decoder. Stanovich (1988) delineated between the disability and the cause of the disability. If a reader with a reading disability had normal to above normal IQ, but was unable to decode, he called them dyslexics. If, on the other hand, the reader was a poor decoder and his/her IQ was below normal, he believed that this reader had a developmental lag and was a ‘garden-variety’ poor reader. The distinction being that children with dyslexia do not suffer from low cognitive functions, but from phonological and/or linguistic processing deficits; whereas, the ‘garden-variety’ reader has overall low cognitive development.

Therefore, throughout this study, the term dyslexia will be used to describe and identify a specific reading disability where “a child with this type of learning disability has a brain/cognitive deficit that is reasonably specific to the reading task” (Stanovich, 1988, p. 601).

Limitations

Three limitations of this study should be addressed. Most importantly, this validation study was not an exact replication of Stanovich’s (1986, 1988, 1994) original studies. In addition to the Metropolitan Achievement Test (MAT 8th Edition) and the Peabody Picture Vocabulary Test III (PPVT-III), he administered between 8 and 12 additional phonological awareness and short-term memory assessments that were not accessible for this study. DIBELS and DRA scores were substituted for basic phonological skill assessment.

Secondly, the student sample involved in this study does not represent a diverse population nationwide. It was a small-town school district with one rural building. The ethnicities represented in the sample were indicative of this particular city, but not the region. Therefore, it should be presumed that the results might be very different if the same protocols were administered to a larger, more diverse sample. The sample tested represents approximately
24% of the district’s third-grade students. Such low representation could have yielded an unfair representation of the entire district.

Finally, Stanovich’s investigations specifically studied and compared identified readers with reading disabilities (fifth-grade) and normal younger readers (third-grade). This study does not for several reasons. Most importantly, the purpose of the study was to possibly uncover hidden children with dyslexia. The moderately strong correlations noted between the MAT 8 and PPVT-III (.76 and .64 respectively) were accepted and are not being restudied. The intent was to look for correlations between two other informal instruments and their validity in screening for readers with dyslexia. Additionally, this study was a model, rather than an exact replication of the original study; therefore, the substitutions made for the phonological processing subtests were not identical to the original tests and may have yielded results different than would have been gathered from using the exact instruments used in the original studies. The variance in instruments would likely produce a sizeable variance in the study’s results. Finally, due to the timing of this study and the impending administration dates of state proficiency tests, school administrators were more curious about identifying unidentified children with dyslexia, than retesting previously identified students with learning disabilities.
CHAPTER II. REVIEW OF LITERATURE

“The long-term goal of reading instruction is to provide children with the skills necessary to construct, or comprehend, the meaning of text in its many forms and genres” (Torgesen, 2002, p. 9).

The notion that readers with dyslexia are successfully hiding in our classrooms is a frightening, yet realistic consideration. In an effort to teach effectively and to identify potentially worrisome readers with disabilities, teachers are constantly assessing their students. This chapter examines assessments currently employed by educators and what they are designed to assess. It also examines and distinguishes the differences between the reader with dyslexia and the “garden-variety” poor reader (Gough & Tunmer, 1986). An examination of reading development theories provides an understanding for the reasons readers with dyslexia camouflage themselves in the classroom and in social situations. Compensatory processing is also discussed and connected to the success of camouflaged dyslexics while refuting long-held beliefs about developmental lag and reading retardation. Finally, this chapter indulges the notion that perhaps informal tests currently in place in third-grade classrooms may be just as effective in the early screening for readers with dyslexia, as are more expensive formal tests.

Reading Assessment: What are We Measuring?

“Assessing students’ literacy development is a difficult task” (Tompkins, 2003, p. 72).

It is safe to assume that classroom and reading teachers throughout the country echo Tompkins’ forthright statement. Moreover, most of us would agree that, “the purpose of classroom assessment is to inform and influence instruction” (Tompkins, 2003, p. 72). We acknowledge and understand the importance of periodic evaluation of students’ work throughout the learning process because it is “[T]hrough assessment, teachers learn about their students,
about themselves as teachers, and about the impact of the instructional program” (Tompkins, 2004, p. 72). In short, assessment is an integral part of teaching and learning; therefore, it behooves us to approach and explore the domain of assessment through the lens of appropriateness. Questions such as: “Does this test accurately measure what I want to evaluate?” “Is this assessment an appropriate and authentic method of measuring this skill?” “Will this assessment provide an accurate reflection of what the student has learned?” or “Do I intend to use the results of this instrument to change or modify my instruction?” will quickly reveal our purpose for and success in assessing our students.

The History of Reading Assessment

Historically, according to Smith (as cited in Glazer, 1998), reading has been one of the most frequently measured literacy abilities. Binet and Simon developed the first standardized tests in 1905 in response to the Army’s recruiting efforts of World War I (Farris, Fuhler, & Walther, 2004; Glazer, 1998). Specifically, they were administered to “determine intelligence for draftees for the armed forces” (Glazer, 1998, p. 5). This began the revolution of quantifying intelligence and would soon be embraced as a viable means of quantifying reading ability as well. Glazer (1998) makes the following distinction concerning the original intelligence tests: “They were not meant to assess achievement. They were designed to separate those who were deficient mentally—those who were feebleminded (or retarded)—from those who were not” (p. 5). Nevertheless, interests in the ability to quantify intelligence had just begun.

Tests designed to specifically assess reading ability flew on the tails of a growing national concern and interest in the reading skills of American children. Reading was under investigation by linguists, sociolinguists, psychologists, psycholinguists, educators, lawmakers, taxpayers, and parents during the 1960s and 1970s (Glazer, 1998). There were several key
players in the public scene that fueled the reading frenzy. Rudolph Flesch dropped the first bombshell with the release of *Why Johnny Can’t Read* (1955) and *Teaching Johnny How to Read* (1956). Flesch flagrantly blamed the American education system’s methodology of reading instruction as the one and only reason children were unable to read and proceeded to assure America that his method of instruction would cure their reading ills.

Ken Goodman and Frank Smith entered the scene with equally revolutionary ideas such as teaching balanced literacy and allowing children to read, rather than teaching them to read, respectively (Glazer, 1998). Standardized tests provided a means to quantify the reading process, but “focused on only a few aspects of what readers do as they read” (Tompkins, 2003, p. 72). Unfortunately, this truth escaped the debate, and cries for proof of education continued to demand evidence. Glazer (1998) reports, “Tests seem to provide the stability and control factor that the ever-changing instructional paradigms don’t. Tests have become the yardstick for the public to use as measure of success (or failure) for both students and teachers” (p. 13).

Since 1900, hundreds of reading tests have been developed. According to *Tests in Print VI*, there are over 100 tests currently in print, designed specifically to test some component of reading (Murphy et al., 2002). Some measure speed; others measure word identification. Some tests are reading tests within other standardized tests such as the Iowa Test of Basic Skills or the Metropolitan Achievement Test. Suffice it to say, we have become a nation obsessed with measuring reading ability via standardized assessment.

**Types of Assessment**

“*Assessment is important as it provides clues to the instructional needs of students and to how we modify our teaching to meet those needs*” (Farris, Fuhler, & Walther, 2004, p. 193).
Reading and classroom teachers understand and rely upon specific and valid assessment of their students to help them alter their instruction to accommodate the needs of their students. Gillet, Temple, and Crawford (2004) extrapolate on the previous quote in their two fundamental reasons for assessments. “One reason [for assessment] is to gather information about students that will be of direct, immediate usefulness to the teacher herself or himself to organize, plan, and evaluate the effectiveness of instruction” (p. 8). The student is their second reason for assessing. “Assessment results are often shared with students to show them their progress and help them to recognize their achievements and where they still need to continue working” (Gillet et al., 2004, p. 8). For the purpose of this study, different types of reading assessment will be broadly classified and briefly examined as they relate to these basic reasons for assessment. The following three domains will be used: casual (French, 2006), authentic (Farris, Fuhler, & Walther, 2004; Gillet et al., 2003; Gunning, 2005) and formal or standardized. This classification of assessments is not intended to be exhaustive, nor concrete. Rather, it is intended to provide the reader with an overview of the number of assessments used, their intended purpose, and their applicability in helping the classroom teacher modify their instruction to meet the needs of the student with reading disabilities.

Casual assessments are often noted during routine tasks (French, 2006). These opportunities are rarely planned and most usually arise naturally. They may be short pauses to listen as students read a portion of the text they are discussing in literature circles or book clubs. Perhaps, it is a short anecdotal note made after overhearing a student subvocalizing a passage during independent reading. Teachers observe their students in a variety of environments noting behaviors such as finger tracking, subvocalizing, posture, interpersonal communication during discussions, and overall body language (French). Because of their spontaneous nature, these
assessments are not specifically targeted or pre-determined for a particular student or group. Casual observations can occur prior to, during, or following an activity. While the teacher may make a mental or anecdotal notation of the observation, the teacher does not often act upon it in a diagnostic manner. However, the observation can often times trigger additional and intentional screening or assessment (French). Because the collection of this information stems from authentic classroom activities, the distinction between casual and informal, authentic assessment is somewhat obscure.

Such observations are often considered to be a component of authentic assessment (Farris et al., 2004; Gillet et al., 2003; Gunning, 2005). According to Gunning (2005), authentic assessment refers to “alternative forms of assessment…because these assessment procedures ‘reflect the actual learning and instructional activities of the classroom and out-of-school worlds’ [Hiebert, Valencia, & Afflerbach, 1994, p. 11]” (p. 25). This type of assessment “has become increasingly important in teaching reading and writing as it is the continuous assessment of ongoing work embedded in classroom contexts” (Farris et al., 2004, p. 201). “It is performance based and features such real-world activities as formal presentations, portfolios, and exhibitions” (Dean & Schiffbauer, 2003, p. 211). Such assessments include think-alouds, retellings, anecdotal records, informal reading inventories, miscue analysis, journal writing, reading and writing artifacts, and running records (Farris et al., 2004; Glazer, 1998; Gunning, 2005). Project Central (2003) offers several additional examples of informal reading assessments in five target areas (phonological awareness, phonics, fluency, vocabulary, and comprehension) of the reading process. This selection includes oral assessments, surveys, informal reading inventories, miscue analysis, running records, reading speed calculations, oral vocabulary, oral comprehension, retelling, and summarizing.
Portfolios are another type of informal assessment. This selective collection of student work authentically represents the student’s reading and writing performance. Portfolios are a collection of student- and teacher-selected artifacts over a period of time. “To be effective, portfolios must be selective and demonstrate the care and reflection the student used to put it together” (Dean & Schiffbauer, 2003, p. 220). The artifacts can then be evaluated holistically for improvement using the child’s own work (Dean & Schiffbauer, 2003; Farris et al., 2004; Glazer, 1998; Gunning, 2005).

Perhaps most importantly, “[A]uthentic assessment focuses on the learning task itself” (Dean & Schiffbauer, 2003, p. 212). Results of these evaluations usually remain in the classroom and are sometimes used to support concerns or additional screening and assessment. They are more structured, planned, and defined than casual assessments; tend to focus on the student’s performance during the particular task; and reflect authentic performance (Dean & Schiffbauer, 2003; French, 2006; Gunning, 2005). Rubrics are often the tool used to assess and report authentic student performance (Dean & Schiffbauer, 2003; Farris et al., 2004; Gunning, 2005). Students are provided a checklist or brief description of the expectations of the task, which, in turn, allows students to monitor their own performance and assume some responsibility and ownership of the learning process (Gunning, 2005).

Another informal assessment tool used in the classroom is the criterion-referenced test. Criterion-referenced tests (e.g., informal reading inventory, textbook or basal written tests, and teacher-constructed objective tests) are used to assess specific student performance in the classroom. Teacher-written tests may ask comprehension, summary, or character questions, may review phonics or syllabication rules, or be designed specifically to assess a particular portion of instruction. Such tests target a specific performance or body of knowledge, rather than
attempting to assess a much broader knowledge base (Gunning, 2005). Gunning (2005) also points out one particular disadvantage of criterion-referenced assessment in that “all too often they do not assess reading skills and strategies in the way students actually use them” (p. 43). These limitations remove the student’s performance from the authentic environment.

Standardized (formal, norm-referenced, ‘high-stakes’) assessments are specifically designed to gather data and to compare student performance with “a representative sample of others who are the same age or in the same grade” (Gunning, 2005, p. 42). This group is called a norm-referenced group and is usually composed of “students from all sections of the country, from urban and non-urban areas, and from a variety of racial or ethnic and socioeconomic groups” (Gunning, 2005, p. 42). In the strictest sense, these assessments typically are “published tests that provide standardized methods of administration, scoring, and interpretation and are often at the heart of the procedures used in traditional diagnoses of reading … problems” (Lipson & Wixson, 2003, p. 375). Lipson and Wixson (2003) subdivide formal standardized tests according to their design element and method of administration: survey (individually or group administered), diagnostic (individually or group administered), tests of general cognitive and verbal abilities (individually or group administered), or readiness/emergent literacy assessment (individually administered). Scores are then statistically calculated into stanines, percentiles, or standard scores to be used in summary, interpretation, and/or comparison (Gunning, 2005).

Unlike informal assessment, these tests are planned well in advance and are administered according to specified guidelines. Specific instructions accompany each test and schools go to great lengths to comply with the protocol and to protect the integrity of the instrument (Gunning, 2005). With the exception of students with disabilities, all students take the same test. Scoring of
the protocol is done outside the building and then reported back to the school several months later (Farris et al., 2004; Gunning, 2005). Many have argued that these tests are not well-suited for the diversity represented in today’s classrooms (Farris et al., 2004; Gillet et al., 2004; Gunning, 2005). Nevertheless, they remain in use and are highly esteemed by those in legislative positions as reliable and valid measures of education in American schools.

Standardized tests are often referred to as ‘high stakes’ tests, in that many weighty decisions are often related to the outcomes of these tests. The No Child Left Behind Act of 2001 (NCLB) (http://www.ed.gov/policy/elsec/leg/esea02/107-110.pdf) has greatly affected (or perverted) the use of student performance on such tests. “The purpose of this title is to ensure that all children have a fair, equal and significant opportunity to obtain a high quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments” (http://www.ed.gov/policy/elsec/leg/esea02/107-110.pdf). High quality education will be determined by the outcomes of standardized tests, as well as other performance indicators. Federal funding, district appropriation of funds, appropriation of manpower, needs assessment, and public accountability for public monies are some of the items related to outcomes on high stakes tests. Therefore, the assessments of reading on standardized tests cannot be overlooked or dismissed (Gunning, 2005).

However, it is necessary to re-examine the purpose of reading subtests in achievement tests and their relevancy in assessing students’ reading skills, including the skills of the hidden children in the classroom. States were directed to establish standards, choose their own tool for assessment, and their proficiency level (NCLB, http://www.ed.gov/policy/elsec/leg/esea02/107-110.pdf). Schools, teachers, administrators, and students will be evaluated based on their yearly progress (Gunning, 2005). Most of these tests are designed to assess reading comprehension,
rather than the subcomponents of reading such as elision, oral reading fluency, and other phonological awareness skills. According to Stanovich (1988), many readers with dyslexia are capable of employing other knowledge sources to aid them in constructing meaning and comprehension of the passage. Reading comprehension tests reflect a false indication of reading proficiency and phonological awareness. Therefore, we must first understand who the reader with dyslexia is.

Readers with Dyslexia: Who are They?

“...that the reading difficulties of the dyslexic stem from problems different from those characterizing the ‘garden-variety’ poor reader” (Stanovich, 1988, p. 590).

The earliest reports of reading disabilities stemmed from medical reports (Shaywitz, 2003). The first recorded mention of one’s inability to read words came in the mid-1600s. A German man “lost his ability to read following a stroke” (Shaywitz, 2003, p. 14) in 1676, and in 1877, Kussmaul realized that “a complete text-blindness may exist, although the power of sight, the intellect and the powers of speech are intact” (Shaywitz, 2003, p. 15). He called this word-blindness. Further studies by Kussmaul revealed the presence of lesions “in the back of the brain, around the left angular gyrus” (Shaywitz, 2003, p. 15) in word-blind adults. German physician Berlin further defined dyslexia as the loss of “ability to read secondary to a specific brain lesion” (Shaywitz, 2003, p. 15).

Scottish medical journals began publishing reports of word-blindness near the turn of the twentieth century. They “described children in their Victorian society who were bright and motivated, came from concerned and educated families, and had interested teachers, but who, nevertheless, could not learn to read” (Shaywitz, 2003, p. 13). In 1896, Dr. W. Pringle Morgan reported the incidence of one such young man in the British Medical Journal concluding that
“His great difficulty has been—and is now—his inability to read. … I might add that the boy is bright and of average intelligence in conversation” (Shaywitz, 2003, pp. 13-14). He also noted that they young boy had normal eyesight and was able to recognize and name numbers, but could not read words (Shaywitz, 2003). Physicians and specialists agreed that developmental dyslexia was a “seemingly inexplicable deficiency in reading alongside normal or superior achievement in other areas” (Gough & Tunmer, 1986, pp. 7-8).

Historically, in the field of special education, children with reading and/or learning disabilities were diagnosed using a psychometric discrepancy model (Aaron, 1995; Joshi, 2003; Stanovich, 1986, 1988; Stanovich, Nathan, & Vala-Rossi, 1986; Stanovich, Nathan, & Zolman, 1988; Stanovich & Siegel, 1994) determined by a significant difference between the student’s intelligence quotient (IQ) and his/her actual reading achievement. This discrepancy indicated that the child should be performing at much higher level because his/her intelligence was high enough to support a potentially higher level of achievement. It was believed that a student’s reading ability should be directly correlated with his/her IQ—average or above IQ equaled average or above reading performance, while low IQ equated to low reading performance.

Students with reading disabilities have been a segment of special education for decades (Stanovich, 1988). It is not surprising that the cause of reading disabilities was frequently attributed to theories associated with special education. One of the most prominent—quite possibly the most prominent and widely accepted—model used to explain the genesis of disability is Zigler’s (1969) developmental lag theory. Zigler posited that “familial retardation could be understood simply as the normal variation in the intelligence variable, and that the development in an individual with cognitive retardation would be characterized by a slower progression through the same sequence of stages…and also a lower level of asymptotic
development” (as cited in Stanovich Nathan, & Vala-Rossi, 1986, p. 269); hence, the term, *reading retarded*. Stanovich explains that, “Lag models predict that when older disabled and younger non-disabled children are matched on reading level, their performance should not differ on any cognitive tasks causally related to reading” (p. 591). In other words, it was assumed that a correlation existed between cognitive skills and reading ability. This correlation was believed to mean that if older reading-disabled students were tested and compared with younger normal reading students of similar cognitive ability, they would both perform at about the same reading level and have similar cognitive development (Siegel, 1989; Stanovich, 1988; Stanovich, Nathan, & Vala-Rossi, 1986; Stanovich, Nathan, & Zolman, 1988; Stanovich & Siegel, 1994).

Research began teasing the theories of reading disabilities in the 1980s; diverging theories and definitions for dyslexia emerged. Gough and Tunmer (1986) examined reading disability in light of their ‘simple view of reading, “The simplest view of the relation between decoding and reading which anyone has ever seriously entertained is this: Reading equals the *product* of decoding and comprehension, or R = D x C, where each variable ranges from 0 (null) to 1 (perfection)” (p. 7). Assuming that reading ability is, in fact, a product of decoding and comprehension, then one must examine reading disability through the same variables. Looking at a reader’s inability, they continued to posit three reasons for reading disability in respect to the simple view of reading: an inability to decode (developmental dyslexia), an inability to comprehend (hyperlexia), or both (‘garden-variety’ poor reader) (Gough & Tunmer, 1986).

Research relevant to reading acquisition and disability often echoed Gough’s and Tunmer’s (1986) definition of dyslexia in the 1980s. Deficits in phonological processing resulting in the reader’s inability to decode, read, and spell emerged in research as a causal link to dyslexia (Elbro, 1999; Ellis & Large, 1987; Gough & Tunmer, 1986; Hatcher, 2000;
Kochnower, Richardson, & DiBenedetto, 1983; Shaywitz, 2003; Shaywitz & Shaywitz, 2004; Siegel, 1998; Stanovich, 1988; Torgesen, 1989). Likewise, researchers were in basic agreement that hyperlexics were individuals having “superior skill in decoding accompanied by average or even inferior comprehension” (Gough & Tunmer, 1986, p. 8). However, it was their ‘garden-variety’ poor reader who was challenged by a new body of research.

According to Gough and Tunmer (1986), the “garden-variety” poor reader exhibits a negative correlation between his/her ability to decode and comprehend and that “most poor readers will be deficient in both decoding and comprehension” (p. 9). This poor reader does not have the ability to decode, nor comprehend. Simply stated, the reader is unable to decode the words and therefore, unable to convert the symbols (letters) into meaningful units (words) that match the reader’s spoken and receptive language when presented with printed text. Gough and Tunmer further postulated that the “garden-variety” poor reader is unable to make this translation and is, therefore, unable to read. While they acknowledged the existence of both dyslexia and hyperlexia, they maintained that most poor readers are of this mixed (or ‘garden-variety’) type. To the contrary, Stanovich (1988) argued, “that the reading difficulties of the dyslexic stem from problems different from those characterizing the ‘garden-variety’ poor reader” (p. 590). Therefore, the ‘garden-variety’ poor reader is neither reading disabled, nor dyslexic.

An Alternative Definition

“A child with this type of learning disability has a brain/cognitive deficit that is reasonably specific to the reading task” (Stanovich, 1988, p. 601).

Researchers began to challenge the long-embraced assumptions of reading disabilities held within special education (Elbro, 1999; Ellis & Large, 1987; Lyon, 1989), primarily their adherence to “the concept of qualitative differences in cognitive/behavioral characteristics”
(Stanovich, 1988, p. 590) as the definitive marker of all learning disabilities. Much of the research concerning disabilities made it a practice “to compare dyslexic children with children of the same age who are reading at the same level, but who are not labeled dyslexic” (Stanovich, p. 590). This approach neglected to consider that if both groups of children were arriving at the same reading level, but had different intelligence quotients (IQs), then one of the groups must have been relying upon other processes to achieve the higher comprehension level (Siegel, 1989; Stanovich, Nathan, & Vala-Rossi, 1986). This approach neither dismissed, nor accounted for, the underlying assumption that reader with dyslexia must have lower IQs resulting in delayed reading-related developmental processes.

Stanovich, Nathan, and Vala-Rossi (1986) challenged the notion of the developmental lag theory and its causal relationship to dyslexia in their study of literacy acquisition. The group studied third- and fifth-grade students and compared “skilled third-grade students and less skilled fifth-grade students who were similar levels of reading comprehension level and decoding level” (p. 269). The results indicated that the largest group of poor readers followed a pattern reflecting a developmental lag. In other words, their IQ/reading discrepancies matched. It “would appear to suggest the hypothesis that ‘garden-variety’ poor reader is characterized by a developmental lag” (Stanovich et al., 1986, p. 280).

However, a smaller group emerged. Readers with dyslexia displayed a “specific phonological deficit, in conjunction with compensatory use of other skills and knowledge sources” (Stanovich, et al., 1986, p. 280). Their IQ/reading deficit did not match: most had average or above average IQ with low reading performance. Stanovich (1988), in a later study attributed the difference “between the ‘pure’ dyslexic (with relatively high IQ for that level of reading) and the ‘pure’ garden-variety (with a lower and more typical IQ)” (p. 600) to
differences in each group’s phonological processing patterns—a model he called the *phonological-core variable-difference (PCVD) model*.

The PCVD model is built around Fodor’s (1983) concept of faculty psychology. Fodor posited that cognitive processes occur either within single cognitive domains (vertical faculties) or across several cognitive domains (horizontal faculties). The term ‘vertical’ faculty was coined by Fodor to provide an illustration of the bundles of cognitive faculties described by Gall as “propensities, dispositions, qualities, aptitudes, and fundamental powers” to illustrate how “the mind is structured into functionally distinguishable subsystems” (as cited in Fodor, p. 14). A vertical domain, for instance, may be reading. Cognitive processes specific to reading, such as decoding, phonological awareness, and phoneme-grapheme correspondences, are located and confined to the vertical faculty called reading. ‘Horizontal’ faculties, as Fodor referred to them, are “the interaction of faculties as, e.g., memory, imagination, attention, sensibility, perception…” and the character of each such process is determined by the particular mix of faculties that it recruits” (Fodor, p. 11). Reading comprehension, on the other hand, is contained within a horizontal faculty because of its use of cognitive processes that are not reading-specific, such as visual discrimination of letters, prior knowledge, attention, orthographic processing, and memory (Stanovich, 1988).

Stanovich (1988) built his definition of dyslexia around the notion that reading disabilities primarily involve linguistic processing difficulties specifically related to reading, rather than intelligence or general cognitive deficits:

A child with this type of learning disability has a brain/cognitive deficit that is reasonably specific to the reading task. That is, the concept of dyslexia requires that the
deficits displayed by such children not extend too far into other domains of cognitive functioning. (p. 601)

It is clear that Stanovich did not believe that dyslexia, in the purest sense, was the result of a broad-base developmental lag. Because the root of dyslexia is related to cognitive processes specifically used in reading (vertical faculties), readers with average or above average IQs supported the delineation between poor reading and reading disability. Cognitive developmental delays affected a broad spectrum of cognitive processes (horizontal faculties) resulting in overall intellectual delays. The reader with dyslexia, unlike the ‘garden-variety’ poor reader, has the cognitive capacity to use a wide variety of cognitive processes (horizontal faculties) to compensate for the deficits in phonological processing: hence the term, *compensatory processing skills* (Spear-Swerling & Sternberg, 1994; Stanovich, 1980).

Compensatory Processing Theory: Camouflage for Readers with Dyslexia

“We call these youngsters compensatory readers because they tend to use other abilities, such as sight-word knowledge or contextual clues, to compensate for weak word-decoding skills”

*(Spear-Swerling & Sternberg, 1994, p. 97).*

Compensatory processing, as defined by Stanovich (1980), is “a deficit in any particular process [which] will result in a greater reliance on other knowledge sources, regardless of their level in the processing hierarchy” (p. 32). “Once we have dispensed with bottom-up models [of reading], we are free to assume that a process at any level can compensate for deficiencies at any other level” (Stanovich, p. 36). Poor readers with dyslexia can, therefore, choose alternative processes to aid them in the construction of meaning during the reading process. He refers to this amalgamation of theory and model as the ‘interactive-compensatory model of reading’ (Stanovich).
This model may best be illustrated in light of fluency. In 1997, The National Reading Panel (NRP) convened and presented educators nationwide with research-based findings, suggestions, and approaches to help the nation become a nation of readers (NICHHD, 2000a, 2000b). The Panel stressed the need for all readers to develop fluency during the reading acquisition process. “Fluent readers are able to read orally with speed, accuracy, and proper expression” (NICHHD, 2000b, p. 3-1). Fluency and automaticity enable the reader to invest less cognitive effort in decoding and more in the construction of meaning (Stanovich, 1986). Reading becomes fluent when children attain “freedom from word identification problems that might hinder comprehension in silent reading or the expression of ideas in oral reading” (Harris & Hodges, 1995, p. 85). In other words, a fluent reader is able to read a written passage smoothly, with expression that is appropriate to the text, and at the appropriate speed while understanding and constructing meaning simultaneously.

Readers with dyslexia are not able to read fluently (Elbro, 1999; Ellis & Large, 1987; Gough & Tunmer, 1986; Hatcher, 2000; Joshi, 2003; Kochnower et al., 1983; Lipson & Wixson, 2003; Shaywitz, 2003; Shaywitz & Shaywitz, 2004; Siegel, 1998; Stanovich, 1980, 1986, 1988; Torgesen, 2002; Torgesen & Burgess, 1995). Phonological processing deficits make decoding, recoding, pronunciation, and word recognition laborious and exhausting. “Slow, capacity-draining word-recognition processes require cognitive resources that should be allocated to higher-level processes of text integration and comprehension” (Stanovich, 1986, p. 364). Reading comprehension is further retarded by poor orthographic recognition. Stanovich (1980) states:

It is not enough that an individual know the sequential constraints of the orthography…it must be applied to word recognition quickly, before individual letter recognition is
completed, or else recognition will be based solely on stimulus information even *though* the reader had the knowledge. (p. 38)

Consequently, the reader with dyslexia has little mental energy left for piecing together bits of information via vertical faculties assigned to reading; he/she must rely upon horizontal processes such the use of contextual clues, structural analysis of words, graphic (photographs, drawings, pictures, graphs, maps) interpretation, imagination, and other knowledge sources to construct meaning (Spear-Swerling & Sternberg, 1994; Stanovich, 1988). “The major problem with the compensatory approach to reading is that it eventually results in impaired reading comprehension” (Spear-Sternburg & Swerling, 1994, p. 97).

Let us pause for a moment and revisit the metaphor of my camouflaged sons. Readers with dyslexia are aware of their reading difficulty; they do not need to be told that reading is difficult for them (Elbro, 1999). Like my sons, they evaluate the situation and begin their preparation. My sons gathered their dad’s old military uniforms, old hats, and camouflage face paints to help them conceal their location. Readers with dyslexia prepare much the same way. Many will begin using compensatory strategies early in the acquisition process. Some of their ‘outfits’ may include strengthening listening skills, memory skills, sight-word knowledge, making key associations with graphics (e.g., pictures, graphs, and shapes), and response behaviors such as eagerness to answer questions orally to avoid reading, silly behavior to distract attention to their poor oral reading skills, needing to use the restroom when their time to read approaches, or quietly slipping in to the sea of students to avoid drawing attention to themselves and their weak word-decoding skills (Laing, 2005; Shaywitz, 2003; Spear-Swerling & Sternberg, 1994; Stanovich, 1988). Once they are dressed, they do their best to hide and remain hidden among the hedges (fluent readers).
Like my sons, these struggling readers will be difficult to identify unless the right method is used. Each student will construct his/her own unique combination of compensation skills in response to his/her own unique situation. Many of the skills will be similar and easy to identify. Others will be vague and not readily noticed or easily excused making identification much more difficult. I verbally called out to my sons, which forced them to answer me. Following the sound of their voices led me to the vicinity of their location. Unfortunately, uncovering hidden readers with dyslexia is a bit more difficult. If the wrong assessment method is used, they could remain hidden for years—like Scoot. Time is of the essence during the reading acquisition process; perhaps more importantly are the assessment choices. The reading success of readers with dyslexia relies on early detection and appropriate remediation.

Aaron (1995) explains, “The conventional diagnostic procedure used in the U.S. for identifying reading disability is based on a measure of the extent of discrepancy found between a child’s potential for reading and his or her actual reading achievement” (p. 348). Students were given passages to read silently followed by a series of constructed-response comprehension questions. Based on their performance and predetermined psychometric criteria, the students were identified as good or poor readers. “Comprehension is a constructive, interactive process involving three factors—the reader, the text, and the context in which the text is read” (Gunning, 2005, p. 276). Readers, therefore, employ a variety of strategies, techniques, and skills during the reading process. Many of these cognitive processes are not specific to reading; therefore, the need for multivariate assessments is necessary for proper identification (Stanovich et al., 1986).

Stanovich’s (1980) research in the area of interactive-compensatory processing used a variety of assessments to uncover children with dyslexia. “Multivariate studies have increased our understanding of the determinants and correlates of reading acquisition” (Stanovich et al.,
1986, p. 268) and possibly, reading difficulties. Stanovich (1980, 1988) as well as Stanovich and Siegel (1994) designed a multivariate study using the Metropolitan Achievement Test 8th Edition (MAT 8), the Peabody Picture Vocabulary Test, III (PPVT-III), and a number of assessments targeting various components of phonological processing (Stanovich, 1988; Stanovich, et al., 1986; Stanovich, et al., 1988; Stanovich & Siegel, 1994). They concluded that assessing poor readers on comprehension-levels only resulted in false negatives. Third-, fifth-, and seventh-grade struggling readers employing compensatory skills scored higher on comprehension identifying ‘garden-variety’ poor readers, but leaving the reader with dyslexia well-hidden. However, when a longitudinal study of the same students was conducted and matched on decoding-level assessments, differences between the poor readers and readers with dyslexia were significant confirming the phonological-core variable difference model (Stanovich & Siegel, 1994).

Stanovich (1986) also posited that if children were provided with early reading experiences and opportunities to experiment with educational experiences that they would in turn become better readers. With exposure to oral reading practices, a broad range of vocabulary, and opportunities to read, children will learn to enjoy reading and will consequently read and learn more than non-readers. He compared this phenomenon to the Biblical passage in the book of Matthew, chapter 25, verse 29: “For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath.” He called this the Matthew effects of reading: the rich (good readers) will get richer and the poor (poor readers) will get poorer. Conversely, “children with inadequate vocabularies—who read slowly and without enjoyment—read less, and as a result have slower development of vocabulary knowledge, which inhibits further growth in reading ability” (Stanovich, p. 381). When reading
deficiencies are not detected early and are not remediated, the reader continues to experience an on-going loss of skills.

Summary

Considering Stanovich’s results (1986), it becomes even more obvious that proper assessment is necessary for locating hidden readers with dyslexia hiding in our classrooms. The current climate of education in the country complicates assessment choices. Educators are faced with federal and state mandates to complete rigorous state standards and assessments and looming threats of No Child Left Behind, often while making adjustments and concessions as a result of funding deficits. Each moment of the day is filled with lessons designed to meet objectives, performance indicators, benchmarks, and test preparation. Therefore, selecting appropriate reading assessments must be the responsibility of informed educators who have the most recent, research-based information.
CHAPTER III. METHODS AND PROCEDURES

The purpose of this study is to answer the question: Are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and the Developmental Reading Assessment (DRA) valid assessments for the early screening and identification of third-grade students with dyslexia? The sample population was given a formal test not currently used in the school district in an effort to duplicate a large portion of Stanovich’s study (1988). This chapter will discuss the methods and procedures used for this investigation.

Methods

Research Design

The design model for this investigation followed that recommended by Mertler and Charles (2005) for quantitative educational research. The driving question for this study was: Are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and the Developmental Reading Assessment (DRA) valid assessments for the early screening and identification of third-grade students with dyslexia?

It appears that one of the problems of hidden reader with dyslexia is their ability to camouflage themselves in compensatory processing skills (Siegel, 1998; Spear-Swerling & Sternberg, 1994; Stanovich, 1980; Stanovich & Siegel, 1994). The literature review produced five studies designed to distinguish the reader with dyslexia from the ‘garden-variety’ poor reader and to further delineate between older poor readers and younger nonreader with dyslexia. Each study used the MAT 8, the PPVT-III, and a number of subtests designed to assess the student’s phonological awareness and skills. A replication of the previous studies is too ambitious for this study, so a school district that administers the MAT 8, DIBELS, and DRA were chosen for the project. Students test scores were extracted from their cumulative files. The
DIBELS and DRA scores were substituted for the individual phonological assessment subtests. Students were individually administered the PPVT-III test during the study.

The school district was identified and permission was granted to conduct the study. Initial contact was made via letter with every building principal and followed with a phone call. Two meetings (one with the principal and one with the teachers) were devoted to the presentation of the study; presentation of the instrument (PPVT-III); discussion of testing logistics; plans for reporting results to the school, students, and parents; and questions and answers. Teachers distributed parental and student consent forms to every third-grade student after an explanation of the test. Consent forms were collected and held at the school until the day of testing.

Students were tested individually during the first three hours of the class day. Only those students with completed parental and student consent forms were included in the study. After a brief introduction, the examiner administered the test. Each test lasted approximately fifteen minutes.

Student performance scores were collected from the building principal before leaving the school. All scores were reported as raw scores. The PPVT-III protocols were scored by one individual and checked by another examiner the following day. Means and Pearson correlation coefficients were calculated for each test.

Participants

Sixty-eight third-grade students participated in this study. Testing was conducted in four elementary buildings. Two buildings each housed one third-grade class and two buildings housed three third-grade classes. The participants were randomly selected from classes in the school district of a small northwest Ohio city. Students were permitted to participate in the study regardless of documented disabilities, speech or language impairments, or repetition of any
grades. No exclusions were made for their participation in Title I or community reading enrichment programs prior to or during the study. Each student who provided both a student and parental consent form was assigned a number to protect his/her privacy during the analysis and reporting portions of the project.

Consenting students and parents gave permission for the release of their current Metropolitan Achievement Test (MAT 8\textsuperscript{th} Edition), Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6\textsuperscript{th} Edition) and Developmental Reading Assessment (DRA) results. These scores were labeled with the student’s corresponding number to ensure confidentiality.

\textit{Instrumentation}

The Peabody Picture Vocabulary Test III was administered to the participants in the study to model Stanovich’s (1986, 1988) as well as Stanovich’s and Siegel’s (1994) research models. Their studies included the administration of the MAT 8, PPVT-III and a multiple number of assessments designed to specifically assess certain subcomponents of reading. The administration of eight or nine additional assessments was not feasible for the present study; therefore, similar information was extracted from the DIBELS and DRA results, namely oral reading fluency, word use fluency, prediction, and retell fluency. The choice to exclude the other smaller tests was also made based on the strong correlation noted in Stanovich’s research between the MAT 8 and the PPVT-III—.76 (Stanovich, 1988). Another reason the PPVT-III was chosen was because of the correlation between vocabulary and reading comprehension. According to Stanovich (1986), “If the development of vocabulary knowledge substantially facilitates reading comprehension, and if reading itself is a major mechanism leading to vocabulary growth….then we truly have a reciprocal relationship that should continue to drive further growth in reading throughout a person’s development” (p. 380).
Procedure

Testing was conducted in four elementary school buildings within the same school district during early February. Time was spent explaining the PPVT-III to each building principal and to each third-grade teacher prior to distributing the consent forms. Teachers presented the project to the students and distributed the Human Subject Research Board consent forms for students and parents and/or guardians. Students were told that their participation in the study was voluntary and would not affect their grade in any way.

On the day of testing, the examiner was introduced to the class and briefly explained how the PPVT-III would be administered. The instrument was given individually to the participants outside of the classroom. When the student arrived, the consent form was examined for the necessary signatures and the student’s birth date was recorded on the protocol. The examiner read the test script with instructions and practice items. The first plate administered to the student corresponded to the manual’s instructions. All guidelines of the manual were followed during the entire testing period. When the child completed the test, he/she was sent back to the classroom and asked to send the next student. Individual assessments took approximately 15 minutes. All students were assessed during the first three hours of the school day.

After all students were assessed, the protocols were scored to determine the student’s raw score using the manual’s guidelines. The raw scores from the PPVT-III were added to the student’s raw scores from the MAT 8, DIBELS, and DRA. A Pearson correlation coefficient formula was used to measure relationships between the four instruments.

Data Collection

Raw scores from the MAT 8, DIBELS, and DRA were extracted from the students’ permanent cumulative file. Building principals agreed to print copies of the scores from their
electronic databases. It is assumed that these scores were correctly entered and contained no misrepresentations.

The raw scores for the PPVT-III were scored and calculated by the examiner. Each protocol was rechecked for mathematical errors or oversights before statistical analysis began. After the raw scores were verified and recorded, an arbitrary number was assigned to each protocol and this number was used during the analysis to protect the child’s privacy.

Data Analysis

Raw scores from the MAT 8, the student’s most recent DIBELS, and DRA along with the PPVT-III score were collected. Means and a Pearson correlation coefficient were calculated for each instrument. Results of assessments were collected and reported by instrument, age, and correlation to other assessments. Scores were tested at the .05 and .01 alpha level for statistical significance.

Summary

The instruments chosen for screening represent Stanovich’s research-based criteria for identifying readers with dyslexia. The MAT 8 Reading instrument was aligned with the goals and standards of the International Reading Association (IRA), the National Council of Teachers of English (NCTE), and the National Assessment of Educational Progress (NAEP). It “measures the spectrum of important reading components, from recognizing sounds to word identification, from vocabulary skills to comprehension” (taken from http://harcourtassessment.com). This protocol provides an overall picture of the student’s reading and comprehension skills. The PPVT-III is a test of receptive vocabulary using standard English and verbal ability. It is designed to assess the student’s listening vocabulary and current speaking skills. DIBELS is designed to assess student literacy performance three times throughout the school year. At the
third-grade level, it measures oral reading and oral retelling fluency. The purpose of DRA is to assess the student’s reading rate and accuracy, comprehension, and stage of reading.
CHAPTER IV. DATA ANALYSIS AND DISCUSSION OF RESULTS

Students with dyslexia generally employ compensatory processing skills during the reading process (Stanovich, 1980, 1988). These skills act as camouflage for other phonological and linguistic deficits (Spear-Swerling & Sternberg, 1994; Stanovich, 1988; Stanovich & Siegel, 1994). Such camouflaged readers remain hidden in classrooms in spite of the many assessments given throughout their early education. Therefore, if educators are to quickly identify these hidden readers to preclude the Matthew effects of reading (Stanovich, 1986), these assessments should be examined for their effectiveness in assessing phonological awareness and linguistic processing as systemic factors in developmental dyslexia (Spear-Swerling & Sternberg, 1994; Stanovich, 1980, 1988). The purpose of this investigation was to determine whether there are alternative ways of discovering the camouflaged readers with dyslexia. The research question that guided this investigation was: Are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and the Developmental Reading Assessment (DRA) valid assessments for the early screening and identification of third-grade readers with dyslexia?

The PPVT-III, Form B was administered to seventy-one third-grade children. However, three of the tested students were excluded from the study because of incomplete testing data. The sample \((n=68)\) represents 23.7\% of the third-grade population enrolled in this school district. This chapter will discuss the findings of this study and the relationships discovered between the standardized and informal tests.

Data Analysis

The PPVT-III, Form B was administered to third-grade children. Raw score means for the four assessment instruments are contained in Table 1. Individual scores were calculated
Table 1

Means of Test Scores for Third-Grade Readers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Metropolitan (MAT 8)</td>
<td>76.98</td>
</tr>
<tr>
<td>2. Peabody (PPVT-III)</td>
<td>130.27</td>
</tr>
<tr>
<td>3. DIBELS</td>
<td>95.05</td>
</tr>
<tr>
<td>4. DRA</td>
<td>30.00</td>
</tr>
</tbody>
</table>
and analyzed for correlations between the standardized instruments (MAT 8 and PPVT-III) and the informal assessments (DIBELS and DRA). The driving question asked if the DIBELS and DRA protocols were valid screening assessments for identifying readers with dyslexia and this study concluded that both tools were valid tools for early screening. The DIBELS and DRA positively correlated higher with the MAT 8 (.57 and .78, respectively) than the PPVT-III. The MAT 8 and DIBELS/DRA correlations were similar in this study to Stanovich et al.’s (1986, 1988) studies and were statistically significant.

The correlation between the MAT 8 and the PPVT-III in this study was .59 and statistically significant at both the .05 and .01 level, slightly less than noted in Stanovich (1988)—.76. This relationship is strong enough to suggest reliability between the two instruments in predicting the student’s overall reading comprehension and vocabulary skills. A moderate correlation (.63) exists between the DIBELS and DRA informal tests suggesting that both tests provide a relatively accurate picture of the student’s phonological and oral reading skills (See Appendix C). Oral reading and word decoding skills are both assessed in these instruments.

The strongest correlation noted between instruments occurred between the MAT 8 and the DRA (Table 2)—.78. Students’ reading level is positively correlated with their total reading comprehension score (See Appendix A). This stands to reason since both the MAT 8 and DRA measure the student’s ability to construct meaning from reading the text silently, although one portion of the DRA does measure the student’s silent reading fluency.

The MAT 8 was also positively correlated with the students’ DIBELS performance (see Appendix B). One would expect to see such a relationship in light of the subcomponents of reading, such as good phonemic and phonological awareness and comprehension.
Assessment statistics (Table 3) reflect several notable performances. The largest range of performance occurred on the DIBELS (. Extreme scores (30-203) indicate an extremely wide range of ability amongst the sample in phonologically-related skills. This low score was a much more accurate predictor of the child’s reading comprehension, than the PPVT-III. The PPV-III scores had the second largest range of 91 (88-171). Again, this low belonged to the
Table 2

Correlation of Test Scores for Third-Grade Children

<table>
<thead>
<tr>
<th>Variable</th>
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</thead>
<tbody>
<tr>
<td>1. Metropolitan (MAT 8)</td>
<td>.59</td>
<td>.57</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td>2. Peabody (PPVT-III)</td>
<td>.59</td>
<td>.58</td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>3. DIBELS</td>
<td>.57</td>
<td>.58</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>4. DRA</td>
<td>.78</td>
<td>.50</td>
<td>.63</td>
<td></td>
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</table>
Table 3
Individual Instrument and Sample Statistics

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 8</td>
<td>76.98</td>
<td>67</td>
<td>32</td>
<td>99</td>
</tr>
<tr>
<td>PPVT-III</td>
<td>130.28</td>
<td>91</td>
<td>88</td>
<td>179</td>
</tr>
<tr>
<td>DIBELS</td>
<td>95.05</td>
<td>173</td>
<td>30</td>
<td>203</td>
</tr>
<tr>
<td>DRA</td>
<td>30</td>
<td>26</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td>Age</td>
<td>9.03</td>
<td>2.08</td>
<td>8.42</td>
<td>10.5</td>
</tr>
</tbody>
</table>
aforementioned student. This reader fits the profile of Gough and Tunmer’s (1986) ‘garden variety’ poor reader. It is unknown if this student has been identified with any learning or reading disabilities. All of the highest outliers were recorded as the performance from one reader.

The mean age for the sample was 9.03 years (See Appendix D). The lowest scoring student was the oldest student in the sample. It was discovered that the student was an English Language Learner (ELL) with only about five months of English language instruction. Several patterns of performance were noted in the sample. The five readers with the lowest scores (Table 4) performed considerably lower than the sample mean on the MAT 8 (Table 3). Only one of the students performed near the sample mean on the PPVT-III. Performance on the DIBELS was much lower than the sample norm with the exception of one student (not the same student as previously mentioned). Three of the five lower readers had surprisingly higher DRA scores (24) than the remaining two readers. The informal assessments seemed to be better predictors of total reading comprehension as measured by the MAT 8, than were their PPVT-III performances.

Table 5 compares the scores of four readers with profiles consistent with Stanovich’s reader with dyslexia. Each child scored higher than the mean in the MAT 8 silent reading comprehension, but much lower on the DIBELS tests. The mean for the DIBELS was 95.05 and these for students scored 48, 60, 73, and 61. The DRA scores for three of the students exceeded the mean. This difference could be explained by the nature of the DRA. Students are allowed to demonstrate the comprehension in oral expression and retelling, rather than through just silent reading. In spite of this inconsistency, these four readers fit the screening profile suggested by Stanovich and this project: readers with dyslexia will score much higher on silent reading comprehension assessments than on tests of phonological skills. This screening would suggest
Table 4

Scores of Five Lowest Performers

<table>
<thead>
<tr>
<th>Test</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 8</td>
<td>32</td>
<td>37</td>
<td>38</td>
<td>43</td>
<td>47</td>
</tr>
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<td>PPVT-III</td>
<td>88</td>
<td>91</td>
<td>124</td>
<td>113</td>
<td>110</td>
</tr>
<tr>
<td>DIBELS</td>
<td>87</td>
<td>53</td>
<td>67</td>
<td>51</td>
<td>30</td>
</tr>
<tr>
<td>DRA</td>
<td>24</td>
<td>14</td>
<td>24</td>
<td>24</td>
<td>16</td>
</tr>
</tbody>
</table>
Table 5

Scores of Potential Hidden Readers

<table>
<thead>
<tr>
<th>Test</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 8</td>
<td>92</td>
<td>82</td>
<td>80</td>
<td>79</td>
</tr>
<tr>
<td>PPVT-III</td>
<td>151</td>
<td>124</td>
<td>131</td>
<td>121</td>
</tr>
<tr>
<td>DIBELS</td>
<td>48</td>
<td>60</td>
<td>73</td>
<td>61</td>
</tr>
<tr>
<td>DRA</td>
<td>40</td>
<td>34</td>
<td>24</td>
<td>34</td>
</tr>
</tbody>
</table>
that there are possibly four children who would benefit from additional specific assessment for reading disabilities.

Discussion of Results

Are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and the Developmental Reading Assessment (DRA) valid assessments for the early screening and identification of third-grade readers with dyslexia? Performance results from the sample appear to indicate that both DIBELS and DRA could be used as preliminary screening assessments for the early detection of compensatory readers. The moderately strong correlations between the MAT 8, DIBELS, and DRA suggest that educators could use either of the informal tests as early screening tools for readers with dyslexia.

The five lowest performances were compared in an effort to test the validity of DIBELS and DRA in uncovering students with reading difficulties (Table 4). Reader 1 is identified as a reader with dyslexia, but does not present a dyslexic profile. Reader 2 is an English Language Learner (ELL) and Reader 3 is a special education student. Readers 4 and 5 are both in Title 1 programs. Their DIBELS results seem to be the most accurate measurement of their current reading skills according to their teachers. The DRA results appear to be consistent and each of the students was labeled “At Risk” for potential reading difficulties.

It appears that only four true potential readers with dyslexia were ‘uncovered’ in this study. Their profile was compiled by comparing the students’ silent reading comprehension (MAT 8 score) and their oral reading ability and comprehension on the DIBELS (Table 5). All of these students have below normal performance scores on DIBELS—which tests phonological subskills—and normal silent reading comprehension. Such behavior, according to Stanovich (1986, 1988), indicates the student’s ability to employ a variety of cognitive and other
knowledge skills to construct meaning, rather than relying upon phonological decoding skills. Students 1 and 4 fit Stanovich’s profile: high receptive vocabulary indicates above normal intelligence. However, student number 1 is 9.58 years old, so his age may have contributed to his superior receptive vocabulary. Student number 3 appears to fit the dyslexic profile as well. His overall silent reading is higher than his phonological skills. But, he is already 9.5 years old, so further diagnostic assessment may reveal developmental delay rather than a phonological core variance. Student number 2 is 8.6 years old and performing lower on her receptive language and oral reading skills.

Summary

Students with dyslexia using compensatory processing skills are oftentimes difficult to spot in classrooms. Their ability to utilize a number and variety of cognitive and knowledge skills enable them to construct meaning from the text in spite of their inability to read fluently. In light of growing demands for standardized testing, shrinking budgets, and academic accountability, identifying readers with reading difficulties is especially important. Teachers need effective and appropriate screening tools at their disposal. It may be that some of the tools currently being used by classroom teachers are suitable screening tools, but they have not been used as such.

With this notion in mind, this study posed the question: Are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 6th Edition) and the Developmental Reading Assessment (DRA) valid assessments for the early screening and identification of third-grade readers with dyslexia? The results indicated moderately strong positive correlations between the MAT 8 total reading comprehension subscore and the student’s DRA reading level. A similar, but somewhat weaker, correlation was also noted between the MAT 8 and the DIBELS scores. Such findings
indicate that classroom teachers could evaluate student performance based on the discrepancy in performance between the MAT 8 and/or the DRA and DIBELS. Such quick screening would alert teachers to potentially hidden readers with dyslexia in the classroom.
CHAPTER V. SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Hidden readers with dyslexia are easily overlooked and can potentially remain unidentified for years if appropriate screening devices are not employed early in the student’s schooling process. Research warns that students who do not learn to read by third grade often fail to ever learn how to read fluently (Adams, 1990; Foorman, Francis, Shaywitz, Shaywitz, & Fletcher, 1997; Juel, 1988; Torgesen, 2002). Stanovich (as cited in Good, Kaminski, Simmons, & Kame’enui, 2001) states, “Differences in developmental reading trajectories can be explained, in part, by a predictable and consequential series of reading-related activities that begin with difficulty in foundational skills, progress to fewer encounters and exposure to print, and culminate in lowered motivation and desire to read” (p. 6). Therefore, readers with dyslexia hiding behind the camouflage of compensatory processing must be identified before third grade.

Summary

All struggling readers are not alike (Stanovich, 1988). ‘Garden-variety’ poor readers (Gough & Tunmer, 1986) demonstrate developmental delays along the cognitive domains; that is, they seem to develop slowly in all areas, rather than those exclusively used in the reading process. The reader with dyslexia (Stanovich, 1988) is much different. This poor reader appears to have normal to above normal intelligence, but is unable to decode and comprehend written text. His/her difficulties are linguistic and phonological deficits strictly in the domain of reading. Traditionally, these students have been defined using the ability-performance discrepancy model. This method is ineffective in identifying the reader with dyslexia using compensatory processing skills during the reading process (Siegel, 1989; Spear-Swerling & Sternberg, 1994; Stanovich, 1980, 1988).
The root causes of reading disability appear to be phonological and linguistic deficits (Shaywitz, 2003; Siegel, 1989; Spear-Swerling & Sternberg, 1994; Stanovich, 1980, 1988); therefore, if educators are going to attempt to uncover struggling readers hiding behind the camouflage of compensatory skills, phonological subskills must be the target of valid assessments.

Standardized tests currently used to measure students’ reading performance (primarily silent reading comprehension or receptive vocabulary) are simply inadequate for this purpose. Moreover, standardized tests tend to be more labor intensive and costly than some informal assessments. DIBELS and DRA scores for 66 third-grade students were found to be moderate predictors of students with potential reading difficulties. This study was able to identify four students who fit Stanovich’s profile for dyslexia—normal or above normal performance in silent reading comprehension with below normal performance in phonological skills. Further diagnostic testing was not conducted to confirm the initial positive results.

Conclusion

The study confirmed a moderate correlation between the MAT 8 and the two informal instruments and that these two phonologically-based informal assessments appear to be valid screening tools in identifying hidden compensatory readers when compared with their MAT 8 Total Reading Scores. In classrooms where DIBELS is in place, special attention should be given to look for such discrepancies between students’ silent reading comprehension assessment in formal instruments and DIBELS results. As a screening tool, this instrument provides teachers with an inexpensive, valid measurement of students’ reading throughout the school year. It also provides quantitative data which can be monitored throughout the current school year and with previous and future assessments.
Recommendations

Three particular recommendations can be made from this study: (1) statistics could be studied in other ways; (2) teachers should not rely upon standardized reading tests to provide a total picture of the reader; and (3) teachers should use informal phonologically-based tests, such as the DIBELS and DRA, for early screening of reader with dyslexia.

The statistics obtained from these instruments could be studied several different ways. Performance scores on the MAT 8 subtests could be compared with the subtests on DIBELS. Relationships between the two instruments may provide greater insight into the students’ phonological understanding. The PPVT-III scores could be compared to the oral vocabulary subtest in DIBELS and the oral retelling subtest on the DRA for a broader view of the student’s receptive and generative vocabulary. MAT 8 (silent) reading comprehension scores and DIBELS oral comprehension scores could be analyzed for correlation. A study of the median performance band for each instrument may provide insight into instruction strengths and weaknesses in the district/school/classroom. It is clear that the performance results obtained in this study can provide reading specialists and classroom teachers with a pool of potentially rich data.

Standardized testing is being relied upon much more than specific informal reading and linguistic tests and that these results may be indicating false reading profiles. Many of the standardized reading tests are comprehension tests. This is problematic if one of the purposes of the test is to flush out hidden reader with dyslexia because many of them are using other knowledge skills and sources to compensate for their phonological weaknesses. These skills help the compensatory reader make inferences, generalizations, and guesses during the reading process resulting in falsely high comprehension scores. Likewise, standardized tests often do not address the phonological and linguistic components of reading. Phonological awareness has been
found to be one of the most reliable predictors of reading success and should be used in the reading assessment process. Informal phonologically-based assessments are affordable and should be used as initial screening instruments for the identification of hidden reader with dyslexia.

Final Summary

This study provides classroom teachers with alternative screening devices which can be used to uncover children with dyslexia hiding amongst fluent readers. Informal assessments such as the DRA and DIBELS are in place in classrooms throughout the country, but may not be used in light of student performance on the MAT 8; therefore, for little or no added costs, teachers can look for discrepancies between the MAT 8 total reading comprehension score and the DRA/DIBELS score to possibly identify and uncover a reading having difficulties. Early and reliable identification will help students receive further assessment, evaluation, and intervention as needed. We need to continue to research methods and instruments in helping such children be uncovered earlier. The longer such readers remain hidden, the more difficult it is to remove their camouflage and help them to become fluent readers.
REFERENCES


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APPENDIX A

Comparison Graph Between MAT 8 & DRA Scores
APPENDIX A

Comparison Graph Between MAT 8 & DRA Scores

![Graph showing comparison between MAT 8 and DRA scores]
APPENDIX B

Comparison Graph Between MAT 8 and DIBELS Raw Scores
APPENDIX B

Comparison Graph Between MAT 8 and DIBELS Raw Scores
APPENDIX C

Comparison Graph Between DIBELS and DRA Scores
APPENDIX C

Comparison Graph Between DIBELS and DRA Scores
APPENDIX D

Class and School Means for Each Assessment Tool and Age
## APPENDIX D

Class and School Means for Each Assessment Tool and Age

<table>
<thead>
<tr>
<th>School</th>
<th>MAT 8</th>
<th>PPVT-III</th>
<th>DIBELS</th>
<th>DRA</th>
<th>Age in yrs</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>School #1</td>
<td>59.5</td>
<td>131.5</td>
<td>83.5</td>
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<td>9.21</td>
<td>2</td>
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<tr>
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<td>127.88</td>
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<td>8.76</td>
<td>8</td>
</tr>
<tr>
<td>School #3</td>
<td>89.63</td>
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<td>124.25</td>
<td>35.5</td>
<td>9.08</td>
<td>8</td>
</tr>
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<td>School Mean</td>
<td><strong>81.53</strong></td>
<td><strong>133.10</strong></td>
<td><strong>112.99</strong></td>
<td><strong>32.78</strong></td>
<td><strong>8.94</strong></td>
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<td>17</td>
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<tr>
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<td>School Mean</td>
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<td><strong>130.20</strong></td>
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