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ACCEPTANCE

This dissertation, EFFECTS OF PHRASE-READING ABILITY, SYNTACTIC AWARENESS, AND READING RATE ON READING COMPREHENSION OF ADOLESCENT READERS IN AN ALTERNATIVE SETTING, by PATSY THOMAS NOMVETE, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education, Georgia State University. The Dissertation Advisory Committee and the student's Department Chairperson, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty. The Dean of the College of Education concurs.

Susan R. Easterbrooks, Ed.D.
Committee Co- Chair

Laura D. Fredrick, Ph.D.
Committee Co-Chair

Peggy A. Gallagher, Ph.D.
Committee Member

Bridget V. Dever, Ph.D.
Committee Member

Date

Laura D. Fredrick, Ph.D.
Chairperson, Department of Educational Psychology, Special Education, and Communication Disorders

Paul A. Alberto, Ph.D.
Dean, College of Education

AUTHOR'S STATEMENT

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Patsy Thomas Nomvete
Educational Psychology, Special Education, and Communication Disorders
College of Education
Georgia State University
P.O. Box 3979
Atlanta, GA 30302-3979

The directors of this dissertation are:

Dr. Susan R. Easterbrooks and Dr. Laura D. Fredrick
Educational Psychology, Special Education and Communication Disorders
College of Education
Georgia State University
Atlanta, GA 30303

CURRICULUM VITAE

Patsy Thomas Nomvete

Email ADDRESS: pnomvete1@gmail.com

EDUCATION:

Ph.D.	2014	Georgia State University Educational Psychology and Special Education
M.Ed.	1996	North Georgia College and State University Special Education
B.F.A	1991	Brenau University Dance

PROFESSIONAL EXPERIENCE:

2013-present	Special Education Teacher Douglas County Schools Douglasville, GA
2005-2006	
2006-2013	Graduate Research Assistant Georgia State University Atlanta, GA
2004-2005	Special Education Teacher Cobb County Schools Marietta, GA

PRESENTATIONS AND PUBLICATIONS:

- Waller, K. S., Houchins, D. E., & Nomvete, P. T. (2011). Establishing a school-based mentoring program for youth who are transitioning from a secure facility. *Beyond Behavior*, 19, 30-35.
- Nomvete, P. T., Duchaine, E., & Jolivet, K. (2011, March). *Class-wide secondary tier reading interventions: Increasing reading comprehension/engagement with secondary students*. 8th International Conference on Positive Behavior Support, Denver, CO.
- Duchaine, E., Kearley, R., & Nomvete, P. (2011, March). *Class-wide secondary interventions for secondary teachers: Overlapping strategies to increase student engagement*. 8th International Conference on Positive Behavior Support, Denver, CO.
- Nomvete, P. T. (2010). School discipline in Florida: Discipline practices leave many children behind. Atlanta, GA: U. S. Commission on Civil Rights
- Shippen, M. E., Houchins, D. E., & Nomvete, P. (2010). Reading assessment and instruction for students at-risk (5th ed.). In R. Colaru6-ss0 & C. O'Rourke (Eds.), *Special education for all teachers*. Dubuque, IA; Kendall Hunt Publishing Company
- Duchaine, E., & Nomvete, P. (2010, Dec). Universal implementation with secondary tier interventions: Teaching challenging students in alternative classrooms. GAPBS Conference, Atlanta, GA.
- Nomvete, P. T., & Duchaine, E. (2010, Dec.). *Check-in/Check-out: Effectively implementing a secondary tier intervention*. GAPBS Conference, Atlanta, GA.
- Nomvete, P. T., Houchins, D., Jolivet, K., & Waller, K. S. (2010, April) *Self-regulated strategy development: Elementary students in a psychoeducational residential facility*. CEC 2010 Annual Convention & Expo, Nashville, TN.
- Waller, K., Houchins, D., Jolivet, K., & Nomvete, P. (2010, April) *Improving reading fluency for students with EBD using self-guided, computer-based repeated reading*. CEC 2010 Annual Convention & Expo, Nashville, TN.
- Nomvete, P. T., Josephs, N. L., Waller, K. S., & White, M. W. (2009, April.). *Academic mentoring of court-involved youth in a community setting: Lessons learned*. CEC's 2009 Annual Convention & Expo, Seattle, WA.

- Nomvete, P. T., & Waller, K. S., Houchins, D., & Jolivette, K. (2009, Oct). *The effects of procedural facilitators on story elements for students with emotional and behavior disorders in a residential setting*. TECBD Conference, Phoenix, AZ.
- Waller, K. S., Nomvete, P. T., Houchins, D., Jolivette, K., & Miltenberger, S. (2008, Oct). *Ending the pipeline to prison through effective reading instruction*. The Prison Pipeline: The Intersection of Childhood and the Criminal Justice system Conference, Athens, GA.
- Jolivette, K., Houchins, D.E., Josephs, N., Waller, K, Hall, T., & Nomvete, P. (2008). Providing educational services in secure settings. L.M. Bullock & R.A. Gable (Eds.), *Ensuring a brighter future for troubled children/youth: Challenges and solutions* (pp. 193-263). Council for Children with Behavioral Disorders. Arlington, VA: Council for Exceptional Children.
- Houchins, D.E., Jolivette, K., Nomvete, P., Waller, K., Hall, T., Josephs, N., & White, M. (2007, Oct.). *Implications of research in juvenile justice settings: Academic, behavior, and transition considerations for students with special needs*. International Conference on Children and Youth with Behavioral Disorders, Dallas, TX.
- White, M., Nomvete, P. T., & Josephs, N. L. (2007, Oct). *No child left behind bars: Research-based reading and behavior interventions for youth in corrections*. Georgia Department of Juvenile Justice: A Prescription for Successful Teaching, Macon, GA.
- Nomvete, P. T., Waller, K. S., & White, M. (2007, July). *No child left behind bars*. Correctional Education Association International Conference: Excellence in education, Atlanta, GA.
- Hall, W. T., Josephs, N. L., Nomvete, P. T. & Waller, K. S. (2006, March). *No child left behind bars*. CEC State Conference, Macon, GA.

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

2006-2012	Council for Exceptional Children Council for Children with Behavior Disorders
2010-Present	Society for the Scientific Study of Reading
2007-2009	Educational Advocacy Council Fulton County Juvenile Court Atlanta, GA

EFFECTS OF PHRASE-READING ABILITY, SYNTACTIC AWARENESS, AND READING
RATE ON READING COMPREHENSION OF ADOLESCENT READERS IN AN
ALTERNATIVE SETTING

by

PATSY THOMAS NOMVETE

Under the Direction of Dr. Susan Easterbrooks and Dr. Laura D. Fredrick

ABSTRACT

Many adolescent readers do not acquire adequate reading skills, and over the past 40 years reading scores for adolescent students have not improved (Edmonds, Vaughn, Wexler, Reutebuch, & Cable, 2009; Lee, Grigg, & Donahue, 2007). The purposes of this study were (a) to explore the relationships among phrase-reading ability, passage reading rate, syntactic awareness and reading comprehension of students attending an alternative school, and (b) to investigate whether phrase-reading ability serves as a mediator (i.e., the mechanism that accounts for the relationship between the predictor and the criterion) between reading rate and comprehension, and between syntactic awareness and reading comprehension. Theories of automaticity (LaBerge & Samuels, 1974; Perfetti, 1985) and the structural precedence hypothesis

(Koriat, Greenberg, & Kreiner, 2002) provide the theoretical basis for this investigation. To investigate the relation among reading rate, syntactic awareness, phrase-reading ability, and comprehension, a series of assessments was conducted with 70 students who attend an alternative school. The resulting data were analyzed using correlation analysis, hierarchical regression (Pedhazur, 1997), and mediation regression (Baron & Kenny, 1984). The hypotheses for adolescent readers in an alternative setting are: (a) Phrase-reading ability, syntactic awareness, passage reading rate, and reading comprehension will have a positive, significant correlation; (b) Language related variables (i.e., phrasing ability, syntactic awareness) will account for more of the variance in reading comprehension than passage reading rate; (c) Phrase-reading ability, as measured by phrase-level prosody, provides a mechanism or at least partially mediates how passage reading rate affects reading comprehension; (d) Phrase-reading ability, as measured by phrase-level prosody, provides a mechanism or at least partially mediates how syntactic awareness affects reading comprehension. Findings confirmed all hypotheses. Based on these findings, researchers should further investigate contributions that language related skills such as phrase-reading ability and syntactic awareness make to reading comprehension for adolescent readers and whether these findings when disaggregated hold true for students with disabilities and struggling adolescent readers. This investigation brought attention to the need for a standardized terminology concerning reading fluency.

INDEX WORDS: Adolescent readers, Students in alternative schools, Students with disabilities, Struggling adolescent readers, Phrase-reading ability, Reading rate, Syntactic awareness, Reading comprehension, Prosody, Reading automaticity.

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A Dissertation

Presented in Partial Fulfillment of Requirements for the

Degree of

Doctor of Philosophy

in

Education of Students with Exceptionalities

in

Department of Educational Psychology and Special Education

in

College of Education
Georgia State University
Atlanta, GA
2014

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DEDICATION

This dissertation is dedicated to my husband, Thozamile “Thozi” Nomvete.

U Tata Mkhonde,

You saw something in me that I did not see in myself, as you interpreted my tendency to root tenaciously around a problem as evidence that I was a researcher at heart. Your insistent encouragement emboldened me to pursue this Ph.D.

This is no surprise to anyone who knows you. You are a promulgator of progress, a master of encouragement, and a cheerleader for all who make even a tentative effort to rise above perceived limitations or step around real obstacles.

Back in South Africa you were so small, maybe only 4 years old, riding in the donkey-drawn wagon with your parents on that dark night. Jolted from sleep you saw that all of the wagons were mired and struggling to cross the river. When your wagon jerked free of the muck and jostled toward the river bank you stood as yelled. “Zawel’ezethu! Zawel’ezethu!” “Ours are crossing! Ours are crossing!”

U Mkhonde, I am so happy to be crossing life’s obstacle with you. Zawel’ezethu!

Your wife and friend,

Nolusapho

ACKNOWLEDGMENTS

Over the last few years, this dissertation became much more than a file on a computer. It was nearby at holidays and family birthdays. No matter where I went, near or far, it was close, at least in thought. Through the years I watched as it grew and changed. At times it was like an awkward adolescent or a rebellious teenager, trying to find its path. As expected, there were missteps and setbacks and as its guardian I often felt inadequate to bring this creation to maturity. But thankfully I was not alone. My husband Thози was there to give me loving encouragement and to take all the daily cares of mundane household chores and cooking off my radar screen. My children were flexible and never complained about this new inanimate child who demanded all my attention. Ty and Nina, Will and Abby, Hannah and Rajesh, Nyameka and Lee, and Tandeka showed support and appreciation for what I was doing all along the way. This meant more than they can know.

During the process, I had incredible people to come into my life and provide me with positive energy. Dr. Gwen Benson and Dr. Susan Ogletree are two such people. They gave me meaningful work and encouragement along the way. Dr. Laura Fredrick provided guidance and encouragement all through my doctoral years. I cannot say enough for my former advisor Dr. Kathryn Heller, whose kind spirit meant more than she can know. I wish her all the best in her retirement from academia and in her new endeavors as a hospice nurse. I whole heartedly thank Dr. Bridget Dever for continuing on my committee despite her new assignment at Lehigh University. Dr. Peggy Gallagher as always has been encouraging and available to me.

This long journey through my Ph.D. program brought me at last to Dr. Susan Easterbrooks as my advisor. How fortuitous for me. She was able to step in at the “11th hour” and with her detailed eye, her knowledge of sentential reading processes, and her happy

demeanor gave me the confidence that we would get this done. With her help, I brought this beloved inanimate child of mine, which some people may call a dissertation, into maturity. I think it is well balanced, logical, and provides a fresh look at reading fluency. Some may say I am biased in my evaluation. And I say, of course I am, as any proud parent would be.

Many others helped me along the way. Katie Cott, provided an often needed voice of reason, a keen eye, and a friendship that will outlive our doctoral years. Millicent Carmouche participated in all forms of data collection with ever present enthusiasm. Dr. Laures Gore assisted with fidelity of training materials and Ellen Duchaine served as long-distant encourager and friend.

Finally, I would like to thank the following entities for providing funding for my research:

- The Georgia State University Dissertation Grant Program.
- The College of Education Doctoral Dissertation Award
- Project PRIDE, An Educational Leadership Grant Program, Office of Special Education and Rehabilitative Services, United States Department of Education, Principal Investigator: Dr. David Houchins

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1 PHRASE-READING, SYNTACTIC AWARENESS, READING RATE, AND READING COMPREHENSION ABILITIES OF ADOLESCENT READERS IN AN ALTERNATIVE SETTING

Literacy is broadly defined as the “ability to identify, understand, interpret, create, communicate, compute, and use printed and written materials associated with varying contexts” (United Nations Educational, Scientific and Cultural Organization: UNESCO Education Sector, 2004, p.13), within a framework that includes “beliefs, attitudes, and social practices” (Rueda, 2011, p. 84). In addition, the acquisition of literacy provides a venue for “individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society” (UNESCO Education Sector, 2004, p. 13). Acquiring literacy is central to achieving economic improvement (Snow, Burns, & Griffin, 1998; UNESCO Education Sector, 2004) and to experiencing a fulfilling life (Anderson, Hiebert, Wilkinson, & Scott, 1985; Moore, Bean, Birdyshaw, & Rycik, 1999). Those without adequate literacy skills experience academic, economic, and social marginalization (Blackorby & Wagner, 1996; Snow et al., 1998). Central to the development of literacy is the need to acquire adequate reading skills, which can be characterized as processes used to decode and comprehend written text (Rueda, 2011).

Adolescent Readers

Poor reading ability may lead to a wide range of problems across one’s lifetime (Blackorby & Wagner, 1996). Failure to acquire adequate reading skills may place a student on a troubled-life trajectory with increased risk for school dropout, court-involvement, and mental health issues (Blackorby & Wagner, 1996; Daniel et al., 2006; Leone, Krezmien, Mason, & Meisel, 2005). Daniel et al. (2006) found that adolescents who were poor readers were significantly more likely than typical readers to experience suicidal ideation or suicide attempts.

Many adolescent readers have poor reading skills and may not receive adequate instructional preparation in reading (Edmonds et al., 2009). According to the National Assessment of Educational Progress (NAEP), a congressionally mandated criteria-based academic assessment of fourth and eighth graders administered through the U.S. Department of Education, a significant number of students experience reading failure (Daane, Campbell, Grigg, Goodman, & Oranje, 2005). In 2007, of the eighth graders (N=160,700) who participated in the NAEP national assessment, 27% scored below the basic level of reading, 43% scored at the basic level, and only 29% scored at or above the proficient level. NAEP defines the basic level of reading achievement as a “partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at a given grade level” (Lee, Grigg, & Donahue, 2007, p. 6). This indicates that in 2007, 70% of eighth graders had either only partial or no mastery of skills required to meet grade-level expectations. Additionally troubling is that the percentage of students scoring at the basic or below basic levels has not changed significantly since NAEP began regular national assessments of fourth and eighth graders in 1992 (Lee et al., 2007).

NAEP conducted a long-term trend assessment of reading abilities of students ages 9, 13, and 17, a total of twelve times between 1971 and 2007 (Edmonds et al., 2009). Reading scores for 9 year olds significantly improved; reading scores for 13 year olds at the 75th and 90th percentile showed improvement between 1971 and 2007, but no improvement between 1999 and 2007. Over that 36 year time span, reading scores of 17 year olds did not improve. According to Edmonds et al. (2009), these findings suggest that adolescents are not receiving adequate preparation in the area of reading. Denton and Vaughn (2008) called for a sense of urgency surrounding the topic of adolescent reading failure as improvements in reading ability can change the trajectory of students’ lives. One approach for improving our understanding of

adolescent reading failure involves learning more about struggling readers' performance along a range of reading subcomponent skills (e.g., decoding ability, word identification, fluency) and how those subcomponent skills relate to reading comprehension.

Hock et al. (2009) conducted a descriptive study to explore three subcomponents of reading comprehension (i.e., vocabulary, reading rate, word level) with a sample of 345 eighth- and ninth-grade students in urban high schools. Students who scored below the 40th percentile in comprehension on the Gray Oral Reading Test - 4 (GORT-4; Wiederholt & Bryant, 2001) were considered struggling readers ($n = 202$) and those who scored above the 40th percentile were considered proficient readers ($n = 143$). Results indicated that of the struggling readers (a) 61% were low in all subcomponents of reading comprehension measured (i.e., vocabulary, reading rate, word level); (b) 13% scored low in vocabulary and reading rate but high in word level skills; (c) 9% scored low in passage reading rate but high in word level skills and vocabulary; (d) 7% scored low in vocabulary but high in word level skills and passage reading rate; (e) 5% scored low in word level skills and reading rate but high in vocabulary; and (f) 4% scored high in vocabulary, reading rate, and word level skills yet still scored low in comprehension. These findings suggest that adolescent students with low comprehension skills are a heterogeneous group who experience various subcomponent weaknesses that interfere with reading comprehension abilities (Hock et al., 2009).

The importance of addressing the needs of adolescent struggling readers is highlighted by (a) the wide ranging problems that result from reading failure (Blackorby & Wagner, 1996; Snow et al., 1998), (b) the documented high level of reading failure experienced by adolescent students (Lee et al., 2007), and (c) the apparent lack of adequate instructional preparation struggling adolescent readers receive (Edmonds et al., 2009). Researchers have suggested that to

identify specific weaknesses not present or not identified in primary school, reading screening should continue from pre-adolescence (Leach, Scarborough, & Rescorla, 2003) through adolescence (Hock et al., 2009). Future researchers should view adolescent readers as a heterogeneous group and investigate reading subcomponents that may interfere with their ability to comprehend (Hock et al., 2009). Gaining a greater understanding about the various subcomponents that contribute to reading comprehension may provide valuable information leading to more effective and efficient intervention strategies for adolescent struggling readers (Catts, Hogan, & Adolf, 2005; Catts, Hogan, & Fey, 2003). Future researchers should investigate how to align students' reading weaknesses with appropriate interventions (Edmonds et al., 2009).

Adolescent Students in Alternative Schools: Characteristics

Struggling adolescent readers may find themselves in alternative education schools. These programs are designed for students who have experienced school failure due to a variety of factors including poor grades, absenteeism, and disruptive behaviors (Carver & Lewis, 2010). During 2007 and 2008, 645,500 students attended an alternative school setting. According to a survey conducted by Carver and Lewis (2010), 57% of the districts responding indicated students could be placed in alternative school solely for ongoing academic failure.

In 2009, Beken, Williams, Combs, and Slate conducted a descriptive study to investigate differences between the academic functioning of students in academic alternative schools and traditional high schools with large populations (70%) of at-risk students. The researchers used archival data from 84 alternative schools and 86 traditional high schools in Texas over a two year period. They used the English/Language Arts Texas Assessment of Knowledge and Skills high school exit exam to quantify students' reading and language abilities. In 2004-2005 students in

traditional high schools with large at-risk populations scored significantly higher on the English/Language exit exam ($M = 78.82$, $SD = 8.08$) than students in alternative schools ($M = 75.7$, $SD = 22.49$). The researchers found similar results in the 2005-2006 data as students in traditional high schools with large at-risk populations scored significantly higher in English and Language ($M = 77.72$, $SD = 8.35$) than students in alternative schools ($M = 68.5$, $SD = 17.1$). Thus, there is an important relationship between the language and reading abilities of students and their likelihood of placement in alternative schools.

Findings of lower language and reading abilities of students in alternative schools compared with typical schools may be explained by the overrepresentation of students with mild disabilities (i.e., learning disabilities, emotional behavior disorders), students with economic disadvantage, and students who have experienced continual academic failure (Carver & Lewis, 2010; Wasburn-Moses, 2009). Results from studies designed to provide percentages of students with disabilities in alternative settings vary widely. A national survey found that the percentages of students with disabilities in alternative schools (i.e., 12%) were statistically equal to those in traditional school settings (13%). However, the researchers found wide variability in that 29% of districts had only 3% of students identified with a disability, while 34% had 20% of students identified with a disability. One statewide survey (Unruh, Bullis, Todis, Waintrup, & Atkins, 2007) found that 32% of students in alternative settings were identified with a disability. Another statewide survey (Wasburn-Moses, 2011) found that 22% of students in alternative settings were identified with a disability. Taken together these studies indicate that students with disabilities are overrepresented in many alternative school settings (Kleiner, Porch, & Farris, 2002). However, researchers have called on increased data collection on students with disabilities within alternative settings (Lehr, Tan, & Ysseldyke, 2009).

Learning disabilities (LD) and emotional behavior disorders (EBD) are the most commonly served disability categories of students in alternative schools (Lehr et al., 2009; Wasburn-Moses, 2011). Students in these two disability groups have similar profiles related to reading difficulties. Both are likely to have lower reading scores than their peers without disabilities (Benner, Nelson, Ralston, & Mooney, 2010; Lane, Gresham, & O'Shaughnessy, 2002), and both are likely to have significant language deficits (Benner, Mattison, Nelson, & Ralston, 2009; Mann, 2006; Nelson, Benner, & Cheney, 2005).

Reading and language deficits are also associated with the economic conditions of students. Ackerman, Smith, and Kobak (2009) found that economic disadvantage was predictive of reading and language deficits. Wasburn-Moses (2011) surveyed a Midwestern state and found that economically disadvantaged students made up 58% of the students. Additionally, 68% of students were placed in an alternative schools because of continual academic failure which is thought to be largely due to reading deficits (Wasburn-Moses, 2011).

Overall, students in alternative school settings have lower reading and language abilities than students in typical high schools (Beken, Williams, Combs, & Slate, 2009). Students who are at-risk of dropping out of high school often enter alternative schools as a last chance to acquire academic and reading skills required for high school graduation (Carver & Lewis, 2010). Reading deficits place alternative school students at risk of school dropout (Christle, Jolivet, & Nelson, 2005). Once students drop out of high school they are at risk for other serious consequences such as living with poverty, experiencing family disruptions, court involvement, delinquency and adult incarceration (Christle & Yell, 2008).

Outcomes for Adolescent Students in Alternative Settings

Exclusionary discipline including alternative school placement (Nomvete, 2010) and academic problems, particularly reading failure, contribute to school detachment, which is a significant risk for becoming a school dropout (Christle & Yell, 2008). Since reading is the basis of literacy development (Rueda, 2011) and literacy development is central to participating fully in society and to achieving a more fulfilling life (Moore et al., 1999; UNESCO Education Sector, 2004), it is obvious that the reading deficits of adolescent students in alternative settings should receive serious and sustained attention (Beken et al., 2009; Lehr et al., 2009; Unruh et al., 2007). Dropping out of school holds significant long-term consequences for students, including loss of income, marginalization, court involvement and incarceration (Blackorby & Wagner, 1996). According to the Department of Justice, 49% of prison inmates do not have a high school diploma or a GED (Harlow, 2003).

Conversely, language acquisition and reading ability are powerful protective factors against school disengagement, school dropout, and court involvement (Christle & Yell, 2008). Reading and academic successes increase one's self-efficacy, which can lead to the reciprocal effect of greater academic success (Bandura, 1993). To provide effective instruction to struggling adolescent students in alternative settings, it is important to understand the reading process more fully, especially the reading process related to adolescent reading ability. This literature review is designed to explore the reading process to better understand how to address the reading deficits of adolescent students with and without disabilities so that the ultimate goal of reading comprehension can be realized by a greater number of students (Edmonds et al., 2009).

Reading Comprehension

Since mid-1900 there has been a decrease in the need for unskilled labor and an increase in the need for skilled labor in the workforce of the United States (Akerman et al., 2009). Having adequate reading skills is necessary for most skilled jobs. Adequate reading skill is measured by the ability to comprehend the text being read (Edmonds et al., 2009). Reading comprehension according to the Rand Reading Study Group (RRSG, 2002) is “the process of simultaneously extracting and constructing meaning through interaction and involvement with written language” (p. xiii).

An instructional theory proposed by Hoover and Gough (1990), the simple view of reading (SVR), categorizes reading ability into two sets of skills (1) the ability to decode words and (2) the ability to comprehend what those words mean. Hoover and Gough hypothesized that “if reading (r), decoding (d), and comprehension (c) are considered as skills that range from zero to one, then reading must be the product of decoding and comprehension” (Gough, Hoover, & Peterson, 1996, p. 3). Algebraically the relationship among reading, decoding, and comprehension is stated, $r = d \times c$. This multiplicative relationship, requires that if either factor is zero then the product is zero. To apply this concretely to the reading process, if a student has either no decoding ability or no comprehension ability then there is no reading ability. Comprehension is measured by having a person read or decode the words on the page. This makes separation of the two skills difficult. Hoover and Gough suggested that listening comprehension calls on the same linguistic skills as reading comprehension without the need to decode. By using listening comprehension as a measure of the linguistic skills needed for reading the researchers were able to separate decoding and comprehension. The SVR states that decoding ability is a necessary but not sufficient condition for reading comprehension since linguistic

skills must be called upon to understand what is being read. A sampling of linguistic skills needed for comprehension include (a) knowing the meanings of words and being able to choose among multiple meanings, (b) drawing on prior knowledge to decipher inferences, and (c) being able to parse sentences into phrases according to syntactic elements (Gough et al., 1996).

Viewing reading development through the lens of the SVR may help explain how decoding and linguistic abilities interact with the development of reading comprehension for adolescent readers. For instance, according to a meta-analysis of 17 reading studies, Gough et al. (1996) found that decoding ability was significantly correlated with reading comprehension at all grades from 1 to 6. However, the strength of the correlation and the associated effect sizes declined over time. The students were divided into four groups: (a) grades 1-2, (b) grades 3-4, (c) grades 5-6, and (d) college level. The correlations between decoding and comprehension across grade levels were .61, .53, .48, and .39, respectively. Effect sizes declined in magnitude across grade levels ($d = 1.51, 1.24, 1.09, .81$). Comprehension, when measured free of decoding (i.e., listening comprehension), showed significant correlations with reading comprehension. However, the strength of the correlation and the associated effect sizes increased over time, opposite to the pattern found in the correlation of decoding and reading comprehension. The correlations between comprehension, measured free of decoding, and reading comprehension across grade levels were .41, .50, .72, .68, respectively. Effect sizes increased in magnitude across grade levels ($d = .90, 1.13, 2.06, 1.80$). These patterns provide evidence of a changing relationship among decoding skills, linguistic skills, and comprehension across grade levels, one in which linguistic skills increase in importance to comprehension and decoding skills decrease in importance to comprehension (Gough et al., 1996). Therefore, both decoding and linguistics skills are important in any discussion of reading comprehension of struggling readers. The

construct of reading fluency is closely associated with reading comprehension and encompasses both decoding and linguistic skills (Kuhn & Stahl, 2003).

Relationship between Reading Comprehension and Reading Fluency

Reading fluency serves as a bridge between individual word reading ability and reading comprehension (Allington, 1983; Chall, 1996; Kuhn & Stahl, 2003; Schwanenflugel, Hamilton, Kuhn, Wisenbaker, & Stahl, 2004). According to Chall (1996) reading fluency describes a stage of reading development where the reader gains “comfort with print, thereby enabling the transition from learning to read to reading to learn” (Kuhn & Stahl, 2003, p.4). Snow, Burns, and Griffin (1998) identified reading fluency as one of three key areas (i.e., alphabetic principle, fluency, comprehension) that if taught appropriately, would help prevent or remedy reading problems even in adolescence (Kamil, 2003). Fluency research is at a disadvantage as there is not a consistent agreed upon definition within or across the fields of education and psychology. Definitions of reading fluency include the ability to read connected text (a) with automaticity (Fuchs, Fuchs, Hosp, & Jenkins, 2001; Kame’enui & Simmons, 2001; Wolf & Katzir-Cohen, 2001), (b) with prosody (i.e., with phrasing and expression) (Daane et al., 2005; Hudson, Lane, & Pullen, 2005; LaBerge & Samuels, 1974; National Reading Panel, 2000; Pinnell, et al., 1995), and/or (c) while comprehending what is being read (Pikulski & Chard, 2005; Samuels, 2006). Kuhn, Schwanenflugel, and Meisinger (2010) offered perhaps the most complete definition:

Fluency combines accuracy, automaticity, and oral reading prosody, which, taken together, facilitate the reader’s construction of meaning. It is demonstrated during oral reading through ease of word recognition, appropriate pacing, phrasing, and intonation. It is a factor in oral and silent reading that can limit or support comprehension. (p. 240)

Wolf and Katzir-Cohen (2001) suggested:

...there are still no consensual definitions of what is meant by fluency and what that relation might be to the subset of time-related terms most frequently related to it (e.g., automaticity, speed of processing, reading rate/speed, and word recognition rate/proficiency). (p. 213)

Inconsistencies among fluency definitions are reflected in a variety of ways. Fluency may refer to automaticity (Fuchs et al., 2001), prosody (Pinnell et al., 1995), or a combination of both prosody and automaticity (Matheson, Allington, & Solic, 2006). To alleviate confusion surrounding the terms associated with the characteristics of oral reading, the following terms will be used in this review:

- Passage reading rate will be used when oral reading of a passage is measured by rate and accuracy or by correct words per minutes (CWPM);
- Word-list reading rate will be used when oral reading of a list of words is measured by CWPM;
- Phrase-reading ability will be used when measuring phrase-level prosody;
- Expressive prosody will refer to emotive characteristics of oral reading;
- Fluency will refer to a broad concept such as that described by Chall (1996) in her stage theory of reading development, which includes both automaticity (i.e., rate, accuracy) and the ability to read with phrasing and expression.

Although prosody is included in most definitions of reading fluency, the most common focus of fluency instruction and assessment is automaticity as measured by passage reading rate (Hasbrouck & Tindal, 2006; Matheson et al., 2006). There is evidence that reading rate may be used as an indicator of overall reading ability (Fuchs et al., 2001). Hosp and Fuchs (2005) found

that the relation between passage reading rate and reading comprehension, as measured by the Woodcock Reading Mastery Passage Comprehension subtest (Woodcock, 1997) was strong for grades 1 to 4. Rasinski et al. (2005) conducted a study to determine the relation between the passage reading rate and comprehension measures from a high school graduation test of 303 ninth graders. The correlation was significant and moderately strong.

Over time the relation between comprehension and word reading diminishes while the relation between comprehension and passage reading rate increases. Denton et al. (2011) conducted a study to determine the relation among word list reading rate, passage reading rate, and reading comprehension. Participants included 1,421 middle school students, 54% of whom were struggling readers. Passage reading rate and word list reading rate were measured using Oral Reading Fluency Curriculum-based Measurement Passage Fluency and Word Fluency (University of Houston, 2008). Reading comprehension was measured using (a) the Passage Comprehension subtest of the WJIII (Woodcock, McGrew, & Mather, 2001), (b) the Group Reading Assessment and Diagnostic Evaluation (Williams, 2001), and (c) the reading subtest of the Texas Academic Accountability test (Texas Education Agency, 2004). Results indicated that passage reading rate (.50-.51) was more strongly related to the three reading comprehension measures than was word list reading rate (.32-.37). These findings indicate that the relation between word list reading rate and reading comprehension weakens as students get older (Denton et al., 2011). Edmonds et al. (2009) suggested this relation weakens as students get older because they are faced with more complex texts having more complex linguistic requirements.

Wexler, Vaughn, Edmonds, and Reutebuch (2008) conducted a research synthesis of 19 studies concerning fluency instruction and secondary readers and concluded that the ability to read text with adequate speed and accuracy increases the likelihood adolescent readers will

comprehend the text. However, Wexler et al. also stated that “being able to read text fluently... is not necessarily sufficient for secondary students to be able to comprehend the complex text they encounter” (p. 342). The correlation between reading rate and comprehension appears to be strongest in the elementary years and may decrease for adolescent readers as linguistic skills (e.g., syntactic and semantic development, prior knowledge) increase in importance (Wexler et al., 2008). Wexler et al. suggested that future research efforts should investigate effective means to increase the ability of adolescent readers to comprehend what they read.

The findings of other researchers (Edmonds et al., 2009; Leach et al., 2003) supported those of Wexler et al. (2008). Edmonds et al. (2009) conducted a synthesis of reading research studies conducted between 1999 and 2004 with adolescent students (i.e., grades 6-12). Findings indicated that from late elementary, word-list reading and passage-level reading rates, although essential for the reading process, have a diminishing relationship with comprehension. Providing additional support for the idea of a developmental shift in the relation between word reading and comprehension, Leach et al. (2003) found that correlations were stronger between word-level reading rate and reading comprehension in the third grade ($r = .75$) than in the fourth grade ($r = .48$). There is little disagreement that adequate passage reading rate is essential to the reading process; however, it may be a necessary though insufficient condition for reading comprehension (Hoover & Gough, 1990), especially as students move into adolescence (Wexler et al., 2008) and encounter reading materials with greater syntactic complexity (Leach et al., 2003). Since reading comprehension is the end goal of reading instruction, more research is needed to better understand the relations among the ability to read words efficiently in the passage, grasp the syntactic complexity of each sentence, and extract meaning from the text.

Passage reading rate measures the ability of an individual to decode a text automatically and prosody measures the ability of an individual to linguistically interpret the text (Kuhn et al., 2010). Passage reading rate is measured by CWPM, while prosody is measured from verbal contours of oral reading (e.g., phrasing, stress, and intonation) (Kuhn et al., 2010). Therefore, the construct of fluency encompasses two groups of skills, reading rate and prosody, which are vastly different from each other. An over emphasis of one area of fluency (i.e., passage-level or word-list reading rate) and neglect of the other (i.e., prosodic expression and phrasing) has informed our understanding of the reading process, resulting in inadequate instructional practices especially for adolescent struggling readers. A deeper understanding of the role fluency plays in the development of reading comprehension is needed.

Construct of Reading Fluency

Despite the diversity of definitions, there is general consensus that fluency, however defined, serves as a bridge linking the skills of decoding and word attack to the more complex skill of reading comprehension (Allington, 1983; Chall, 1996; Kuhn & Stahl, 2003; Schwanenflugel et al., 2004). Theoretical perspectives surrounding automaticity and prosody provide a framework around which the relation between fluency and reading comprehension can be explored (Kuhn et al., 2010). Understanding this relation provides a foundation for identifying gaps or weaknesses within the reading process that interfere with reading comprehension for adolescent struggling readers with and without disabilities

Automaticity

To understand automaticity better, it is important to know about its properties and the theories related to its acquisition. Automaticity has been defined a number of ways including as a single-step memory retrieval (Logan, 1997), an ability to process information without conscious

effort (LaBerge & Samuels, 1974), and the confirmation of what the reader already knows (Chall, 1996). The ability to read words automatically on a page is central to understanding the role fluency plays in reading comprehension (Kuhn et al., 2010; Samuels, 2006). The development of automaticity is thought to free cognitive resources necessary for the comprehension process (LaBerge & Samuels, 1974). Perfetti (1985) suggested that as lower level skills such as decoding, word reading, and phrase reading become more efficient or automatic the limited resources of working memory are freed for higher level processes such as inferences, integration of prior knowledge, and other processes related to comprehension (Hudson, Pullen, Lane, & Torgesen, 2009).

Evidence of automaticity. Four criteria are generally accepted as evidence of automaticity including rate, effortlessness, autonomy, and a lack of conscious effort (LaBerge & Samuels, 1974; Logan, 1997).

Reading rate. An increase in reading rate indicates a decrease in reaction time (Logan, 1997) and develops along with accuracy through reading practice (Kuhn et al., 2010). The impact of practice on reading rate is greatest when the skill is first introduced, but an increase in reading rate is not limitless. Power law, as defined by Logan (1997), describes a learning curve in which practice has a diminishing return as rate increases. For instance, according to norms of passage reading rates established by Hasbrouck and Tindal (2006), a first-grade student reading at the 50th percentile may be expected to increase reading rate by 30 words from winter to spring yet an eighth-grade student at the 50th percentile during the same period would be expected to increase reading rate by only 5 words per minute (Kuhn et al., 2010). The learning curve as put forth in Logan's power law (Logan, 1997) is relevant to our understanding of adolescent reading

because while practice improves reading rate, practice solely for the purpose of increasing rate will have a diminishing return as rate improves.

Effortlessness. Another characteristic of automaticity is effortlessness, which is the ability to read with ease as well as the ability to process more than one thing at a time (LaBerge & Samuels, 1974; Logan, 1997). As individuals engage in reading practice, words are read with less effort due, in part, to unitization (Kuhn et al., 2010). Unitization describes a hierarchic process within which lower level elements such as letters and syllables are processed within the higher order word unit (Healy, 1994). A reader processes only enough elements within a word to identify it, and then moves onto the next segment of text (Healy, 1994). Unitization also can be described as a collapsing of sequential steps into a single-step retrieval from memory (Cunningham, Healy, Kanengiser, Chizzich, & Willitts, 1988). Unitization can occur at the word or phrase level (Healy, 1994; Kuhn et al., 2010). At the word level, unitization allows the reader to move from decoding each letter or syllable to retrieving the word from memory in a single step. At the phrase level, unitization allows the reader to move from reading each word in a phrase individually to collapsing the words into a single phrase unit. Unitization at the word and phrase level aids effortless reading; thus, freeing cognitive resources for understanding the meaning of the text. Phrase-level unitization is not typically a focus of oral reading fluency practice because of the assumption that as readers develop word-level effortlessness the ability to group words into appropriate phrases develops naturally (LaBerge & Samuels, 1974). However, breaking sentences into syntactically correct phrasal units is a problem for many readers (Chomsky, 1976; Fuchs et al., 2001; LeVasseur, Macaruso, Palumbo, & Shankweiler, 2006; Raskinski, 1994; Schreiber, 1980, 1991), indicating that phrase-level effortlessness does not automatically follow word-level effortlessness (Stevens, 1981).

Autonomy. Automaticity has the quality of autonomy, which means that readers have no control over whether they recognize a word or not. Beginning readers, whether at the elementary or secondary level, must intentionally process a word to recognize it (Logan, 1997), while skilled readers do not need this step. The Stroop effect provides an example of autonomy (Cohen, Dunbar, & McClelland, 1990). To illustrate the Stroop effect, words are mismatched with a pictorial representation. For instance the word red may be filled in with the color blue. Participants are asked to read the mismatched color words in a list, then asked to identify the color of the mismatched color words in a list. Identifying the color of the word took significantly longer reading the words. An individual who has developed word reading automaticity experiences interference stating the color of the word since the word is recognized without conscious effort. There is evidence that the Stroop effect develops with practice as automaticity develops and that students just learning to read experience less interference from the effect (Logan, 1997). The move from intentional processing to processing autonomy frees cognitive resources, allowing the reader to focus those resources on the meaning of the text.

Lack of conscious effort. In addition to increased rate, effortlessness, and autonomy, as the reader acquires automaticity, a lack of conscious awareness of the subskills that make up the reading component develops (Logan, 1997). Disfluent readers are slow and deliberate in their efforts to read and are cognizant each step they take; whereas, fluent readers carry out their reading processes without awareness of how they are doing it (Kuhn et al., 2010). The lack of conscious awareness of the reading processes implies that cognitive resources are not involved, thus freeing cognitive resources to be directed elsewhere, such as engaging with the process of drawing inferences. However, if a skill is practiced incorrectly to the point that lack of conscious awareness results, the incorrect skill is difficult to remediate without deliberate corrective

practice (Ericsson, Krampe, & Tesch-Romer, 1993). This highlights the importance of being well informed about how fluency increases reading comprehension so that practice will have the desired outcome (i.e., reading comprehension).

Learning to read involves moving from intentional to unintentional actions at each level of the reading process including letter, syllable, word, and phrase. Phrase-level instruction has received some attention, but it is not typically a focus of automaticity practice (LeVasseur et al., 2006). Instructors and students strive to increase passage reading rate. However, without awareness that phrasal automaticity also is important, phrasal units may be ignored in an effort to increase rate. Consequently, practice that focuses solely on rate may help develop automaticity at the word level but hinder automaticity at the phrasal level, which is important for extracting meaning from the sentence (Carnie, 2002).

Each of the criteria for identifying automaticity (i.e., rate, effortlessness, autonomy, lack of conscious awareness) provides a window into cognitive processes. Gaining a greater understanding about how automaticity develops increases the chance of designing instructional practices that will facilitate its development in appropriate ways. However, to design effective instructional practices in fluency it is important to know what the relationship is among the components of fluency (i.e., rate, accuracy, phrasing, expression) and to what extent those components contribute to comprehension. Adolescent struggling readers with and without disabilities develop incorrect habits due to ineffective instruction and lack of appropriate corrective feedback. These incorrect habits become automatic and require intensive targeted remediation to correct. Increasing our understanding of processes necessary for reading comprehension will assist in development of reading practices which foster automaticity and that do not unintentionally disrupt those processes (e.g., phrasing).

Acquiring automaticity. Along with being able to identify automaticity it is important to know how it is acquired. Automaticity develops through practice (Kuhn et al., 2010; Logan, 1997; Samuels, 2006) of consistent tasks (Schneider & Fish, 1982). Automaticity of individual words is important in the development of fluency (Levy, Abello, & Lysynchuk, 1997). However, to read connected text (i.e., sentences, passages) fluently, students must integrate automatic word reading with information from various sources (e.g., phrasal units) (Kuhn et al., 2010; Kuhn et al., 2003). Research efforts to identify underlying mechanisms of automaticity acquisition have resulted in the development of a number of theories. Categories of theories of automaticity include those based on (a) strengthening the connections between stimulus and response, (b) reducing the number of steps by chunking stimulus and response elements, and (c) storing and retrieving memory (Logan, 1997).

Strengthening connections. The theory of automaticity introduced by LaBerge and Samuels (1974) suggests that automaticity is developed via strengthening the connection between the stimulus (i.e., visual presentation) and the response (i.e., recognition) (Logan, 1997). LaBerge and Samuels suggest that this connection is strengthened by distributed practice (i.e., practice over time) along with feedback concerning time taken to execute the task. Providing students the opportunity to compare previously well-learned tasks with newly-learned tasks helps to monitor the strength of stimulus/response connections associated with the newly learned tasks (e.g., progress monitoring graphs). Automaticity is strengthened through consistent practice, although the rate of acquisition will be affected by the cognitive load (i.e., the level of demand placed on working memory) of the task (Schneider, & Shiffrin, 1977; Shiffrin, & Dumais, 1981).

Exploring the theory of automaticity, Eldredge (2005) studied possible causal relationships of the subskills of fluency (i.e., letter/sound correspondence, word blending, word recognition) and the development of word list reading rate and passage reading rate. The researchers assessed 233 first- through third-graders nine-months apart. They found a directional relationship in which phonics knowledge in February had a causal effect on word knowledge improvements in November. They also found that word knowledge in February had a causal effect on passage reading rate improvements in November. This directional relationship supports the proposition put forth by LaBerge and Samuels (1974) that microlevel subskills (e.g., letter-sound correspondence, word blending, word attack) must be automatic before macrolevel skills (e.g., quick and accurate passage reading, prosodic reading) become automatic. Additionally, LaBerge and Samuels (1974) explained that readers will begin to organize individual words into phrases as microlevel subskills become automatic. The understanding that microlevel subskills must become automatic before macrolevel skills become automatic, provides a basis for assessing the reading abilities of adolescent struggling readers across microlevel skills (e.g., letter, word) and macrolevel skills (e.g., phrase reading). Interventions at the lower level skills are necessary to develop automaticity at a macrolevel skill. LaBerge and Samuels suggested that phrase reading would emerge naturally when word level skills became automatic, but the mechanism for the transition from word reading to phrase reading was not explained. Chunking theories provide an explanation of possible mechanisms that account for the development of phrase reading.

Chunking. Chunking theories, previously referred to as unitization (Kuhn et al., 2010) provide an explanation of how fluent readers may organize individual letters into words and individual words into multiple-word phrases so they are processed as one meaningful unit

(Anderson & Lebiere, 1998; MacWhinney, 2002; Schunk, 2008). Anderson (1992) described how the number of steps associated with a particular task is reduced until the task is perceived as one step. Rosenbloom and Newell's (1981) chunking theory accounts for mechanisms that allow a series of actions to be stored as a single unit (MacWhinney, 2002). When a series of actions is stored as a single unit, reading becomes smoother and quicker and therefore more fluent. The chunking of phrases also allows a series of words to be held in short-term memory as one unit rather than as a series of single words, thus making reading more efficient (Koriat, Greenberg, & Kreiner, 2002).

Storing and retrieving memory. Memory storage and retrieval provide the foundation for instance theory (Logan, 1997). This theory posits that learning is a function of attention. According to Logan (1997) each occurrence of a particular task produces a memory trace. As the individual practices the task, more traces are produced, making it easier to retrieve the task from memory. However, power law dictates a diminishing return for practice. For instance, practice adds more traces in memory, thus increasing the chance that the task will be retrieved from one of the traces. However, adding 1 trace to 10 has a greater effect on memory retrieval than adding 1 trace to 100. Instance theory maintains that automaticity is achieved when the task is retrieved solely from memory stores without the need for thinking or reasoning (Logan, 1997).

In contrast to the theory of automaticity (LaBerge & Samuels, 1974) that suggests automaticity is gradually developed after many repetitions, instance theory suggests that automaticity can occur as the result of a single trial and that automaticity occurs at every level of the reading process (i.e., letter, words, phrases, ideas). According to instance theory, automaticity at the phrase-level of sentence reading can be achieved as long as attention is directed to the task (Logan, 1997). Conversely, practice that does not include attention to phrase-level reading may

not facilitate phrase-level automaticity. Fluency instruction that focuses attention solely on rate and accuracy may be inadvertently interfering with the student's ability to develop phrase-level automaticity, an important process for extracting meaning from connected text (LeVasseur, Macaruso, & Shankweiler, 2008; Rasinski, 1994).

In summary, automaticity in reading connected text provides the foundation for comprehending what one is reading. Acquiring automaticity may be described as the move beyond serial processing (i.e., processing one task at a time) to parallel processing (i.e., processing multiple tasks at once) of information from multiple sources. To develop reading automaticity, students need to attend to the relevant task (Logan, 1997) and have opportunities to practice reading connected text (Kuhn et al., 2010; Schwanenflugel et al., 2004). However, practice based on an incomplete understanding of reading fluency may develop automaticity of inadequate models of reading fluency. Reading fluency instruction generally emphasizes rate and accuracy, but not phrase-level automaticity, which is essential for extracting meaning from the text (LeVasseur et al., 2008; Rasinski, 1994). For instance, graphing a student's reading rate is standard practice for providing a measure of reading progress. Yet, phrases require pauses and actually slow down reading rate (Matheson et al., 2006; Zutell & Rasinski, 1991). An unintentional result of measuring and graphing reading rate may be to encourage students to read through phrases, ignoring an essential element of comprehension. Interventions for struggling adolescent readers with and without disabilities should be designed to provide those students with experiences that build automaticity at every level of the reading process. Automaticity is central to the development of fluent reading and is closely associated with the ability to comprehend, but it does not encapsulate fluency. The other necessary and often neglected

component (Matheson et al., 2006) of reading fluency is prosody, which includes phrase-level reading (Kuhn et al., 2010).

Prosody

In addition to automaticity, the construct of fluency includes prosody, which can be thought of as an expression of meaning as well as an expression of syntactic structure (Klauda & Guthrie, 2008). To better understand prosody it is important to know about its constituent features as well as research concerning its relationship to reading comprehension. Prosody represents a complex concept with multiple components. Across various research studies, prosody has been described as reading with proper “expression approximating normal speech” (Young & Bowers, 1995, p. 435), reading with “the musical quality of language” (Benjamin & Schwanenflugel, 2010, p. 388), and reading with “appropriate expression or intonation coupled with phrasing that allows for the maintenance of meaning” (Kuhn et al., 2010, p. 233). More technically, prosody is a broad term that describes an aspect of phonology (i.e., the study of the sound system of language). Phonology is divided between (a) segmental phonology which focuses on individual sounds, and (b) suprasegmental phonology (i.e., prosody) which focuses on features that are layered onto and across individual segments (i.e., letter combinations, words, phrases) (Schreiber, 1991, p159).

Researchers have identified various prosodic suprasegmental features thought to be oral cues with various meanings. These cues include stress (i.e., emphasis on particular syllables), intonation (i.e., the rise and fall of pitch), duration (i.e., the length of time to pronounce a sound) (Schreiber, 1991), pause, and appropriate phrasing (i.e., the grouping of two or more words that act as one unit) (Miller & Schwanenflugel, 2006). These cues provide a window into the processing of emotional expression, of discourse organization, and of syntactic features (Kuhn et

al., 2010). For instance, happiness and sadness can be distinguished by the rate, pitch, and onset of utterances, while topic changes, informational emphasis, and contrast are conveyed by pitch, pauses, and stress changes (Kuhn et al., 2010). For a sentence to be read with intonation it is necessary to assign syntactic roles to the words in a sentence (Chafe, 1988; Kuhn & Stahl, 2003). Assigning syntactic roles is necessary to chunk a sentence into meaningful units (Kuhn & Stahl, 2003), which is essential for comprehending the ideas put forth in the sentence (Walker, Mokhtari, & Sargent, 2006). Over the past decade there has been growing interest in prosody and its relationship with reading comprehension. Areas of particular interest include the relationship between automatic word reading and prosody development, and the contribution prosody makes to reading comprehension (Dowhower, 1991; Kuhn et al., 2010). It is prosody that taps into the linguistic skills that provide meaning to the words. Recent research indicates early problems with linguistic competence as a key diagnostic feature of students with EBD (Benner, Nelson, & Epstein, 2002) and students with LD (Gage, Lieheimer, & Goran, 2012). Thus not only are students with disabilities not taught to chunk linguistically, they also struggle with the underlying linguistic competence needed to benefit from such instruction. Perhaps a better understanding of the linguistic skills associated with prosodic reading would lead to better instructional methods, better assessment measures, and stronger links to reading comprehension for struggling adolescent readers with and without disabilities.

Assessing prosody. The construct of reading prosody has not received the level of research as that of automaticity (Dowhower, 1991; Matheson et al., 2006). One explanation for the paucity of prosody research is the lack of agreement on how to measure it. Direct measurement using spectrographic technology and indirect measurement using rating scales are the two most common methods used in research. Spectrographic analysis allows the sound waves

of oral reading to be translated into graphical depictions that can be carefully analyzed according to various prosodic features (Schwanenflugel et al., 2004). Spectrographic analysis of prosody can be quantified and provides a less subjective measurement than rating scales (Miller & Schwanenflugel, 2008). However, rating scales are easier and more accessible to use, and may be better at capturing phrase reading (Miller & Schwanenflugel, 2008). Three commonly used rating scales include (a) National Assessment of Education Progress Oral Reading Fluency Scale (NAEP; 1994) 4-point rating scale, (b) Allington's 6-point rating scale (Allington, 1983), and (c) Zutell and Raskinsk's (1991) rating scale divided into three 4-point scales.

Spectrographic research. Schwanenflugel et al. (2004) studied 120 second- and third-grade students to determine whether prosody was a function of decoding skill development and whether there was a reciprocal relationship between prosody and reading comprehension. Only students whose first language was English and who were able to read at least 90% of the words of the passage were included. Using spectrographic analysis the students' oral readings were analyzed and compared to adult intonation contours. The researchers found that decoding skills were related to prosodic pause structures within sentences and between sentences. Also they found that decoding skills were related to child/adult intonation matching. They did not find a relationship between prosodic features and reading comprehension, but suggested that the full range of prosodic features may not have been captured by the oral reading of simple straightforward passages used in the study. Suggestions for future research included the employment of passages with greater syntactic complexity, while keeping the text at an appropriate decoding level.

Miller and Schwanenflugel (2008) conducted a study with 80 third graders to investigate the relationship among prosody of syntactically complex sentences, passage reading rate and

accuracy, and reading comprehension. The inclusion of syntactically complex sentences addressed a limitation from Schwanenflugel et al. (2004). They also investigated whether or not prosody emerges as a function of reading skill (i.e., accuracy, rate) improvement. Using spectrographic technology, students' oral readings were compared to each other along a set of targeted prosodic features. The features included pause and pitch changes under the following linguistic conditions: (a) at the end of a declarative sentence, (b) at the end of a declarative quotative, (c) at the end of a Wh question, (d) at the end of a yes-no question, (e) after complex adjectival phrase commas, and (f) after a phrase-final comma. Miller and Schwanenflugel found statistically significant pitch changes related to reading skill level at the end of declarative sentences ($R^2 = .099$), $F(1,79) = 8.54$, $p = .005$ and at the end of yes-no questions ($R^2 = .117$), $F(1,79) = 10.316$, $p = .002$. Prosody was found to be a significant predictor of reading comprehension beyond that of accuracy and rate $t(78) = 2.93$, $p = .005$. With the use of passages with syntactically complex sentences at a 3.26 grade level, which was close to the students reading level, researchers were able to capture greater prosodic expression than the passages in Schwanenflugel et al. Miller and Schwanenflugel suggested future researchers should take into account that different aspects of prosody may be related to different aspects of the reading process. For instance, long pauses may indicate students are struggling with decoding, whereas pitch changes at the end of sentences that align with adult pitch changes may indicate good comprehension.

Miller and Schwanenflugel (2008) conducted a longitudinal study with 92 first-grade students. Only students who were not receiving services as English language learners and who could read the passage at a level that prosodic analysis could be completed were included. The researchers investigated the development of prosodic reading from grade 1 to grade 2 and the

impact of its development on reading comprehension at grade 3. Two prosodic features, (a) number of pausal intrusions (i.e., pausing within words or syntactic units), and (b) adult-like intonation contour (i.e., pitch changes within and across sentences), were identified as being the best indicators of the prosodic change between grade 1 and grade 2.

Using spectrographic technology and path modeling, Miller and Schwanenflugel (2008) analyzed number of pausal intrusions and adult-like intonation across all 92 participants. The analysis indicated that pausal intrusion at grade 1 was significantly related to pausal intrusion at grade 2 and significantly related to development of adult-like intonation contours at grade 2, $X^2(2, N = 92) = 1.27, p = .53, GFI = 0.99, NNFI = 1.02, CFI = 1.00, RMSEA = 0.0$. The fit indexes indicate that this model is a good fit to the data. This finding supports the understanding that pausal intrusions represent a basic level of disfluency in word reading and recognition within connected text, which interferes with prosodic expression. Over time, as the students increase their ability to read words within connected text more fluidly, pausal intrusions decrease, and the students are better able to reflect the structure of the sentences through more adult-like intonation contours.

Miller and Schwanenflugel (2008) constructed a path model for reading comprehension to investigate the impact of pausal intrusions, adult-like intonation contour, and word reading efficiency at grades 1 and 2 on the students' reading comprehension at grade 3. The data fit well to the model, $X^2(6, N = 92) = 9.75, p = .14, GFI = 0.97, NNFI = 0.97, CFI = 0.99, RMSEA = 0.079$. The following features were significant predictors of grade 3 reading comprehension: (a) word reading efficiency at grade 2, (b) pausal intrusion at grade 2, and (c) adult-like intonation contour at grade 1. Adult-like intonation at grade 2 was not a significant predictor of reading comprehension at grade 3.

Miller and Schwanenflugel (2008) found (a) reductions in pausal intrusions and more adult-like intonation contours developed as reading skills increased from grade 1 to grade 2, (b) reductions in pausal intrusions predicted the development of more adult-like intonation contours, and (c) both prosodic features (i.e., pausal intrusions, and adult-like intonation contours) were related to later reading comprehension. The researchers concluded that reading prosody plays a role in the development of reading skills. Future research suggestions included a focus on the various prosodic features and their relationship with reading comprehension longitudinally.

Several conclusions may be drawn from the above prosody research; a caveat is that only students with adequate reading skills were included so findings may not be applicable to students with atypical reading development. First, as reading skills in decoding and word attack improve students are better able to reflect the prosodic structure of the passage (Miller & Schwanenflugel, 2008). This finding supports the suggestions from the theory of automaticity (Samuels & LaBerge, 1974) that once word reading becomes automatic, cognitive resources can be directed elsewhere. The expression of more adult-like intonation contours signals that phrase boundaries and natural units of language are being observed (Dowhower, 1991; Miller & Schwanenflugel, 2008).

Second, to capture the wide range of prosodic features effectively, such as those involving phrase units, it is probably better to provide syntactically complex sentences rather than syntactically simple sentences (Miller & Schwanenflugel, 2008; Schwanenflugel et al., 2004). This conclusion is supported by the research of Benjamin and Schwanenflugel (2010) who found that prosody from more complex text explained 5.5% more variance beyond that explained by passage reading rate, whereas prosody from simple text did not explain any more variance beyond passage reading rate alone.

Finally, different aspects of prosody may differentially relate to different aspects of reading outcomes. For instance, pausal intrusion may reflect problems in word reading within connected text, whereas a more adult-like intonation contour may reflect the ability to group words into meaningful syntactic phrases (Dowhower, 1991; Miller & Schwanenflugel, 2008). Additionally, prosody related to emotional expression and discourse organization indicates different aspects of the reading process than prosody related to syntactic parsing of sentences into meaningful units (Dowhower, 1991; Kuhn et al., 2010; Young & Bowers, 1995).

Spectrographic research has provided valuable information about prosody; however, there is a lack of adolescent spectrographic research in general, and no instances of spectrographic research on struggling readers, or students with disabilities. Spectrographic research faces logistical limitations because high quality recording is required with limited intrusive sounds, which may be more suitable for a clinical rather than school setting. Prosody measures using rating scales are more realistic for school house settings.

Rating scale and sentence parsing research. Pinnel et al. (1995) explored the relationship between prosodic oral reading ability and overall reading proficiency (i.e., rate, accuracy, and comprehension) with a subsample of fourth-grade students (1,136) who took part in the 1992 National Assessment of Educational Progress (NAEP). Using a fluency scale, Pinnel et al. measured fluency as defined in this study as appropriate syntactical phrasing and appropriate expression. Scores from the NAEP Oral Reading Fluency Scale ranged from Level 1, indicating the student read the passage word by word, to Level 4, indicating the student read the passage with meaningful phrases and with appropriate expression. They found that 55% of the fourth graders were considered fluent (i.e., levels 3 & 4) with only 13% reaching the highest fluency level. Approximately, 44% of students scored in the non-fluent range (i.e., levels 1 & 2)

with 7% scoring at the lowest level of prosodic fluency (i.e., Level 1). High prosodic fluency ratings were related to greater levels of comprehension.

Daane et al. (2005) conducted a follow-up study to Pinnell et al. (1995) to explore further the relationship between prosodic oral reading ability and overall reading proficiency (i.e., rate, accuracy, and comprehension) using a subsample of 1,779 fourth-grade students from the 2002 NAEP reading assessment. The researchers used the same procedures as Pinnell et al. with the exception of the selected reading passages. Whereas Pinnell et al. chose a passage of moderate-level difficulty because it included quotations and a narrative structure that was intended to elicit expressive oral reading, Daane et al. chose a less difficult passage that had fewer complex sentences, simple vocabulary, and a topic that would be familiar for the students. Fifty percent of participants in the Pinnell et al. study were able to read the passage with ninety-six percent accuracy whereas, seventy-five percent of participants in the Daane et al. study were able to read the less complex passage with ninety-five percent accuracy. Reading a passage with at least a 95% accuracy rate indicates that the passage is at the reader's independent reading level (Armbruster, Lehr, & Osborn, 2001). Armbruster et al. (2001) suggested that fluency instruction should use passages at the reader's independent level so that word level problems do not interfere with passage fluency. Using the same prosodic rating scale as Pinnell et al., Daane et al. found that 61% of the students scored in the fluent range (i.e., Levels 3 & 4) with 10% scoring in the top level of prosodic fluency (i.e., Level 4). Approximately 40% of students scored in the non-fluent range (i.e., Levels 1 & 2) with 8% scoring in the lowest level of prosodic fluency (i.e., Level 1). As with Pinnell et al. there was a strong positive relationship between prosodic oral reading and comprehension.

Young and Bowers (1995) conducted a study with 85 fifth-grade students. Forty students were average readers and forty-five students were considered poor readers. Students whose reading problems were attributable to their physical disabilities, their lack of knowledge of English, or their emotional or behavior disability were excluded from the study. The study included an investigation of (a) whether lack of prosodic fluency experienced by poor readers is a function of relative text difficulty; (b) the relationship among reader ability, level, rate accuracy and phrasing; and (c) the relationship between phrasal knowledge and prosodic fluency. Prosodic fluency was assessed using a 6-point rating scale (Allington, 1983). Phrasing assessment was conducted by having the students mark with paper and pencil meaningful boundaries between phrases and clauses. The researchers found that poor readers expressed less phrasing at their level of reading competence than average readers at their level of reading competence. Better readers maintained their level of phrasing across reading levels even when text difficulty decreased their accuracy and rate. Young and Bowers concluded that prosodic fluency differences between average and poor readers were not accounted for by word level skills (i.e., decoding, word attack). Poor readers did not exhibit appropriate phrase-reading regardless of text difficulty level, whereas average readers exhibited appropriate phrase-reading even with more difficult text. This finding is consistent with Schreiber (1980) who suggested that the ability to parse text into meaningful syntactic phrases differentiates poor and good readers. The ability to parse sentences into meaningful phrases explained additional variance ($R^2 = .08, p < .001$) beyond that of accuracy and rate for the good readers on the most difficult text. No relationship was found with easier texts or with any of the text read by the poor readers.

Klauda and Guthrie (2008) studied 278 fifth graders whose mean reading level was 5.87 (SD = 3.17). The students were representative of school district percentages across gender,

ethnicity, English Language Learners (4.8%), and special education (9.2%). The researchers examined the relationship among 3 levels of reading fluency (i.e., word, phrase, and passage level) and reading comprehension. Word-level accuracy and rate were measured using a word list of all unique words from two passages of the Gates-MacGinitie Reading Test (GMRT; MacGinitie, MacGinitie, Maria, & Dreyer, 2000). Phrase-level and passage-level prosody (i.e., expression) were measured using one of two passages from the GMRT. The passage read by the student contained the same words as were assessed in the word-level fluency list. The NAEP Oral Reading Fluency Scale (Pinnell et al., 1995) was adapted so that passage expressiveness was measured based on oral interpretation of the text (i.e., mood and tone). The NAEP Oral Reading Fluency Scale (Pinnell et al., 1995) was adapted so that phrase prosody was measured separately from passage expressiveness. Phrase prosody measurement was based on whether the student read primarily (a) word-by-word, (b) in two word phrases, (c) in three or four word phrases, or (d) in larger meaningful units. Comprehension was measured using the GMRT comprehension assessment. Results indicated that (a) word-level fluency explained 43% of the variance, (b) phrase-level prosody explained 10% of the variance, and (c) passage-level prosody (i.e., expression) explained an additional 4% of the variance in reading comprehension. These findings indicate that each dimension of fluency measured (i.e., word, phrase, passage) related uniquely to reading comprehension assessment results from a heterogeneous group of fifth-graders. Klaua and Guthrie suggest the findings (a) provide evidence of an automaticity effect at the word level and at the syntactic level; and (b) support a multidimensionality view of fluency that includes processing at the word level, syntactic unit level (i.e., phrase level), and passage level (i.e., expression). They also adapted the NAEP Oral Reading Fluency Scale (Pinnell et al.,

1995) by separating two aspects of prosody (i.e., phrase reading and expression) that are generally measured together, thus creating a new prosody rating scale.

Several observations can be made from the rating scale studies. First, a large percentage of students (40%) at the fourth-grade level do not read with adequate prosody (Daane et al., 2005). Second, prosodic expression appears to be related to reading comprehension (Daane et al., 2005; Pinnel et al., 1994). Third, the ability to parse sentences into phrases is a problem for poor readers even when word level skills are taken into account (Young & Bowers, 1995). Fourth, text difficulty provides a better opportunity for good readers to parse sentences into meaningful phrases (Young & Bowers, 1995). Last, phrase-level prosody has a unique association with reading comprehension beyond that of word level automaticity (Klauda & Guthrie, 2008). However, no research has been conducted with either typical or struggling adolescent readers, or students with disabilities.

Klauda and Guthrie (2008) suggested that future researchers should investigate whether different aspects of fluency (i.e., rate, prosody) are more strongly associated with comprehension at various grade levels. For instance, reading rate may be more strongly associated with reading comprehension in elementary grades, whereas syntactic level (i.e. phrasing ability) may be more strongly associated with sixth grade and beyond.

Syntactic Awareness and Phrase-Reading Ability

Syntax refers to the rules and structure that govern the formation of phrases, clauses, and sentences in a language (Shapiro, 1997). Syntactic awareness is the ability to discern those rules in the sentence structures (Siegel & Ryan, 1988; Velutino, Fletcher, Snowling, & Scanlon, 2004). In typically developing readers, syntactic awareness may result from prosodic input through normal speech interactions (Cutler, Dahan, & van Donselaar, 1997; Schreiber, 1980;

Whalley & Hansen, 2006). There is evidence that during the babbling stage, infants acquire information about syntactic structure of language through verbal exposure and interaction with prosodic patterns (Jusczyk, 2002; Shafer, Shucard, Shucard, & Gerken, 1998; Snow & Balog, 2002; Soderstrom, Seidl, Kemler, & Jusczyk, 2003). It is through the connected string of infants' utterances that the beginning processes of syntax (i.e., segmentation, grammatical categorization, phrase bracketing) may be observed (Morgan, 1996). These processes help develop the structural form that may contribute to more complex parsing and eventually to sentence comprehension (Morgan, 1996). Having a language processing deficit may affect development of syntactic awareness (Morgan, 1996). Additionally, there is evidence that syntactic awareness is associated with reading comprehension (Scott, 2006).

Mokhtari and Thompson (2006) conducted correlation analyses to determine if the syntactic awareness of 32 fifth-grade students was related to prosodic reading fluency and reading comprehension scores. Three of the students had learning disabilities, seven received Title 1 services, and one received instruction in the gifted and talented program. The construct of syntactic awareness was measured using three subtests (i.e., sentence combining, word ordering, grammatical competence) of the Test of Language Development- Intermediate (TOLD-II; Hammill & Newcomer, 1996). Prosodic reading fluency was measured using the NAEP Oral Reading Fluency Scale (Pinnell et al., 1995). Vocabulary was measured using the Gates-MacGinitie Reading Test (MacGinitie & MacGinitie, 1989). Reading comprehension was measured using the Gates-MacGinitie Reading Test (MacGinitie & MacGinitie, 1989) and the Oklahoma Criterion-Referenced Reading Test (Oklahoma Department of Education, 2002). Students' levels of syntactic awareness were significantly related to their prosodic reading fluency ($r = .625$) and reading comprehension ($r = .816$). The researchers found that students who

had lower levels of syntactic awareness did poorly in reading comprehension and prosodic reading measures. They concluded that syntactic awareness skills are closely related to reading skills, and that students with poor comprehension appear to have weaknesses related to awareness of the syntactic structure of language.

Reading prosody provides a window into the cognitive processes at work during the reading process. Prosodic phrase reading represents the structural (i.e., syntactic) analysis of the sentence (Koriat et al., 2002), and has been associated with syntactic awareness (Mokhtari & Thompson, 2006). Function words are a closed-class of words that signal relationships among words; whereas, content words are an open-class of words that carry meaning. Function words include prepositions, pronouns, auxiliary verbs, conjunctions, and articles (Klammer, Schulz, & Volpe, 2009). These words provide clues for readers, which help determine sentence structure (Koriat et al., 2002). Koriat et al. (2002) found that structure was maintained in phrasal reading even when meaning was absent, if function words were maintained. The structure precedence hypothesis put forth by Koriat et al. provides an explanation of how syntactic cues (i.e., function words) promote reading comprehension. Prosodic phrasing reflects the reader's ability to extract the structure from the sentence and meaningfully group words into appropriate phrases (i.e., group of words that function together as a unit) while semantic meaning takes place (Koriat et al., 2002). Phrase-reading ability may be the mechanism (i.e., mediator) by which syntactic awareness affects reading comprehension.

Since prosodic phrasing requires the reader to extract the syntactic structure, it is likely that students who have deficits in syntactic judgment would have difficulty extracting that structure during the reading process (Mokhtari & Thomson, 2006). If a reader is unable to extract the structure from a sentence, working memory functions inefficiently and the relationship

between different words and concepts will be missed (Koriat et al., 2002); therefore, comprehension of the meaning of the sentence would be impaired.

Conclusion

Acquiring ability to comprehend words, phrases, and sentences on a page is the purpose of reading instruction. If comprehension does not follow reading instruction, reading has not occurred. Alternative schools are often the last resort for students with and without disabilities who have experienced continual academic and reading failure. Students with E/BD, LD, and/or who are economically disadvantaged are overrepresented in alternative schools. These students are likely to struggle with language deficits or language disorders (Mann, 2006; Nelson et al., 2005), which affect their ability to process syntactic information (Vaughn, Linan-Thompson, & Hickman, 2003). Without syntactic processing, sentences remain a group of individual words without the cohesion of phrases that provide the structure for comprehension of complex sentences. Researchers should investigate the relationship among phrase-reading ability, syntactic awareness, reading rate, and reading comprehension with adolescent students who are in alternative school settings. These students may provide the research community with a greater understanding of the reading process for adolescents so that effective interventions can be developed to improve outcomes for this population. Researchers should explore the need to emphasize appropriate phrasing ability in fluency instruction and assessment. Although emphasis on reading rate is appropriate to a certain point it should not negate the development of appropriate phrasing.

References

- Akerman, B., Smith, C., & Kobak, R. (2009). Diversity in the school problems of economically disadvantaged adolescents: Dual pathways of reading and externalizing problems. *Social Development, 18*, 597-617. doi: 10.1111/j.1467-9507.2008.00496.
- Allington, R. L. (1983) Fluency: The neglected goal. *Reading Teacher, 36*, 556-561.
- Anderson, J. R. (1992). Automaticity and ACT theory. *The American Journal of Psychology, 105*, 165-180.
- Anderson, R. C., Hiebert, E. F., Wilkinson, I. A. G., & Scott, J. (1985). *Becoming a nation of readers*. Champaign, IL: National Academy of Education and Center for the Study of Reading.
- Anderson, J. R., & Lebiere, C. J. (1998). *The atomic components of thought*. Mahwah, NJ: Erlbaum.
- Armbruster, B., Lehr, F., & Osborn, J. (2001). *Put reading first: The research building blocks for teaching children to read*. Jessup, Maryland: National Institute for Literacy.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*, 117-148.
- Beken, J. A., Williams, J., Combs, J. P., & Slate, J. R. (2009). At-risk students at traditional and academic alternative school settings: Differences in math and English performance indicators. *Florida Journal of Educational Policy, 3*, 49-61.
- Benjamin, R. G., & Schwanenflugel, P. J. (2010). Text complexity and oral reading prosody in young readers. *Reading Research Quarterly, 45*, 388-404.

- Benner, G. J., Mattison, R. E., Nelson, J. R., & Ralston, N. C. (2009). Types of language disorders in students classified as ED: Prevalence and association with learning disabilities and psychopathology. *Education and Treatment of Children, 32*, 631-653.
- Benner, G. J., Nelson, J. R., Ralston, N. C., & Mooney, P. (2010). A meta-analysis of the effects of reading instruction on the reading skills of students with or at-risk of behavioral disorders. *Behavioral Disorders, 35*, 86-102.
- Benner, G. J., Nelson, J. R., & Epstein, M. H. (2002). The language skills of children with emotional and behavioral disorders: A review of the literature. *Journal of Emotional and Behavioral Disorders, 10*, 43-59.
- Blackorby, J., & Wagner, M. (1996). Longitudinal post school outcomes of youth with disabilities: Findings from the national longitudinal transition study. *Exceptional Children, 62*, 399-413.
- Carnie, A. (2002). *Syntax: A generative introduction*. Malden, Maine: Blackwell.
- Carver, P. R., & Lewis, L. (2010). *Alternative schools and programs for public school students at risk of educational failure: 2007-08* (NCES 2010-026). U.S. Department of Education, National Center for Education Statistics. Washington, DC: Government Printing Office.
- Catts, H. W., Hogan, T. P., & Adolf, S. M. (2005). Developmental changes in reading and reading disabilities. In H. W. Catts & A. G. Kamhi (Eds.), *The connections between language and reading disabilities* (pp. 25-40). Mahwah, NJ: Lawrence Erlbaum Associates.

- Catts, H. W., Hogan, T. P., & Fey, M. E. (2003). Subgrouping poor readers on the basis of individual differences in reading-related abilities. *Journal of Learning Disabilities, 36*, 151-164.
- Chafe, W. (1988). Punctuation and the prosody of written language. *Written Communication, 5*, 395-426.
- Chall, J. S. (1996). *Stages of reading development* (2nd ed.). Fort Worth, TX: Harcourt-Brace.
- Chomsky, N. (1976). On the nature of language. In S. R. Harnad, H. D. Steklis & J. Lancaster, (Eds.), *Origins and evolution of language and speech. Annals of the New York Academy of Sciences*, (Vol. 280, pp. 46-77).
- Christle, C. A., Jolivette, K., & Nelson, C. M. (2005). Breaking the school to prison pipeline: Identifying school risk and protective factors for youth delinquency. *Exceptionality, 13*, 69-88.
- Christle, C. A., & Yell, M. L. (2008). Preventing youth incarceration through reading remediation: Issues and solutions. *Reading & Writing Quarterly, 24*, 148-176.
- Cohen, J. D., Dunbar, K., & McClelland, J. L. (1990). On the control of automatic processes: A parallel distributed processing account of the Stroop effect. *Psychological Review, 97*, 332-361.
- Cunningham, T. F., Healy, A. F., Kanengiser, N., Chizzick, L., & Willitts, R. L. (1988). Investigating the boundaries of reading units across ages and reading levels. *Journal of Experimental Child Psychology, 45*, 175-208.
- Cutler, A., Dahan, D., & van Donselaar, W. (1997). Prosody in the comprehension of spoken language: A literature review. *Language and Speech, 40*, 141-201.

- Daane, M. C., Campbell, J. R., Grigg, W. S., Goodman, M. J., & Oranje, A. (2005). Fourth-grade students reading aloud: NAEP 2002 special study of oral reading (NCES 2006-469). U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics. Washington, DC: Government Printing Office.
- Daniel, S., Walsh, A., Goldston, D., Arnold, E., Reboussin, B., & Wood, F. (2006). Suicidality, school dropout, and reading problems among adolescents. *Journal of Learning Disabilities*, 39, 507-514.
- Denton, C. A., Barth, A. E., Fletcher, J. M., Wexler, J., Vaughn, S., Cirino, P. G., ...Francis, D. J. (2011). The relations among oral and silent reading fluency and comprehension in middle school: Implications for identification and instruction of students with reading difficulties. *Scientific Studies of Reading*, 15, 109-135.
- Denton, C. A., & Vaughn, S. (2008). Reading and writing intervention for older students with disabilities: Possibilities and challenges. *Learning Disabilities Research & Practice*, 23, 61-62.
- Dowhower, S. L. (1991). Speaking of prosody: Fluency's unattended bedfellow. *Theory into Practice*, 30, 165-174.
- Edmonds, M. S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K. K., & Schnakenberg, J. W. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of Educational Research*, 71, 262-300.
- Eldredge, J. L. (2005). Foundations of fluency: An exploration. *Reading Psychology*, 26, 161-181.

- Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, *100*, 363-406.
- Fuchs, L. S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading*, *5*, 239–256.
- Gage, N. A., Lierheimer, K. S., & Goran, L. G. (2012). Characteristics of students with high-incidence disabilities broadly defined. *Journal of Disability Policy Studies*, *23*, 168-178.
- Gough, P. B., Hoover, W. A., & Peterson, C. L. (1996). Some observations on a simple view of reading. In C. Cornoldi & J. Oakhill (Eds.), *Reading comprehension difficulties: Processes and interventions* (pp. 1- 13). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Hammill, D., & Newcomer, P. L. (1996). *Test of language development-intermediate*. San Antonio, TX: The psychological Corporation.
- Harlow, C. W., (2003). *Bureau of justice statistics special report: education and correctional populations*. Department of Justice; Washington D.C. Retrieved from <http://www.bjs.gov/datacollection.cfm>
- Hasbrouck, J., & Tindal, G. A. (2006). Oral reading fluency norms: A valuable assessment tool for reading teachers. *The Reading Teacher*, *59*, 636–644
- Healy, A. F. (1994). Letter detection: A window to unitization and other cognitive processes in reading text. *Psychonomic Bulletin & Review*, *1*, 333-344.
- Hock, M. F., Brasseur, I. F., Deshler, D., Catts, H. W., Marquis, J. G., Mark, C. A., & Stribling, J. W. (2009). What is the reading component skill profile of adolescent struggling readers in urban schools? *Learning Disability Quarterly*, *32*, 21-38.

- Hoover, W. A., & Gough P. B. (1990). The simple view of reading. *Reading and Writing: An Interdisciplinary Journal*, 2, 127-160.
- Hosp, M. K., & Fuchs, L. S. (2005). Using CBM as an indicator of decoding, word reading, and comprehension: Do the relations change with grade? *School Psychology Review*, 34, 9-26.
- Hudson, R. F., Lane, H. B., & Pullen, P. C. (2005). Reading fluency assessment and instruction: What, why, and how? *The Reading Teacher*, 58, 702-714.
- Hudson, R. F., Pullen, P. C., Lane, H. B., & Torgesen, J. K. (2009). The complex nature of reading fluency: A multidimensional view. *Reading & Writing Quarterly*, 25, 4-32.
- Jusczyk, P. W. (2002). How infants adapt speech-processing capacities to native-language structure. *Current Directions in Psychological Science*, 11, 15-18.
- Kame'enui, E. J., & Simmons, D. C. (2001). Introduction to the special issue: The DNA of reading fluency. *Scientific studies of Reading*, 5, 203-210
- Kamil, M. L. (2003). *Adolescents and literacy: Reading for the 21st century*. Washington, DC: Alliance for Excellent Education.
- Klammer, T., Schulz, M. R., & Volpe, A. D.(2005). *Analyzing English Grammar* (5th ed). New York, NY: Pearson Longman.
- Klauda, S. L., & Guthrie, J. T. (2008). Relationship of three components of reading fluency to reading comprehension. *Journal of Educational Psychology*, 100, 310-321.
- Kleiner, B., Porch, R., & Farris, E. (2002). *Public alternative schools and programs for students at risk of education failure: 2000–01* (NCES 2002–004). U.S. Department of Education. Washington, DC: National Center for Education Statistic.

- Koriat, A., Greenberg, S. N., & Kreiner, H. (2002). The extraction of structure during reading: Evidence from reading prosody. *Memory & Cognition, 30*, 270-280.
- Kuhn, M. R., Schwanenflugel, P. J., & Meisinger, E. B. (2010). Aligning theory and assessment of reading fluency: Automaticity, prosody, and definitions of fluency. *Reading Research Quarterly, 45*, 230-251.
- Kuhn, M. R., & Stahl, S. A. (2003). Fluency: A review of developmental and remedial practices. *Journal of Educational Psychology, 95*, 3-21
- LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6*, 293-323.
- Lane, K. L., Gresham, F. M., & O'Shaughnessy, T. (2002). Identifying, assessing, and intervening with children with or at risk for behavior disorders: A look to the future. In K. L. Lane, F. M. Gresham, & T. E. O'Shaughnessy (Eds.), *Interventions for children with or at risk for emotional and behavioral disorders* (pp. 317-326). Boston: Allyn & Bacon.
- Leach, J. M., Scarborough, H. S., & Recorla, I. (2003). Late-emerging reading disabilities. *Journal of Educational Psychology, 95*, 211-224.
- Lee, J., Grigg, W., & Donahue, P. (2007). *The nation's report card: reading 2007* (NCES 2007-496). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, Washington, D.C.
- Lehr, C. A., Tan, C. S., & Ysseldyke, J. (2009). Alternative schools: A synthesis of state-level policy and research. *Remedial and Special Education, 30*, 19-32.
- Leone, P. E., Krezmien, M., Mason, L., & Meisel, S. M. (2005). Organizing and delivering empirically based literacy instruction to incarcerated youth. *Exceptionality, 13*, 89-102.

- LeVasseur, V. M., Macaruso, P., Palumbo, L. C., & Shankweiler, D. (2006). Syntactically cued text facilitates oral reading fluency in developing readers. *Applied Psycholinguistics*, *27*, 423-445.
- LeVasseur, V. M., Macaruso, P., & Shankweiler, D. (2008). Promoting gains in reading fluency: A comparison of three approaches. *Reading and Writing*, *21*, 205-230.
- Levy, B. A., Abello, B., & Lysynchuk, L. (1997). Transfer from word training to reading in context: Gains in fluency and comprehension. *Learning Disability Quarterly*, *20*, 173-188.
- Logan, G. D. (1997). Automaticity and reading: Perspectives from the instance theory of automatization. *Reading & Writing Quarterly*, *13*, 123-147.
- MacGinitie, W., & MacGinitie, R. (1989). *Gates-MacGinitie reading test* (3rd Ed.) Rolling Meadows, IL: Riverside Publishing.
- MacGinitie, W. H., MacGinitie, R. K., Maria, K., & Dreyer, L. G. (2000). *Gates-MacGinitie reading tests: Manual for scoring and interpretation*. , IL: Riverside.
- MacWhinney, B. (2002). Extending the competition model. In R. Heredia & J. Altarriba (Eds.), *Bilingual sentence processing* (pp. 31-58). Amsterdam, Netherlands; Elsevier Science.
- Mann, V. A. (2006). Language processes: Keys to reading disability. In H. L. Swanson, K. R. Harris & S. Graham (Eds.), *Handbook of learning disabilities* (pp. 213 – 228). New York, NY: Guilford Press.
- Matheson, D. V., Allington, R. L., & Solic, K. L. (2006). Hijacking fluency and instructionally informative assessments. In T. Rasinski, C. Blachowicz, & K. Lems (Eds.), *Fluency instruction: Research-based best practices* (pp.106-119). New York, NY; Guilford.

- Miller, J., & Schwanenflugel, P. J. (2006). Prosody of syntactically complex sentences in the oral reading of young children. *Journal of Education Psychology, 98*, 839–853.
- Miller, J., & Schwanenflugel, P. J. (2008). A longitudinal study of the development of reading prosody as a dimension of oral reading fluency in early elementary school children. *Reading Research Quarterly, 43*, 336-354.
- Mokhtari, K., & Thompson, H. B. (2006). How problems of reading fluency and comprehension are related to difficulties in syntactic awareness skills among fifth graders. *Reading Research and Instruction, 46*, 73-93.
- Moore, D. W., Bean, T. W., Birdyshaw, D., & Rycik, J. (1999). *Adolescent literacy: A position statement for the commission on adolescent literacy of the International Reading Association*. Newark, DE: International Reading Association
- Morgan, J. L. (1996). Prosody and the roots of parsing. *Language and Cognitive Processes, 11*, 69-106.
- National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implication for reading instruction*. Washington DC: National Institute of Child Health and Human Development.
- Nelson, J. R., Benner, G. J., & Cheney, D. (2005). An investigation of the language skills of students with emotional disturbance served in public school settings. *The Journal of Special Education, 39*, 97-105.
- Nomvete, P. T. (2010). *School discipline in Florida: Discipline practices leave many children behind*. Atlanta, GA: U. S. Commission on Civil Rights. Retrieved from <http://www.usccr.gov/pubs/FLSchoolDisciplineReport.pdf>

Oklahoma Department of Education (2002). *Oklahoma criterion-referenced reading text*.

Oklahoma City: OK: Oklahoma State Department of Education.

Perfetti, C. A. (1985). *Reading ability*. New York, NY: Oxford University Press.

Pikulski, J. J., & Chard, D. J. (2005). Fluency: Bridge between decoding and reading comprehension. *International Reading Association, 10*, 510–519.

Pinnell, G. S., Pikulski, J. J., Wixson, K. K., Campbell, J. R., Gough, P. B., Beatty, A. S. (1995). *Listening to children read aloud: Data from NAEP's integrated reading performance record (IRPR) at grade four*. (Report No. CS 011970). Washington D.C.: National Center for Education Statistics (ED). (ERIC Document Reproduction Service No. ED378550)

RAND Reading Study Group Report (RRSGR). (2002). *Reading for understanding: Toward a R&D program in reading comprehension*. Office of Educational Research and Improvement (OERI) (Document No. MR- 1465-OERI, 2002).

Rasinski, T. V. (1994). Developing syntactic sensitivity in reading through phrase-cued texts. *Intervention in School and Clinic, 29*(3), 94–97.

Rasinski, T. V., Padak, N. D., McKeon, C. A., Wilfong, L. G., Friedauer, J. A., & Heim, P. (2005). Is reading fluency a key for successful high school reading? *Journal of Adolescent & Adult Literacy, 49*, 22–27.

Rosenbloom, P. S., & Newell, A. (1981). Mechanisms of learning acquisition and the law of practice. In J. R. Anderson (Ed.), *Cognitive skills and their acquisition* (pp. 1-56).

Hillsdale, NJ: Erlbaum

Rueda, R. (2011). Cultural perspectives in reading: Theory and research. In M. L. Kamil, & D. Pearson (Eds.), *Handbook of reading research*, (Vol. IV, pp. 84-105). New York, NY: Routledge.

- Samuels, S. J. (2006). Reading fluency: Its past, present, and future. In T. Rasinski, C. Blachowicz, & K. Lems (Eds.), *Fluency instruction: Research-based best practices* (pp.7-20). New York, NY: Guilford.
- Schneider, W. & Shiffrin, R. M. (1977). Controlled and automatic human information processing: Detection, search, and attention. *Psychological Review*, 84, pp1-66.
- Schneider, W., & Fish, A. D. (1982). Degree of consistent training: Improvements in search performance and automatic process development. *Perception and Psychophysics*, 31, 160-168.
- Schreiber, P. A. (1980). On the acquisition of reading fluency. *Journal of Reading Behavior*, 12, 177-186.
- Schreiber, P. A. (1991). Understanding prosody's role in reading acquisition, *Theory into Practice*, 30, 158-164.
- Schunk, D. H. (2008). *Learning theories: An educational perspective*, 5th. Ed. Upper Saddle River, NJ: Pearson
- Schwanenflugel, P. J., Hamilton, A. M., Kuhn, M. R., Wisenbaker, J. M., & Stahl, S. A. (2004). Becoming a fluent reader: Reading skill and prosodic features in the oral reading of young readers. *Journal of Educational Psychology*, 96, 119-129.
- Scott, C. M. (2006). Syntactic contributions to literacy learning. In C. A. Stone, E. R. Silliman, B. J. Ehren & K. Apel (Eds.), *Handbook of language & literacy: Development and disorders* (pp.340-362). New York, NY: Guilford. Press.
- Shafer, V. L., Shucard, D. W., Shucard, J. L., & Gerken, L. A. (1998) An electrophysiological study of infants' sensitivity to the sound patterns of English speech. *Journal of Speech, Language, and Hearing Research*, 41, 874-886.

- Shapiro, L. P. (1997). Tutorial: An introduction to syntax. *Journal of Speech, Language, & Hearing Research, 40*, 254- 273.
- Shiffrin, R. M., & Dumais, S. T. (1981). The development of automaticity. In J. R. Anderson (Ed.), *Cognitive skills and their acquisition* (pp. 111-140). Hillsdale, NJ: Erlbaum.
- Siegel, L. S., & Ryan, E. B. (1988). Development of grammatical- sensitivity, phonological and short-term memory skills in normally achieving and learning disabled children. *Developmental Psychology, 24*, 28-37. doi:10.1037/0012-1649.24.1.28
- Snow, D., & Balog, H. L. (2002). Do children produce the melody before the words? A review of developmental intonation research. *Lingua, 112*, 1025-1058.
- Snow, C. E., Burns, M. S., & Griffin, P. (Eds.) (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Soderstrom, M., Seidl, A., Kemler, D. G. K., & Jusczyk, P. W. (2003). The prosodic bootstrapping of phrases: Evidence from prelinguistic infants. *Journal of Memory and Language 49*, 249-267.
- Stevens, K. C. (1981). Chunking material as an aid to reading comprehension. *Journal of Reading, 25*, 126-129.
- Texas Education Agency (2004). *Appendix 20—Student assessment division technical digest 2004–2005*. Retrieved from <http://ritter.tea.state.tx.us/student.assessment>
- UNESCO Education Sector (2004). *The plurality of literacy and its implications for policies and programs*. Paris, France: Scientific and Cultural Organization Nations Educational, Scientific and Cultural Organization: UNESCO, 2004
- University of Houston. (2008). *Texas middle school fluency assessment*. Houston, TX: Author Manuscript.

- Unruh, D., Bullis, M., Todis, B., Waintrup, M., & Atkins, T. (2007). Programs and practices for special education students in alternative education settings. *Research to Practice Brief: Improving Secondary Education and Transition Services through Research* 6(1). Retrieved from <http://www.ncset.org/publications/viewdesc.asp?id=3448>
- Vaughn, S., Linan-Thompson, S., & Hickman, P. (2003). Response to instruction as a means of identifying students with reading/learning disabilities. *Exceptional Children*, 69, 391-409.
- Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of Child Psychiatry*, 45, 20-40.
- Walker, B. J., Mokhtari, K., & Sargent, S. (2006). Reading fluency: More than fast and accurate reading. In T. Rasinski, C. Blachowicz & K. Lems (Eds.), *Fluency instruction: Research-based best practices* (pp.106-119). New York, NY: Guilford.
- Wasburn-Moses, L. (2011). An investigation of alternative schools in one state: Implications for students with disabilities. *Journal of Special Education* 44, 247-255.
- Wiederholt, J. L., & Bryant, B. R. (2001). *Gray Oral Reading Tests*. Austin, TX: Pro-Ed.
- Williams, K. T. (2001). *Group reading assessment diagnostic evaluation*. Shoreview, MN: Pearson AGS Globe
- Woodcock, R. N. (1997). *Woodcock reading mastery tests*. Circle Pines, MN: American Guidance Service
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III Tests of Achievement*. Rolling Meadows, IL: Riverside Publishing.
- Wexler, J., Vaughn, S., Edmonds, M., & Reutebuch, C. K. (2008). A synthesis of fluency interventions for secondary struggling readers. *Reading and Writing*, 21, 317 -347.

- Whalley, K., & Hansen, J. (2006). The role of prosodic sensitivity in children's reading development. *Journal of Research in Reading, 29*, 288-303.
- Williams, K. T. (2001). *Group reading assessment diagnostic evaluation*. Shoreview, MN: Pearson AGS Globe.
- Wolf, M., & Katzir-Cohen, T. (2001). Reading fluency and its intervention. *Scientific Studies of Reading, 5*, 211
- Young, A., & Bowers, P. G. (1995). Individual difference and text difficulty determinants of reading fluency and expressiveness. *Journal of Experimental Child Psychology, 60*, 428-454.
- Zutell, J., & Rasinski, T. V. (1991). Training teachers to attend to their students' oral reading fluency. *Theory into Practice, 30*, 211-217.

2 ROLE OF PHRASE-READING ABILITY IN READING COMPREHENSION FOR ADOLESCENT READERS IN AN ALTERNATIVE SETTING

According to the National Assessment of Educational Progress (NAEP) longitudinal study, reading scores for elementary age students indicate significant improvements since 1992, yet over the last 40 years reading scores for adolescent students stagnated (Edmonds et al., 2009; Grigg, Daane, Jin, & Campbell, 2003; Lee, Grigg, & Donahue, 2007). Adolescent struggling readers are a heterogeneous group who experience deficits in various reading subskills (Hock et al., 2009). Researchers suggest that specific weaknesses emerge in adolescent readers that are not present during elementary school as linguistic skills increase in importance (Leach, Scarborough, & Rescorla, 2003). Delineation of these specific weaknesses is needed if educators are to provide instruction to ameliorate the weaknesses (Catts, Hogan, & Adolf, 2005; Catts, Hogan, & Fey, 2003; Edmonds et al., 2009).

Providing relevant instruction for struggling adolescent readers is not only an academic concern because the acquisition of adequate reading skills is central to all aspects of a person's life. Without adequate skills students are at a higher risk of school dropout, court involvement, and mental health issues (Blackorby & Wagner, 1996, Daniel et al., 2006). As adults, poor readers face fewer opportunities, lower economic potential, social marginalization, as well as greater risk for incarceration (Blackorby & Wagner, 1996; Snow, Burns, & Griffin, 1998). Many struggling readers end up in alternative schools because of academic failure or disruptive behaviors (Beken, Williams, Combs, & Slate, 2009).

Reading ability has been identified as a scholastic skill highly predictive of school success for students in alternative schools (Lee, 2009). Yet, researchers have found that students in alternative schools score significantly lower in reading and language-based academic skills

than do students in traditional secondary schools (Beken et al., 2009). Not surprisingly, a majority of these students experience ongoing academic failure (Carver & Lewis, 2010; Kleiner, Porch, & Farris, 2002). Raffaele-Mendez, Knoff, and Ferron (2002) found that low scores on standardized reading assessments were associated with multiple school suspensions. Academic failure and exclusionary discipline are risk factors for students becoming high school dropouts (Wald & Losen, 2003). When students drop out of school, they are at greater risk of becoming involved in the court system (Ekstrom, Goetz, Pollack, & Rock, 1986).

Students with disabilities are overrepresented within alternative settings (Foley & Pang, 2006). In one state survey, over 60% of the students in alternative settings had a disability (Foley & Pang, 2006). Students with Emotional and Behavior Disorders (E/BD) may experience learning difficulties, problems with interpersonal relationships, inappropriate behaviors or feelings, feelings of depression or unhappiness, and fear-based physical symptoms (Kauffman & Landrum, 2009). Researchers also have found that high portions (i.e., two-thirds) of students with E/BD have significant language deficits (Benner, Nelson, Allor, Mooney, & Dai, 2008) and over three-quarters are several grade levels below expectations on reading (Greenbaum et al., 1996). Most individuals with LD experience deficits in information processing that may affect their ability to listen, think, speak, read, write, spell, and/or perform mathematical calculations (IDEA 2004 Summary). Over 90% of those with LD experience reading difficulties (Heward, 2006). Additionally, researchers have found that over 50% of students with LD who have reading difficulties may have concomitant language impairments (Eisenmajer, Ross, & Pratt, 2005). Similarities related to academic attainment exist among students with E/BD and students with LD. For instance both are likely to have lower reading scores than their peers without disabilities (Benner, Nelson, Ralston, & Mooney, 2010; Lane, Gresham, & O'Shaughnessy,

2002), and both are likely to have significant language deficits (Mann, 2006; Nelson, Benner, & Cheney, 2005). An examination of specific subcomponents that contribute to reading comprehension for adolescent students may provide information that will lead to greater understanding of the reading process and to a better alignment of instructional practices with student characteristics (Catts et al., 2005; Catts et al., 2003; Hock et al., 2009).

Reading Comprehension

Reading comprehension, defined as “the process of simultaneously extracting and constructing meaning through interaction and involvement with written language” (RAND Reading Study Group, 2002, p. xiii), is the ultimate goal of reading instruction (Edmonds et al., 2009). Numerous reading subskills or subcomponents contribute to one’s ability to comprehend the written word (RAND Reading Study Group, 2002). Conversely, weaknesses in a comprehension subcomponent thwart comprehension. Struggling adolescent readers are a heterogeneous group who experience a variety of reading subcomponent weaknesses (e.g., reading rate, decoding skills, and vocabulary) that may interfere with reading comprehension (Hock et al., 2009). Researchers have suggested that gaining a greater understanding of how various reading subcomponents contribute to reading comprehension may lead to more effective and more efficient reading instruction (Catts et al., 2005; Catts et al., 2003) for adolescent struggling readers (Hock et al., 2009) with and without disabilities.

The subcomponents of reading comprehension, according to the simple view of reading (SVR; Hoover & Gough, 1990), can be categorized into two sets of skills, namely, (1) the decoding skills (e.g., word attack, reading rate) needed to read the words on a page, and (2) the language skills (e.g., phrasing ability, syntactic awareness) needed to comprehend what those words mean. The relationships among these two sets of skills and reading comprehension change

over time. Gough, Hoover, and Peterson (1996) found that decoding ability was significantly correlated with reading comprehension across grades 1 to 6, but the strength of the correlation declined over time. Conversely, the relationship between language skills and reading comprehension strengthened as students aged (Gough et al., 1996). Based on a research synthesis of 19 studies, Wexler, Vaughn, Edmonds, and Reutebuch (2008) suggested that reading rate, although important, is not necessarily sufficient for adolescent students “to be able to comprehend the complex text they encounter” (p. 342). Additionally, Hock et al. (2009) found that adolescent struggling readers, with and without disabilities, scored low on a variety of reading subcomponents (i.e., word skills, reading rate, vocabulary). They suggested researchers investigate methods to identify those specific reading components that interfere with comprehension so that teachers can provide targeted remediation. However, much of the reading research has been conducted with elementary-aged students with findings often generalized to adolescent readers. Taking into consideration the changing relationships of decoding, language skills, and comprehension as students age, these generalizations from younger readers are not always appropriate (Denton et al., 2011; Denton & Vaughn, 2008). Researchers have suggested greater attention be directed toward the unique needs of adolescent struggling readers, concerning reading comprehension (Edmonds et al., 2009; Hock et al., 2009). Additionally, researchers have called for more research designed to identify the characteristics related to comprehension development for adolescent students with and without disabilities (Denton & Vaughn, 2008; Vaughn et al., 2011).

Phrase-Reading Ability

Phrase-reading ability (i.e., the chunking of individual words into meaningful word groups) is a language-based skill associated with reading comprehension (Dowhower, 1991;

Klauda & Guthrie, 2008) and is of increasing interest among reading researchers (Benjamin & Schwanenflugel, 2010; Klauda & Guthrie, 2008; Kuhn, Schwanenflugel, & Meisinger, 2010; LeVasseur, Macaruso, Palumbo, & Shankweiler, 2006; LeVasseur, Macaruso, & Shankweiler, 2008; Mokhtari & Thompson, 2006; Young & Bowers, 1995). A particular interest has been the possibility that phrase-reading ability may be increasingly more important as students get older and text complexity increases (Gough et al., 1996; Klauda & Guthrie, 2008).

Phrase-reading ability is a language-based skill, and language-based skills appear to increase in importance through adolescence (Gough et al., 1996). Benner, Mattison, Nelson, and Ralston (2009) suggested that a significant proportion (i.e., two-third) of students with E/BD also have language deficits. Most students with LD are affected by language processing difficulties and there is evidence that a majority of those with LD also have concomitant oral language deficits (Eisenmajer, Ross, & Pratt, 2005) that may affect the recognition of prosodic cues concerning phrasing (Fisher, Plante, Vance, Gerken, & Glatke, 2007). Investigating how phrase-reading ability contributes to reading comprehension requires measurement of both phrase-reading ability and reading comprehension. Measuring reading comprehension is commonplace in research, but much less so for measuring phrase-reading ability. Measurement of phrasing ability requires an analysis of the prosodic qualities exhibited by the oral reading of an individual. Spectrographic analysis and rating scales are the most common types of measurement of prosodic reading (Benjamin & Schwanenflugel, 2010). Spectrographic analysis provides a graphical depiction of prosodic features of oral reading (Schwanenflugel, Hamilton, Kuhn, Wisenbaker, & Stahl, 2004) that is considered more objective than rating scales (Miller & Schwanenflugel, 2006). Rating scales, however, are more practical for applied settings, and may be more appropriate for measuring phrase-reading ability (Miller & Schwanenflugel, 2006). One

rating scale that has been used in several research studies (Daane, Campbell, Grigg, Goodman, & Oranje, 2005; Pinnell et al., 1995) is the National Assessment of Education Progress (NAEP) Oral Reading Fluency Scale (Pinnell et al., 1995). Klauda and Guthrie (2008) adapted the NAEP Oral Reading Fluency Scale (Pinnell et al., 1995) to assess phrase-level prosody independently of expression or intonation. They studied 278 fifth graders and found that phrase-reading ability had a unique association with reading comprehension beyond that of passage reading rate (Klauda & Guthrie, 2008). The researchers suggested that phrase-reading ability be investigated in terms of its relationship to reading comprehension with other age groups (Klauda & Guthrie, 2008). There appears to be evidence of a relationship among the language skills of syntactic awareness, phrase-level reading, and reading comprehension that calls for closer attention in students with language deficits and or reading disabilities (Marshall, Harcourt-Brown, Ramus & van der Lely, 2009) as well as for students without disabilities (Mokhtari & Thompson, 2006; Pinnell et al., 1995).

Syntactic Awareness and Phrasing Ability

Syntactic awareness is a broad language skill associated with reading comprehension (Mokhtari & Thompson, 2006) and can be described as awareness of the syntactic structure of sentences (e.g., phrases, clauses) as well as the ability to reflect on and manipulate syntactic elements (Mokhtari & Thompson, 2006, p. 77). It develops through typical speech interactions (Culter, Dahan, & von Donselaar, 1997; Schreiber, 1980; Whalley, & Hansen, 2006) beginning in infancy (Jusczyk, 2002; Shafer, Shucard, Shucard, & Gerken, 1998; Snow & Balog, 2002; Soderstrom, Seidl, Kemler, & Jusczyk, 2003). Exposure to prosodic patterns that reflect the structure of the language helps develop a structural awareness of phrases, clauses, and sentences (Morgan, 1996). Having a language processing deficit may interfere with the normal

development of syntactic awareness (Morgan, 1996) which may then affect reading ability since syntactic awareness is associated with reading comprehension (Scott, 2006).

Struggling readers have syntactic awareness deficits that affect their ability to identify and/or to use syntactic knowledge (Leikin & Assayag-Bouskila, 2004; Nation & Snowling, 2000). These deficits also affect their ability to comprehend what they read (Klauda & Guthrie, 2008; Mokhtari & Thompson, 2006; Nation & Snowling, 2000). Marshall et al. (2009) found that students with reading disabilities experienced difficulty using prosodic cues to disambiguate syntactic structures, causing errors in comprehension. Regardless of whether a student has LD, E/BD, or no identified disability, deficits in syntactic awareness affect one's ability to comprehend the meaning of print (Bentin, Deutsch, & Liberman, 1990; Leikin et al., 2004). However, syntactic awareness may not influence reading comprehension directly but rather through the mechanism of grouping words into appropriate syntactic phrases (i.e., phrase reading) (Mokhtari & Thompson, 2006). Young and Bowers (1995) found that fifth-graders identified as average readers were able to apply phrasal knowledge to their reading even in the most difficult text to assist in comprehension, whereas those identified as poor readers did not use phrasal knowledge in easy or difficult texts. According to the structural precedence theory (Koriat, Greenberg, & Kreiner, 2002), to read a sentence in appropriate syntactic phrases, the reader must extract the structure (e.g., group words into syntactic units) while reading the sentence and before comprehension can take place (Koriat et al., 2002). Phrasing allows a reader to transform a group of words into one unit. It is more efficient to hold one unit of several words in short-term memory while semantic processing takes place than it is to hold each individual word in short-term memory (Koriat et al., 2002).

Passage Reading Rate and Phrase-Reading Ability

The emergence of phrase-reading ability is associated not only with syntactic awareness (Mokhtari & Thompson, 2006), but also with passage reading rate (Klauda & Guthrie, 2008). Theories of automaticity (LaBerge & Samuels, 1974; Perfetti, 1985) provide a perspective on the relationship between reading rate and phrase-reading ability. Automaticity theories suggest that as lower level reading skills (i.e., decoding, word reading ability) become automatic, cognitive resources are freed to focus on higher level reading skills (e.g., phrasing ability) (Hudson, Pullen, Lane, & Torgesen, 2009). Taking into consideration this cognitive resource premise (Perfetti, 1985) it would follow that as automaticity develops (i.e., as measured by passage reading rate) attention is freed to focus on chunking individual words into meaningful phrases (Benjamin & Schwanenflugel, 2010). Through the development of phrase-reading ability the reader is able to extract the meaning of the sentence more thoroughly and more efficiently. As reading materials become more complex, through the inclusion of sentences with multiple phrasal units, phrase-reading ability begins to mediate the relationship between reading rate and comprehension. More specifically, phrase-reading ability may be a mechanism by which reading rate influences reading comprehension in syntactically complex sentences. Logan (1997) provides a caveat concerning passage reading rate in his description of power law. According to Logan (1997) there is a diminishing return on reading-rate practice as a student moves toward an optimal reading level. If reading rate becomes the primary focus of instruction beyond recognition of phrasing then reading rate may interfere with, rather than facilitate, reading comprehension (Matheson, Allington, & Solic, 2006). This may offer some insight into why researchers have found that reading rate increases for adolescent readers do not necessarily lead to reading comprehension increases (Edmonds et al., 2009). Edmonds et al. (2009) suggested that skills

related to reading rate and accuracy are essential to the reading process but are not adequate for reading comprehension as students get older

Phrase-Reading Ability, Syntactic Awareness, and Passage Reading Rate

There is evidence that phrase-reading ability, syntactic awareness, and reading rate are associated with each other and with reading comprehension (Klauda & Guthrie, 2008; Mokhtari & Thompson, 2006). Researchers have suggested that efforts be made to investigate how various reading skills contribute to reading comprehension for struggling adolescent readers, with (Catts et al., 2005; Catts et al., 2003) and without disabilities, so that appropriate reading interventions can be developed (Edmonds et al., 2009; Hock et al., 2009). To that end, prior research (Benjamin & Schwanenflugel, 2010; Catts et al., 2005; Catts et al., 2003; Edmonds et al., 2009; Hock et al., 2009; Mokhtari & Thompson, 2006) and theoretical foundations ((LaBerge & Samuels, 1974; Koriat et al., 2002; Perfetti, 1985), provided the framework for development of the following four hypotheses concerning adolescent readers:

1. Phrase-reading ability, syntactic awareness, passage reading rate, and reading comprehension will have a positive, significant correlation for adolescent readers in an alternative setting;
2. Language related variables (i.e., phrasing ability, syntactic awareness) will account for more of the variance in reading comprehension than passage reading rate;
3. Phrase-reading ability, as measured by phrase-level prosody, provides a mechanism that mediates or at least partially mediates how syntactic awareness affects reading comprehension;
4. Phrase-reading ability, as measured by phrase-level prosody, provides a mechanism or at least partially mediates how passage-reading rate affects reading comprehension.

To test these hypotheses, the following four research questions concerning adolescents in an alternative school setting were asked:

1. Is there a significant relationship, as demonstrated through correlation, among phrase-reading ability, syntactic awareness, passage reading rate, and reading comprehension for adolescent students in an alternative school setting?

2. How much of the variance in reading comprehension do phrase-reading ability, syntactic awareness, and passage reading rate account for among a sample of adolescent students in an alternative school setting?

3. Does phrase-reading ability mediate the relationship between syntactic awareness and reading comprehension with adolescent students in an alternative school setting? and

4. Does phrase-reading ability mediate the relationship between passage reading rate and reading comprehension with adolescent students in an alternative school setting?

Methods

Participants

Identification of participants began after the researcher received appropriate approval and documentation from the University's Institutional Review Board. Participants included adolescent readers with and without disabilities in two alternative educational schools. The principal of each school sent permission letters home with each student who was not receiving services as an English Language Learner (ELL) or presented the permission letter to the parent during intake for new students. A total of 114 parental permissions and consent letters were distributed. Of the 114 recruitment letters, 70 resulted in the students participating in the study. This was a 61% acceptance rate. Of the 92 parents who received the permission letters for their students under the age of 18 years, 61 gave permission for their students to participate. Thirty-

one of the parents refused permission. Of the 61 students who received parental permission, 6 left the program before they began the study. This left 55 students or 60% of those recruited, under the age of 18 year, who participated in the study. Twenty-two students between the ages 18 and 21 years were recruited for the study. These students were required to give consent and did not need parental permission. Of these 22, 15 or 68% participated and 6 or 32% refused consent.

Inclusionary criteria included students (a) who were 13 to 21 years of age (see Table 1 for participant demographics), (b) who read with 80% accuracy or higher the words on the Word-List Screening Assessment (see Appendix A), (c) whose parent or guardian gave permission, and (d) who provided assent to participate.

Table 1

Student Demographics

	<i>N</i>	<i>Percentage</i>
Students	70	
<i>Served in Sp Ed</i>	22	31.4%
<i>EBD</i>	3	13.6%
<i>LD</i>	19	86.3%
Racial or Ethnic Background		
<i>Caucasian</i>	62	88.6%
<i>African American</i>	5	7.1%
<i>Latino</i>	3	4.3%
	<i>Ages</i>	<i>Mean (SD)</i>
Ages of Students	13-19 years	16.5 (1.8)

Students who were 18 years or older were able to give consent and did not need parental permission. The Word-List Screener Assessment contained all of the words from the passage used in the phrase-level prosody audio recording assessment. Reading fewer than 80% of those words correctly would impede the student's ability to read the passage with enough accuracy to score phrase-level prosody. Exclusionary criteria included students (a) who were served in an English Language Learner (ELL) program, or (b) who scored 79% or lower on the Word-List Screening Assessment (see Appendix A).

Seventy students participated in the study. Of the 70 participants, 65 completed all assessments. Three of the participants were not given permission to be audio taped, but completed all other assessments. One student moved after completing the Word-List Screener Assessment and the comprehension assessment. Another student completed three of the assessments (i.e., Word-List Screener, comprehension assessment, phrase-reading assessment) but did not have time to take the reading rate assessment or the syntactic awareness assessment because of pressing high school assignments.

Setting

The study took place at two alternative schools in a rural area in the Southeast United States. Demographics of the rural regions averaged 92% white, 4% African American, and 4% Latino. These alternative schools are for-profit schools which contract with local school systems to provide an educational setting for middle and high school students who are unable to attend the public school, who are experiencing academic failure, or who are at risk of dropping out of school. Several reasons are identified as to why students enroll in this alternative program, including truancy, expulsion, long-term suspension, academic failure, or personal reasons (e.g., teen pregnancy).

Materials

Digital recorders were used to record students during the phrase-level prosody assessment. Copies of the following testing books and protocols were used (a) Woodcock-Johnson-III Tests of Achievement (WJ-III; Woodcock, McGrew, & Mather 2001); (b) Comprehensive Assessment of Spoken Language test (CASL; Carrow-Woolfolk, 1999); and (c) Gray Oral Reading Test-Fourth Edition (GORT-4; Wiederholt & Bryant, 2001). Additionally, the list of words from the National Assessment of Educational Progress (NAEP) passage, and the NAEP (Daane et al., 2005) reading passage were provided for each student being assessed.

Measures. Several assessments were used to measure various reading and language skills. These skills included passage reading rate, phrase-reading ability, syntactic awareness, and reading comprehension. Table 2 provides information about the instruments, the subtests used in each measure, and what skills were measured to answer each research question. Additionally, a word-list accuracy screener was used to ensure students who took part in the phrase reading assessment were able to read the words in the passage.

Passage reading rate. Passage reading rate was measured using the Gray Oral Reading Test-Fourth Edition (GORT-4; Wiederholt & Bryant, 2001). This assessment was designed to identify students who are significantly below expected oral reading levels as well as to measure the reading abilities of students for research purposes (Crompton, 2003). Reliability of the GORT-4 was measured across three methods (a) internal consistency reliability (i.e., content sampling), (b) test/retest reliability (i.e., time sampling), and (c) interscorer reliability (i.e., interscorer differences) for each subtest. Fluency reliability was .93, .93, .99, respectively for participants between the ages of 6 years to 18 years 11 months, and was normed on a sample population who were representative of the nation as a whole in relationship to geographical area,

Table 2

Research Questions & Instruments

Research Question	Instrument	Subtest/Reliability	What is Measured	Score
1 & 2	Adapted NAEP Oral Fluency Scale (Klauda & Guthrie, 2008)	Phrase-Reading Prosody/.70-.79	Phrasing-Reading Ability	Rating 1-4
	GORT-4 (Wiederholt & Bryant, 2001)	Rate/ >.90	Passage- Reading Rate	S. Score.
	WJIII (Mather & Woodcock, 2001)	Passage Comprehension/ .83	Reading Comprehension	W Score
	CASL (Carrow-Woolfolk, 1999)	Grammaticality judgment/ .93	Syntactic Awareness	S. Score
3	Adapted NAEP Oral Fluency Scale (Klauda & Guthrie, 2008)	Phrase-Reading Prosody/.70-.79	Phrase-Reading Ability	Rating 1-4
	CASL (Carrow-Woolfolk, 1999)	Grammaticality judgment/ .93	Syntactic Awareness	S. Score
	WJIII (Mather & Woodcock, 2001)	Passage Comprehension/ .83	Reading Comprehension	W Score
4	Adapted NAEP Oral Fluency Scale (Klauda & Guthrie, 2008)	Phrase-Reading Prosody/.70-.79	Phrase-level Prosody	Rating 1-4
	GORT-4 (Wiederholt & Bryant, 2001)	Rate/ >.90	Passage-Reading Rate	S. Score
	WJIII (Mather & Woodcock, 2001)	Passage Comprehension/ .83	Reading comprehension	W Score

Note. **Research Questions:** 1 = Is there a significant relationship, as demonstrated through correlation, among syntactic awareness, passage-reading rate, phrase-reading ability, and reading comprehension for adolescent students in an alternative setting? 2 = How much of the variance in reading comprehension do syntactic awareness, passage-reading rate, and phrase-reading ability account for among a sample of adolescent students in an alternative setting? 3 = Does phrase-reading ability mediate the relationship between syntactic awareness and reading comprehension with adolescent students in an alternative setting? 4 = Does phrase-reading ability mediate the relationship between passage-reading rate and reading comprehension with adolescent students in an alternative setting?

Instruments: GORT-4 = Grey Oral Reading Test-Fourth Edition, NAEP Oral Fluency Scale = National Assessment of Educational Progress Oral Reading Fluency Scale, WJIII = Woodcock-Johnson III, CASL = Comprehensive Assessment of Spoken Language.

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gender, race, ethnicity, family income, and educational attainment of parents (Crumpton, 2003). The student read a passage aloud while the examiner measured rate (i.e., number of seconds) and accuracy (i.e. number of errors). The rate and accuracy measures were combined for the fluency score. The basal rule indicated that if a fluency score of 9 is not reached, the previous story should be assessed. The ceiling rule indicated that assessments should continue until a score of 2 or below is reached. Standard scores, with a mean of 10 and a standard deviation of 3, were used in statistical analyses to answer research questions 1, 2, and 4 (see Table 2).

Phrase-reading ability. Phrase-reading ability, as measured by phrase-level prosody, was assessed using the same method as that used by Klauda and Guthrie (2008). They adapted the National Assessment of Educational Performance (NAEP) Oral Reading Fluency Scale (Pinnell et al., 1995) by separating phrase-level prosody from other aspects of prosody measurement (i.e., passage expressiveness, word expressiveness, pace, smoothness). The participants read aloud a 196-word passage (see Appendix B; Daane et al., 2005) and were digitally recorded. Later, the audio recordings were analyzed using the Adapted NAEP Oral Reading Fluency Scale (Klaudia & Guthrie, 2008; Pinnell et al., 1995) (see Appendix C). According to the Adapted NAEP Oral Reading Fluency Scale (Klaudia & Guthrie, 2008; Pinnell et al., 1995), participants are given a score between 1 and 4.

Students receive a 1 if they read primarily word-by-word, a 2 if they read primarily in two-word phrases, a 3 if they read primarily in three- or four-word phrases or in run-on sentences, or a 4 if they read primarily in larger, meaningful units.(Klauda & Guthrie, 2008, p. 314)

There was a correlation of .70 across three judges using the Adapted NAEP Oral Reading Fluency Scale during their study.

The passage used in the Daane et al. (2005) study was appropriate for this study for several reasons. First, the passage contains simple vocabulary with which participants reading at or above the fourth grade level should be familiar. The vocabulary may be below the level of some readers; however, this will not interfere with the assessment. According to Adams (1990), if the focus of assessment is on syntactic features, vocabulary in the passage should be familiar to the reader. For this study, it was important to have a reading passage with vocabulary that would not interfere with the measurement of phrase-level prosody. Second, the passage contained a variety of sentence types including 12 simple, 6 compound, and 1 complex sentence. When measuring phrasing ability, it is important to have syntactically complex sentences (Miller & Schwanenflugel, 2006; Schwanenflugel et al., 2004). The researcher used the Adapted NAEP Oral Reading Fluency Scale's 1 to 4 rating to conduct statistical analyses for questions 1, 2, 3, and 4 (see Table 2)..

Word-list accuracy screener. Before conducting the phrase-level prosody assessment, research assistants screened participants to assess whether or not the students could read at least 80% of the words in the passage correctly. Accuracy was measured as participants read a list of 124 words (74 words in the passage are repeated: see Appendix A), which included every word contained in the passage (Klauda & Guthrie, 2008). Researchers suggest that the ability to read a large percentage (i.e., 90%) of the words in a passage correctly is necessary for fluency (Hasbrouck & Tindal, 2006; Raskinski, 2004). So as not to eliminate an undue number of participants the criteria for passing was set at 80% rather than 90%. As students read, research assistants marked correct/incorrect response on a data collection sheet (see Appendix D). The accuracy assessment, measured as percentage of words read accurately, was used to screen students for the phrase-level prosody assessment. Students who read 79% or fewer of the words

correctly did not participate in the phrase-level prosody assessment. Students who read 80% or more of the words correctly were allowed to take part in the prosody assessment.

Syntactic awareness. Syntactic awareness was assessed using the Grammaticality Judgment subtest of the Comprehensive Assessment of Spoken Language test (CASL; Carrow-Woolfolk, 1999). The CASL was designed to assess oral language skills, including syntactic skills, across several language areas. The assessment is oral and does not require the participant to read or to write, thus removing the possibility that poor reading or writing skills affected the results (Snyder, 2003). The Grammaticality Judgment subtest is the core subtest of the CASL for assessing syntactic awareness and was standardized on students between the ages of 7 and 21. This subtest assesses the individual's ability to recognize whether a sentence is syntactically correct or not, and if not, to change the sentence to make it correct. There is evidence that poor readers, as compared to good readers, are less able to use their knowledge of syntactic awareness to correct syntactic errors (Bentin et al., 1990). Additionally, there is evidence that students with reading disabilities, as compared to students without reading disabilities, are less able to make correct judgments of syntactic errors (Bentin et al., 1990). Test/retest reliability for Grammaticality Judgment test was 0.93. Basal rules indicated that maximum points must be earned for 3 consecutive items. Ceiling rules indicated that the assessment should be discontinued after maximum points were not earned for 5 consecutive items. Standard scores, with a mean of 101 and a standard deviation of 14.2, were used to answer research questions 1, 2, and 3 (see Table 2).

Reading comprehension. Reading comprehension was measured using the Passage Comprehension subtest of the Woodcock-Johnson-III Tests of Achievement (WJ-III: Woodcock, et al., 2001). The Passage Comprehension subtest of the WJ-III uses a cloze format, which

requires the participant to read a passage and then to pick the word that makes sense in the passage. The difficulty level rises when increments are made in the length of the passage, the level of vocabulary, and syntactic and semantic complexity. The reliability of the Passage Comprehension subtest was .83 for participants between the ages of 5 to 19 years (Cizek, 2003). The WJ-III has been standardized on a nationally representative population including all ages levels and controlling for bias due to race (Cizek, 2003). The assessment began with Item 14 (i.e., the suggested level for 3rd grader) since many of the students in this alternative school setting were likely several grade levels below expectations. The basal rules indicate that basal has been met when the six lowest-numbered items are correct. The ceiling rules indicate that the assessment should be discontinued after 6 consecutive numbered items are answered incorrectly. The W scores (Huck, 2004) from the Passage Comprehension subtest were used to answer research questions 1, 2, 3, and 4 (see Table 2). Students' raw scores were converted to W scores using the WJ-III NU Compuscore and Profiles Program (Schrank & Woodcock, 2007). . "The W scale for each test is centered on a value of 500, which is set to approximate the average performance of a typical child age 10–0" (Jaffe, 2009, p. 5). The range of W scores is typically 430 to 550 (Jaffe).

Data Collection

Data collection for the study included the assessment training for the research assistants, the assessment process, and entry of the data from the assessments.

Screening and assessment processes. Initially, the school principal sent home parent/guardian consent letters with any student not served in an English Language Learner (ELL) program and below the age of 18. Once the researcher received parental/guardian consent, she met with the student to discuss participation and assent. After reading the assent

form aloud, she invited the student to participate. Students who were 18 years or older received a consent form instead of an assent form. After the researcher gained assent/consent she placed the student's name on the data sheet (see Appendix E). Before administering assessments, the researcher asked each student to provide his or her grade level and date of birth, which were recorded on the assessment protocols. The researcher provided each student with a folder that contained all necessary protocols. The researcher assigned each folder a random four-digit number code and recorded this number code on all protocols within the folder. The researcher recorded the four-digit number code next to the student's name on the data sheet (see Appendix E). The lead researcher kept the list of potential participants and the data sheet in a locked box. Once students completed the assessments, the lead researcher provided the principal with the data sheet and asked her to complete the requested student demographics. The principal removed the student names, and gave the de-identified list to the lead researcher for analyses (i.e., means, ranges, standard deviations). The lead research shredded any list that contained student names at the conclusion of the assessment period.

The lead researcher or research assistant conducted assessments during school hours. The lead researcher or a research assistant conducted fidelity assessments (see Appendices F, G, H, I). Most assessments were conducted in one sitting except for a few students who had to continue on another day because of time constraints. First the examiners gave the Word-List Screening Assessment (see Appendix A). If the student read at least 99 words (80%) correctly from the Word-List Screening Assessment, the researcher conducted the remaining assessments. The assessments included the Passage Comprehension Subtest of the WJ-III, the GORT-4, the Grammaticality Judgment subtest of the CASL, and the phrase-level prosody audio recording

assessment. The measures were administered in a counterbalanced manner by having each research assistant conduct assessments in a different order.

Data scoring and entry. The researchers administered, scored and checked for accuracy on the same day on site with the exception of the Adapted NAEP Oral Reading Fluency Scale assessment. When only one researcher was present, the assessment protocols were checked for accuracy on a subsequent day. Then, all data were entered into an Excel file directly from the assessment protocols by the lead researcher. The digital recordings were transferred to a password-protected computer. The Adapted NAEP Oral Reading Fluency Scale assessments were scored off-site, after the assessment phase was completed. Columns in the database included (a) student identification number (i.e., random 4-digit number); (b) date tested; (c) number and percent of words read correctly from the Word-List Accuracy Screener; (d) raw scores from the CASL Grammaticality Judgment subtest; (e) raw scores from the GORT-4 Rate subtest; (f) raw scores from the GORT-4 Accuracy subtest; (g) combined raw scores from the GORT-4 Rate and Accuracy subtests; (h) raw scores from the GORT-4 Oral Reading Quotient (i) w-scores from the WJIII Passage Comprehension subtest; (j) rating scores (1-4) from the Adapted NAEP Oral Reading Fluency Scale; (k) date of birth; (l) special education status; (m) type of disability; (n) race or ethnicity; and (o) age in months. A research assistant checked all data entries for accuracy.

Training. Several different training sessions took place. The four potential research assistances had all passed CITI training prior to the implementation of this study. Two of the individuals had to take a refresher training to bring their status current. The lead researcher instructed each research-assistant trainee on the five assessment protocols including (a) Word-

List Accuracy Screening, (b) CASL Grammaticality Judgment, (c) the GORT-4, (d) WJIII Passage Comprehension, and (e) audio-recording of the passage.

Aside from providing an overview of each assessment instrument, the training sessions provided opportunities (a) to observe the lead researcher administering assessments, (b) to administer the assessments on the other trainees using scripts developed by the lead researcher, which reflected errors students may make, and (c) to score protocols using data provided by the lead researcher. After trainees exhibited competence in administering the assessments, the lead researcher measured fidelity, using checklists developed for this study (see Appendices F, G, H, I), while trainees implemented the assessments with a peer trainee. The trainees were assessed on inter-observer reliability (IOR) for the word-list screener, the GORT-4, the CASL, and the Passage Comprehension subtest of the WJ-III. The lead researcher made recordings with errors of the material students would be reading. Research assistants marked errors as they were listening to the recordings. Their scoring was then compared to the score sheet, which the lead researcher had made to match the recording errors. To pass the training, the research assistants conducted each assessment with 100% fidelity over three consecutive trials. At this point two trainees had dropped out of the study due to other demands. The three remaining trainees now assumed the role of research assistant. The lead researcher conducted the final conditions of training at the study site. First they observed the lead researcher conducting an assessment on-site with a participant. Next they conducted an assessment with a participant while the researcher conducted a fidelity measure. All fidelity results conducted with initial participant were 100%

After all data had been collected, the lead researcher enlisted two of the research assistants to rate the recorded oral reading passages according to phrase-reading ability using the Adapted NAEP Oral Reading Fluency Scale (see Appendix C; Klauda & Guthrie, 2008; Pinnell

et al., 1995). The training and implementation of this assessment took place off-site. The training goal was for the research assistants to be able to categorize student recordings into 1 of 4 levels with 100% accuracy over 3 sets of recordings that included all four levels. A rating of 1 indicated reading primarily word-by-word. A rating of 2 indicated reading primarily in two-word phrases. A rating of 3 indicated reading in three- or four-word phrases and may have included run-on sentences. A rating of 4 indicated reading “primarily in larger meaningful units” (Klauda & Guthrie, 2008, p. 314). The lead researcher created four models, corresponding to the four rating criteria, for training purposes. The lead researcher constructed written passages that included spaces between the words and or phrases that would allow the reader to reflect oral characteristics emulate of the four levels. An adolescent boy was recruited to record the passages. The selections included recordings that appeared to be extremely well phrased, recordings that indicated word by word reading, and several recordings that were in between extremely well-phrased reading and word by word reading. The lead researcher identified each recording as one of the four levels. The training recordings were validated by a communications professor. The lead researcher provided the professor with a description of the four levels of prosody on the Adapted NAEP Oral Reading Fluency Scale (Klauda & Guthrie, 2008). After a short training the professor was given 12 recordings to rate. The interrater reliability was 90% between the lead researcher and the communications professor.

The training process began with the research assistants listening to one recording from each category. They discussed the characteristics of each category as a group with the lead researcher. Next, the research assistants listened to four recordings and independently rated them. If the ratings did not match the expected level, the lead researcher discussed with the assistants why and they reviewed the characteristics of each level. If the rating did match, the

assistant continued rating another set of recordings. This continued until the assistants were able to rate the recordings with 100% accuracy over three sets of recordings according to requirements set by the lead researcher.

Designs, Data Analyses, and Power Analysis

The first research question (i.e., is there a significant relationship, as demonstrated through correlation, among phrase-reading ability, syntactic awareness, passage reading rate, and reading comprehension for adolescent readers in an alternative setting?) concerned whether a relationship existed among the four variables. To test the hypothesis, pairwise correlation analysis was used to construct an intercorrelation matrix of the four variables (see Table 3). The formula depicting this analysis is $r_{xy} = \frac{SS_{xy}}{SS_x SS_y}$. Previous research with fifth graders indicated that the variables are correlated with each other (Klauda & Guthrie, 2008; Mokhtari & Thompson, 2006).

The second research question (i.e., how much of the variance in reading comprehension do phrase-reading ability, syntactic awareness, and passage reading rate account for among a sample of adolescent readers in an alternative setting?) concerns the relation among phrase-reading ability, syntactic awareness, and passage reading rate with reading comprehension. Hierarchical regression (Pedhazur, 1997) was used to investigate how much variance in the dependent variable (i.e., reading comprehension) was accounted for by the three independent variables (i.e., phrase-reading ability, syntactic awareness, passage reading rate) (see Table 3). The formula depicting this analysis was $Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3$. The following variables were represented in the formula: Y = reading comprehension; X_1 = syntactic awareness; X_2 = passage reading rate; X_3 = phrase-reading ability. Previous research with fifth graders indicated

Table 3

Statistical Design, Instruments, and Formulas

Design	Research Question	Instrument	Formula	Variables
Correlation	1	a. GORT-4 b. Adapted NAEP Oral Fluency Scale c. CASL d. Woodcock-Johnson III	$r_{xy} = \frac{SS_{xy}}{SS_x SS_y}$	Passage-Reading Rate Phrase-Reading Ability Syntactic Awareness Reading Comprehension
Hierarchical Regression	2	a. Woodcock-Johnson III b. CASL c. GORT-4 d. Adapted NAEP Oral Fluency Scale	$Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3$	Y = Reading Comprehension X ₁ = Syntactic Awareness X ₂ = Passage- Reading Rate X ₃ = Phrase-Reading Ability
Testing Mediation with Regression Analysis	3	a. Woodcock-Johnson III b. CASL c. Adapted NAEP Oral Fluency Scale	$Y = B_0 + BX$ $Y = B_0 + BM$ $M = B_0 + BX$ $Y = B_0 + B_1 X + B_2 M$	Y = Reading Comprehension X = Syntactic Awareness M = Phrase-Reading Ability
Testing Mediation with Regression Analysis	4	a. Woodcock-Johnson III b. GORT-4 c. Adapted NAEP Oral Fluency Scale	$Y = B_0 + BX$ $Y = B_0 + BM$ $M = B_0 + BX$ $Y = B_0 + B_1 X + B_2 M$	Y = Reading Comprehension X = Passage-Reading Rate M = Phrase-Reading Ability

Note. Research questions: 1 = Is there a significant relationship, as demonstrated through correlation, among syntactic awareness, passage-reading rate, phrase-reading ability, and reading comprehension for readers in an alternative setting? 2 = How much of the variance in reading comprehension do syntactic awareness, passage-reading rate, and phrase-reading ability account for among a sample of students in an alternative setting? 3 = Does phrase-reading ability mediate the relationship between syntactic awareness and reading comprehension with adolescent students in an alternative setting? 4 = Does phrase-reading ability mediate the relationship between passage- reading rate and reading comprehension with adolescent students in an alternative setting?

Instruments: GORT-4 = Grey Oral Reading Test-Fourth Edition, NAEP Oral Fluency Scale= National Assessment of Educational Progress Oral Fluency Scale, WJIII = Woodcock-Johnson III, CASL = Comprehensive Assessment of Spoken Language.

that the independent variables were predictive of reading comprehension (Klauda & Guthrie, 2008).

The third and fourth research questions (i.e., does phrase-reading ability mediate the relationship between syntactic awareness and reading comprehension with adolescent readers in an alternative setting?; does phrasing ability mediate the relationship between passage reading rate and reading comprehension with adolescent readers in an alternative setting?) utilized a method of mediation analysis introduced by Baron and Kenny (1986). The mediation model uses regression analysis to determine if a middle variable supplies the mechanism by which an independent variable influences a dependent variable. This method of mediation analysis has been used in over 9,000 published research studies (Gelfand, Mensinger, & Tenhave, 2009). This model is appropriate when the purpose of the research is "...to explain how one variable affects another" (Gelfand et al., 2009, p. 153). Mediation regression provided a means to investigate whether phrase-reading ability was mediating (i.e., providing the mechanism) the relationship between syntactic awareness and reading comprehension and between passage reading rate and reading comprehension.

The four-step model established a baseline level of the beta coefficient for each identified relationship using simple regression (see Figure 1). First, the independent variable (X) is regressed on the outcome variable (Y). Second, the independent variable is regressed on the mediation variable (M). Third, the mediation variable is regressed on the dependent variable (Y). To continue the analysis all relationships must be significant; previous research indicates these relationships should be significant (Klauda & Guthrie, 2008; Mokhtari & Thompson, 2006). After the baseline beta coefficient level for each relationship is established and all relationships are found to be significant, the fourth step is to place the mediator variable (M) and the

independent variable (X) as predictors of the dependent variable (Y). If the effect of the independent variable (X) on the dependent variable (Y) is less after including the mediation variable (M) then it is suggested mediation has occurred. If the effect of the independent variable (X) on the dependent variable (Y) is no longer significant, it is suggested that full mediation has occurred (Baron & Kenny, 1986). To assess possible reciprocal effects, the dependent variable (Y) can be switched with the mediator variable (M) in the regression analysis. If the results look similar to the original mediation analysis, a reciprocal relationship may exist.

The third research question (i.e., does phrasing ability mediate the relationship between syntactic awareness and reading comprehension with adolescent readers in an alternative setting?) asked whether phrase-level prosody mediates the relationship between syntactic awareness and reading comprehension (see Figure 1). Mediation effects were assessed using the four-step statistical model of mediation regression (Baron & Kenny, 1986; see Table 3). As explained in the preceding paragraph, simple regression was used to determine if syntactic awareness (X) predicted reading comprehension (Y); if syntactic awareness (X) predicted phrase-reading ability (M); and if phrase-reading ability (M) predicted reading comprehension (Y). The first three steps of the mediation analysis were conducted using simple regression: (a) syntactic awareness predicting reading comprehension ($Y = B_0 + BX$), (b) syntactic awareness predicting phrase-reading ability ($M = B_0 + BX$), and (c) phrase-reading ability predicting reading comprehension ($Y = B_0 + BM$). The fourth step was to assess the effect of the mediator variable on the relationship between the independent variable and the outcome variable. This was accomplished by adding the mediator variable (M) (i.e., phrase-reading ability) to the regression model containing the predictor variable (X) (i.e., syntactic awareness) and the outcome variable (Y) (i.e., reading comprehension) ($Y = B_0 + B_1X + B_2M$). After the addition of the mediator

variable, if the strength of the relationship between X and Y, as measured by the beta coefficient, was lower or no longer significant, then this suggests that the mediator variable was providing a mechanism for the independent variable to influence the dependent variable (Frazier, Tix, & Barron, 2004; Judd & Kenny, 1981). The hypothesis was that phrasing ability would mediate the relationship between syntactic awareness and reading comprehension (see Figure 1; Bentin et al., 1990; Klauda & Guthrie, 2008; Koriat et al., 2002; Mokhtari & Thompson, 2006). For instance, researchers suggested that prosodic phrasing reflects the reader's ability to extract the syntactic structure from the sentence and group words into meaningful phrases (a group of words that function together as a unit) (Koriat et al., 2002). The ability to transform a group of words into one unit or phrase provides a means for holding multiple words in short-term memory while analyzing semantic meaning (Koriat et al., 2002). A final step was conducted by switching the dependent variable with the moderator variable to test for reciprocal effects.

The fourth research question (i.e., does phrase-reading ability mediate the relationship between passage reading rate and reading comprehension with adolescent readers in an alternative setting?) asked whether phrase-reading ability mediated the relationship between passage reading rate and reading comprehension (see Figure 1). Mediation effects were assessed using a statistical model of mediation regression as described for the third research question (Baron & Kenny, 1986). The statistical steps used to answer the third research question were used to answer this question with one change. Passage reading rate took the place of syntactic awareness in each step. The formula depicting this analysis is $Y = B_0 + B_1X + B_2M$. The hypothesis states that phrase-reading ability will mediate the relation between passage reading rate and reading comprehension.

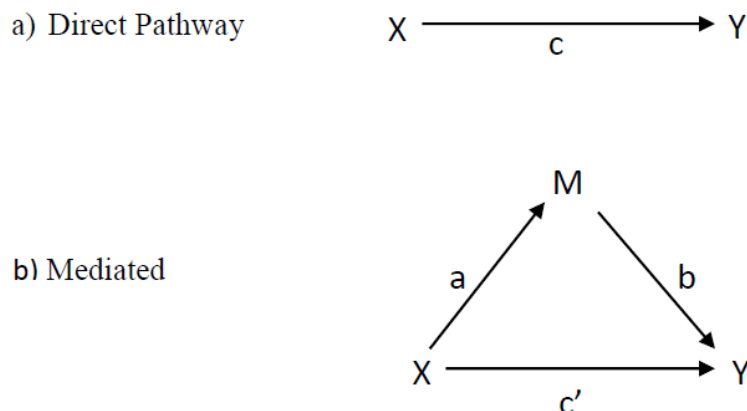


Figure 1. Graphic depiction of mediation model for syntactic awareness, reading rate, phrase-reading ability, and comprehension (Baron & Kenney, 1996). X = independent variable; Y = dependent variable; M = mediator variable. X = syntactic awareness in research question two and reading rate in research question 3; Y = reading comprehension; M = phrase-reading ability; a, b, c, c' = regression coefficients. First determine if c is significant, and then add the mediator variable (M). If b is significant and c' is no longer significant after adding the mediator variable (M) then the finding supports full mediation. In Research Question 3 and in Research Question 4 M = Phrase-reading ability and Y = Reading Comprehension. In Research Question 3, X = Reading Rate and in Research Question 4, X = Syntactic Awareness.

This relation was consistent with previous research findings that suggested passage reading rate and comprehension are linked not only because they both involve processing of individual words but also because they involve the processing of phrases (Kuhn & Stahl, 2003). This relationship also was consistent with the precepts of the theory of automaticity (LaBerge & Samuels, 1974), which state that as reading rate improves cognitive resources can be allocated to other efforts, such as syntactic phrasing (Benjamin & Schwanenflugel, 2010). Perfetti (1985) suggested that as lower level skills, such as decoding and word reading, become more automatic then limited cognitive resources can focus on development of automatic phrase reading. Logan (1997) suggested in the instance theory that each level of the reading process develops

automaticity (i.e., letter, words, phrase, ideas), which allows cognitive resources to be directed to higher levels of processes such as inferences, integration of prior knowledge, and other processes related to comprehension (Hudson et al., 2009). From these theoretical perspectives, it was reasonable to assume that phrase-reading ability would mediate the relation between reading rate and reading comprehension. A final step was conducted by switching the dependent variable with the moderator variable to test for reciprocal effects.

An a priori power analysis was conducted to determine the number of participants needed for there to be sufficient power in the design of the study to detect meaningful differences (Huck, 2004). The power analysis was conducted with the use of G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007), which is a power analysis program for statistical tests, including multiple correlations and regression. A priori power analyses provide sample sizes for specified effect sizes, alpha levels, and power values (Huck, 2004). For this study, three predictor variables (i.e., passage reading rate, syntactic awareness, phrase-reading ability) and one outcome variable (i.e., reading comprehension) were identified. The effect sizes of the three predictor variables were calculated by G*Power 3 using the correlation coefficients from a similar previous study (Mokhtari & Thompson, 2006). Along with effect sizes of the three predictor variables (i.e., .52), the alpha level of .05 and the power level of .95 were used to calculate the suggested sample size. Statistical power should be at least .80 to detect meaningful differences (Cohen, 1992). Analyses indicated that for power level of .95 the total sample size should be at least 38. Analyses indicated that for power level of .80 the total sample size should be at least 26. Several factors influenced the goal of having a greater number of participants in the study (i.e., 70 students): (a) students may refuse to participate once data collection has started; (b) there may be a significant number of students who do not read well enough to pass the screening for the

Adapted NAEP Oral Reading Fluency Scale assessment, and therefore will not participate in the prosody assessment, which means analyses of their data cannot occur for research questions 2 or 3; and (c) the population of participants in prior studies (i.e., fifth graders in a typical school setting) (Klauda & Guthrie, 2008) is not similar to the population of students in this study, which included adolescent students with a diversity of ages, of disabilities, and of ability levels.

Fidelity. To help ensure accurate administration of the assessment protocols, fidelity of implementation was assessed for 21% of all assessment sessions by trained observers using checklists (see Appendices F, G, H, I, J). The fidelity scores include the following: (a) Passage Comprehension subtest of the WJIII (100%), (b) GORT-4 (96.5%), (c) Grammaticality Judgment subtest of the CASL (97.25%), (d) screening word-list assessment (99.4%), and (e) recordings of the oral reading NAEP passage (100%). All fidelity scores were calculated by dividing the number of examiner behaviors that were correctly performed by the total number of expected examiner behaviors and then multiplied by 100.

Interobserver agreement. Interobserver agreement (IOA) was collected on 21% or 15 of all student assessment sessions by trained observers using checklists (see Appendices F, G, H, I). The IOA scores include the following: (a) Passage Comprehension subtest of the WJIII (100%), (b) GORT-4 (84%), (c) Grammaticality Judgment subtest of the CASL (99%), and (d) screening word-list assessment (100%). All Interobserver agreement scores were calculated by dividing the number of agreements by the number of agreements plus non-agreements and then multiplying by 100.

Interobserver agreement (IOA) was conducted on 100% of all permanent product assessments, which includes all protocol forms, all data computer entry, and all student recordings. The protocol forms were filled out each day by the person assessing the student, and

then checked by another person, either the researcher or research assistant. The IOA scores were 100% for protocol forms and data entry. The process for scoring and conducting IOA on the student recordings was more complex. After one person (i.e., researcher or research assistant) rated a recording, another person (i.e., researcher or research assistant) rated the same recording. If the two scores were the same, the rating was accepted. If the scores were not the same, a third research assistant scored the recording. If two of the three ratings were the same, that rating was accepted. If there had been no agreement after the second rating additional training would have been carried out and the recording assessed again (see Appendix K); however, all recordings had agreement by the second recording. Interobserver agreement on the first recording was 78.5% and 100% on the second recording. The formula is the number of agreements divided by the number of agreements plus disagreements and multiplied by 100. During the first recording, 51 of the 65 recordings (78.5%) had agreement. Of the 14 recordings that were not in agreement (a) 2 or 14.3% were between ratings 1 and 2, (b) 5 or 37.3% were between ratings 2 and 3; and (c) 7 or 50% were between ratings 3 and 4.

Results

Seventy adolescent readers in an alternative setting participated in this research designed to answer several questions related to reading comprehension and to various subcomponents of reading which contribute to reading comprehension. All participants completed the word-list screener and the WJ-III Passage Comprehension subtest; 68 students completed the Gort-III and the CASL- Gramaticallity Subtest; 65 students completed the oral reading of the NAEP Passage. SPSS is designed to exclude missing scores if they will be affecting the outcome. For this reason all student scores (N = 70) were entered into SPSS. The first hypothesis posited that passage reading rate, syntactic awareness, phrase-reading ability, and reading comprehension are

significantly and positively correlated. The second hypothesis posited that language based skills (i.e., syntactic awareness, phrase-reading ability) account for more of the explained variance in reading comprehension than passage reading rate. The third hypothesis proposed that phrase-reading ability provides a mechanism or at least partially mediates how syntactic awareness affects reading comprehension. The fourth hypothesis proposed that phrase-reading ability provides a mechanism or at least partially mediates how passage reading rate affects reading comprehension. All statistical analyses for this study were conducted using the computer program, SPSS-20.0 (IBM, 2011).

Research Question 1

The first research question asked whether there was a significant correlation among passage reading rate, syntactic awareness phrase-reading ability, and reading comprehension for adolescent students in an alternative setting. Analyses of the data indicated significant positive relations among all measures (see Table 4). There was a positive correlation between reading comprehension and passage reading rate ($r = .461, n = 70, p < .01$), reading comprehension and syntactic awareness ($r = .461, n = 68, p < .01$), and reading comprehension and phrase-reading ability ($r = .569, n = 65, p < .01$). There was a positive correlation between passage-reading rate, syntactic awareness ($r = .599, n = 68, p < .01$), and passage reading rate, phrase-reading ability ($r = .699, n = 68, p < .01$). There was also a positive correlation between syntactic awareness and phrase-reading ability ($r = .638, n = 65, p < .01$).

Table 4

Summary of Correlations, Means, and Standard Deviations

Variable/Measurement Instrument	1	2	3	4	M	SD	N
1. Reading Comprehension/ PC-WJIII	1				512.03	11.543	70
2. Passage-Reading Rate/FS-GORT-4	.461**	1			6.66	3.752	68
3. Syntactic Awareness/GJ-CASL	.474**	.559**	1		81.09	13.830	68
4. Phrase-Reading ability/A- NAEP	.569**	.699**	.638**	1	2.74	0.906	65

Note. PC-WJIII = Passage Comprehension Subject of the WJ-III (W-Scores); FS-GORT-4 = Fluency Score of the GORT-4 (Standard Scores); GJ-CASL = Grammaticality Judgment Subtest of the CASL (Standard Scores); A-NAEP = Adapted NAEP Oral Fluency Scale (Scores 1-4).

**p < .01.

Research Question 2

The second research question concerned the relative relationship among passage reading rate, phrase-reading ability, syntactic awareness, and reading comprehension. Hierarchical regression (Pedhazer, 1997) was used to assess the contribution of passage reading rate, syntactic awareness, and phrase-reading ability to reading comprehension. In each of the three models reading comprehension was entered as the dependent variable. In the first model, passage-reading rate was entered as the independent variable and accounted for 20.6% ($R^2 = .206$) of the variance for reading comprehension. The first model was a significant predictor of reading comprehension $F(1, 68) = 17.678, p < .001$. In the second model, passage-reading rate and syntactic awareness were added as independent variables. This model was a significant predictor of reading comprehension $F(1, 67) = 12.54, p < .001$ and accounted for an additional 6.6% of the variance for a total of 27.2%. Both passage reading rate ($\beta = .281, p < .05$) and syntactic awareness ($\beta = .310, p < .05$) continued to be significant predictors of reading comprehension. In the third model, passage reading rate, syntactic awareness, and phrase-reading ability were entered as independent variables. This model was a significant predictor of reading comprehension $F(1, 66) = 10.899, p < .001$ and accounted for an additional 5.9% of the variance for a total of 33.1%. Neither passage reading rate ($\beta = .111, p = \text{n.s.}$) nor syntactic awareness ($\beta = .186, p = \text{n.s.}$) were significant predictors of reading comprehension after phrase-reading ability ($\beta = .356, p < .05$) was added to the model (see Table 5).

Table 5

Hierarchical Regression: Variables Contributing to Variance of Reading Comprehension

Independent Variables/Measures	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Passage-Reading Rate /PC=WJIII	1.418	.337	.454**	.877	.393	.281*	.348	.438	.111
Syntactic Awareness /GJ-CASL				.263	.106	.310*	.157	.112	.186
Phrase-Reading Ability / A-NAEP							4.706	1.951	.356*
R^2 (R^2 Change)		.206 (.206)			.272 (.066)			.331 (.059)	
F for R^2 Change		17.678**			6.080*			5.815*	

Note. FS-GORT-4 = Fluency Score of the GORT-4 (Standard Scores); GJ-CASL= Grammaticality Judgment Subtest of the CASL (Standard Scores); A-NAEP = Adapted NAEP Oral Fluency Scale (Scores 1-4); Dependent Variable: Reading Comprehension/PC-WJIII = Passage Comprehension Subject of the WJ-III (W-Scores).

* $p < .05$. ** $p < .01$.

Research Question 3

The third research question asked whether phrase-reading ability mediates the relationship between syntactic awareness and reading comprehension (see Figure 1). Mediation effects were assessed using a four-step statistical model of mediation regression (Baron & Kenny, 1986). Simple regression analyses indicated that (a) syntactic awareness predicted reading comprehension ($\beta = .474, t = 4.372, p < .01$), (b) syntactic awareness predicted phrase-reading ability ($\beta = .638, t = 6.518, p < .000$), and (c) phrase-reading ability predicted reading comprehension ($\beta = .567, t = 5.498, p < .01$). The next step was to determine if syntactic awareness would continue to be a significant predictor of reading comprehension after phrase-reading ability was added as a dependent variable. Once phrase-reading ability was added to the model, the standardized beta weight (β) for syntactic awareness dropped ($\beta = .187, t = 1.383, p = .172$) and was no longer a significant predictor of reading comprehension at the alpha level of .05. Phrase-reading ability strongly predicted reading comprehension ($\beta = .446, t = 3.307, p < .01$). This indicates according to Baron and Kenny (1986) that phrase-reading ability is mediating the relation between syntactic awareness and comprehension (see Table 6).

Research Question 4

The fourth research question asked whether phrase-reading ability mediates the relationship between passage reading rate and reading comprehension (see Figure 1). Mediation effects were assessed using a statistical model of mediation regression (Baron & Kenny, 1986). Simple regression analyses indicated that (a) passage reading rate predicted reading comprehension ($\beta = .461, t = 4.218, p < .01$), (b) passage reading rate predicted phrase-reading ability ($\beta = .699, t = 7.69, p < .01$), and (c) phrase-reading ability predicted reading comprehension ($\beta = .569, t = 5.498, p < .01$). The next step was to determine if passage reading rate would continue

Table 6

Mediation Effects of Phrase-Reading Ability between Syntactic Awareness and Reading Comprehension

Variables	Mediation Regression Steps			
	Step 1 $Y = B_0 + BX$	Step 2 $M = B_0 + BX$	Step 3 $Y = B_0 + BM$	Step 4 $Y = B_0 + B_1X + B_2M$
Syntactic Awareness (β)	.474**	.638**		.187
Phrase-Reading Ability (β)			.567**	.446**

Note. Y = Reading Comprehension; X = Syntactic Awareness; M = Phrase-Reading Ability.
** $p < .01$.

Table 7

Mediation Effects of Phrase-Reading Ability between Passage-Reading Rate and Reading Comprehension

Variables	Mediation Regression Steps			
	Step 1 $Y = B_0 + BX$	Step 2 $M = B_0 + BX$	Step 3 $Y = B_0 + BM$	Step 4 $Y = B_0 + B_1X + B_2M$
Passage-Reading Rate (β)	.461**	.699**		.100
Phrase-Reading Ability (β)			.569**	.446**

Note. Y = Reading Comprehension; X = Syntactic Awareness; M = Phrase-Reading Ability.
** $p < .01$.

to be a significant predictor of reading comprehension after phrase-reading ability was added as a dependent variable. Once phrase-reading ability was added to the model, the standardized beta weight (β) for passage reading rate dropped ($\beta = -.100, t = -.677, p = .501$) and was no longer a significant predictor of reading comprehension at the alpha level of .05. Phrase-reading ability significantly predicted reading comprehension ($\beta = .496, t = 3.373, p < .01$). This indicates according to Baron and Kenny (1986) that phrase-reading ability is mediating the relation between passage reading rate and comprehension (see Table 7).

Discussion

Results support the hypotheses that phrase-reading ability, syntactic awareness, passage reading rate, and reading comprehension are significantly, positively correlated and that language-related variables (i.e., phrasing ability, syntactic awareness) account for additional variance in reading comprehension beyond that of passage reading rate with adolescent readers in an alternative school. These findings support previous research, which found that as students move into adolescence, language-related variables such as syntactic awareness and phrase-reading ability increase in relation to reading comprehension whereas passage reading rate decreases in relation to reading comprehension (Edmonds et al., 2009; Gough et al., 1996; Wexler et al., 2008). The results of this study indicate that the same relationship holds true for adolescent students in alternative schools. This is not to suggest that reading rate is unimportant, but rather it is a stepping stone on the path to reading comprehension for adolescent students in alternative schools

These results also support the hypothesis that phrase-reading ability serves as mediator between syntactic awareness and reading comprehension. According to the structural precedence hypothesis, being able to parse a sentence into meaningful phrases is a result of extracting

structure from the sentence (Koriat et al., 2002) via function words (i.e., prepositions, conjunctions, articles, auxiliary verbs, pronouns). Function words carry syntactic information about the relationships among words as opposed to content words (i.e., nouns, verbs, adjectives, adverbs), which carry semantic meaning (Klammer, Schulz, & Volpe, 2012). Awareness of cues provided by function words assists readers to extract phrasal structure from the sentence. According to this study and previous research, the ability to extract phrase structure is the result of syntactic awareness ability (Siegel & Ryan, 1988; Velutino, Fletcher, Snowling, & Scanlon, 2004). Consequently, if a syntactic awareness deficit is present, despite adequate reading rate, phrasing ability will not develop as expected and reading comprehension of complex text will be impaired.

Additionally, this study supports the hypothesis that phrase-reading ability serves as mediator between passage reading rate and reading comprehension. These findings provide evidence that once passage reading rate is sufficiently developed to indicate automaticity at the word level, and once reading requirements move beyond simple sentences to complex sentences, phrase-reading ability emerges as a requisite skill for comprehension. It is at this point that phrase-reading ability contributes to comprehension beyond passage-reading rate (i.e., word-level automaticity).

These results support several premises based on theories of automaticity. For instance, the results provide evidence (a) that as lower level skills (i.e., word reading) become automatic, attention can be directed to higher level skills (i.e., phrasing ability) (LaBerge & Samuels, 1974; Perfetti, 1975); (b) that micro-level skills (i.e., word reading) become automatic before macro-level skills (i.e., phrase reading) (Eldredge, 2005); and (c) that as reading becomes automatic, readers chunk/unitize smaller units (i.e., word-by-word reading) into larger units (i.e., phrasing

reading) (Anderson & Lebiere, 1998; MacWhinney, 2002; Schunk, 2008). Phrase reading ability provides a mechanism by which multiple words are held in short term memory as one unit (e.g., to the store) rather than word-by-word (e.g., to / the / store). Adolescent readers who continue to struggle with word level automaticity will experience difficulty with phrase-reading ability and consequently with reading comprehension (Klauda & Guthrie, 2008).

These findings support the research conducted by Pinnell et al. (1995) and Daane et al., (2005), who found that the prosodic reading scores, which included phrasing ability, of fourth-graders were positively related to higher scores on academic assessments. This study extends the work of Pinnell et al. and Daane et al. by (a) including adolescent students in an alternative school, and by (b) separating phrase-level prosody from expressive prosody.

The purpose of this study was to increase understanding of the reading process concerning adolescent readers to inform better instructional practices. Hock et al. (2009) suggested that greater emphasis should be placed on identifying, assessing, and remediating reading sub-skills (i.e., vocabulary, passage-reading rate, vocabulary, word-level decoding) that interfere with reading comprehension for adolescent readers as a means of improving instruction practice. The results of this study add syntactic awareness and phrase-reading ability to this list. Although researchers have made progress in the last decades adding to our knowledge of the reading process, the findings of this study provide evidence that we have much more to learn about adolescent readers.

Implications for Instruction

This study provides evidence that reading is made up of a hierarchy of distinct but continuous skills that once acquired serve as a foundation for comprehension. The SVR provides a framework for understanding the reading process by separating the two aspects of reading into

the mechanics of word reading and the language related skills that imbibe those words with meaning. The processes within each area of this reading dichotomy are complex and multifaceted. Much is known about development of word reading ability within the hierarchy of distinct but continuous skills including (a) separating and manipulating individual sounds (i.e. phonemic awareness), (b) connecting sounds to letters (i.e., the alphabetic principle), (c) blending letter sounds into words (i.e., decoding), and (d) increasing rate of reading through practice reading of connected text (i.e., automaticity). The process of language development is well researched to the point that we know language processes, including syntactic awareness, begin developing with verbal interactions between infant and caregiver (xxxx), and continue to develop through verbal interactions (xxxx). Much less is known about how and when language related skills interact with word reading skills to produce comprehension.

This study provides evidence that phrasing ability serves as a bridge between word reading and language related skills as it is an expression of lower level word reading skills (i.e., automaticity of word reading) as well as a reflection of syntactic ability (i.e., language related skill). However, phrasing ability does not reflect comprehension, since nonsense words can be read with appropriate phrasing as long as meaningful function words are in place (Koriet et al., 2002). Rather phrasing ability serves as a framework for extracting relationships among semantic elements of a sentence, thereby facilitating comprehension.

Current instructional methods emphasize explicit instruction for individual sounds and word level skills. Students read connected text (i.e., sentences) orally to improve reading rate (i.e., automaticity); however, assessment lies at the word level (i.e., correct words per minute) and progress is measured solely by increasing the number of words read regardless of whether phrases or punctuations are verbally reflected. Automaticity at the word level is essential as a

building block of comprehension, but should not become the end goal of reading automaticity instruction. The findings from this study support an understanding that phrase-reading ability provides an essential support for reading comprehension beyond word-level skills. Rather phrase-reading ability is a sentential skill, as sentences are made up of one or multiple phrases. The findings of this study support a conclusion that reading instruction should include sentence – level instruction of phrase-reading ability as well as word-level instruction.

Measuring phrase-level prosody provides a glimpse of the reader’s ability to recognize phrases within a sentence and to group words in a phrase as one unit. The grouping of individual words within a phrase into one unit allows students (a) to hold that unit in short term memory more efficiently than holding individual words, and (b) to extract relationships among concepts within the sentence.

Another implication of this study is that fluency instruction and practice should include the element of phrase-reading ability. Typically fluency instruction and practice promotes, implicitly or explicitly, the idea that the faster is better. The number of correct words per minute is generally the sole criterion for fluency success. For this reason students often try to increase their rate by sacrificing attention to punctuation and phrasal boundaries. Fluency practice that encourages students to read quickly without attention to phrasal units may lead to greater automaticity at the word level but hinder automaticity at the phrasal level (Carnie, 2002), thus impeding comprehension ability.

However, a focus on phrasing ability should not negate the necessity to provide interventions for lower level skills, even for adolescent readers. These lower level skills including phonemic awareness, the alphabetic principle, decoding ability, and word- level automaticity provide the foundation for phrase-reading and comprehension abilities. It is

important that practitioners determine where students' skills break down along this hierarchy of discrete skills, which provide a foundation to phrase-reading ability, and intervene appropriately. If students are unable to access the written word, language and cognitive skills (e.g., making inferences, determining main idea and details, identifying cause and effect) should be taught by verbal interaction with students while word-level skills are taught.

Implications for Research

The results of this study also hold implications for the research field. As students move into adolescence they experience a developmental shift from word-level skills to language-related skills (Gough et al., 1996) and reading research findings with elementary students are not necessarily transferable to adolescent readers. Researchers should conduct targeted research on the effects of language deficits on students' ability to cope with educational requirements (Bryan, Freer, & Furlong, 2007). An issue that emerged from this study is the difficulty articulating the construct of reading fluency and its composite elements as there is no consistency of definition or terms within or across the fields of education and psychology. An implication of this study is that researchers should work to develop a consistent terminology concerning reading fluency. The literature review associated with this study (see page 11) provides some suggestions concerning clarification of fluency terms.

Limitations and Future Direction

Several issues may provide limitations to this study. First, participants were from an alternative school in a rural region of the southeastern part of the United State and may not be representative of the broader population of the United States. Future research should replicate this study with other populations.

Next, statistical analyses were conducted as a single group, making no distinction between typically developing readers, struggling readers, and students with disabilities (i.e., LD, E/BD). Researchers should investigate the relationships among passage-reading rate, syntactic awareness, phrase-reading ability, and reading comprehension with typically developing readers, struggling readers, and students with disabilities (i.e., LD, E/BD).

Additionally, the subjective nature of scoring the Adapted NAEP Oral Reading Fluency Scale poses a limitation. Measures were taken to increase the reliability of the scoring of student recordings by requiring 2 of 3 raters to agree. On the first scoring, the inter-rater reliability score was 78.5%, and on the second scoring the inter-rater reliability score was 100%. Future researchers should introduce additional scoring procedures, which may increase reliability of scoring.

Another possible limitation of the study was the use of mediation regression (Baron & Kenny, 1986). Because of the size of the available population and the available resources, mediation regression was chosen to test the hypotheses that phrase-reading ability is a mediator between syntactic awareness and reading comprehension and between reading rate and reading comprehension. Structural equation modeling (SEM) provides a more complete understanding of complex processes such as those related to reading comprehension, than does mediation regression. However, the number of participants needed to produce adequate power in an SEM analysis was out of the reach of this study, and typically is a challenge to the field of special education. Researchers should investigate grant opportunities for resources and expand this study using SEM as the statistical analysis method.

A final limitation concerns the choice of measurement instrument to reflect a cognitive process (i.e., syntactic awareness). In this study, the Grammaticality Judgment subtest of the

CASL (Carrow-Woolfolk, 1999) was used to measure syntactic awareness for reasons put forth in the narrative. Previous studies investigating the influence of syntactic awareness have used a variety of measures. Klauda and Guthrie (2008) used phrase-level prosody, passage-level reading rate, and passage-level accuracy to measure syntactic awareness. Mokhtari and Thompson (2006) measured the construct of syntactic awareness using three subtests (i.e., sentence combining, word ordering, grammatical competence) of the TOLD-II (Hammill & Newcomer, 1996). Because of a lack of consistency of measures across studies it is difficult to compare results. Future researchers should investigate different aspects of syntactic awareness and match those to appropriate measurement instruments.

Summary

Seventy adolescent students in an alternative school setting participated in this study. Examiners assessed their skills in passage reading rate, syntactic awareness, phrase-reading ability, and reading comprehension. Results indicate that all subskills contribute to reading comprehension and that linguistic skills (i.e., syntactic awareness, phrase-reading ability) provide additional variance beyond passage-level reading rate for these students. Results also suggest that phrase-reading ability mediates (i.e., provides the mechanism for) the relationship between syntactic awareness and reading comprehension. These results have implications for future research and for appropriate interventions, especially concerning phrase reading and fluency instruction with adolescent students in alternative settings.

References

- Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA; MIT Press.
- Anderson, J. R., & Lebiere, C. J. (1998). *The atomic components of thought*. Mahwah, NJ: Erlbaum.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 6, 1173-1182.
- Beken, J. A., Williams, J., Combs, J. P., & Slate, J. R. (2009). At-risk students at traditional and academic alternative school settings: Differences in math and English performance indicators. *Florida Journal of Educational Policy*, 3, 49-61.
- Benjamin, R. G., & Schwanenflugel, P. J. (2010). Text complexity and oral reading prosody in young readers. *Reading Research Quarterly*, 45, 388-404.
- Benner, G. J., Mattison, R. E., Nelson, J. R., & Ralston, N. C. (2009). Types of language disorders in students classified as ED: Prevalence and association with learning disabilities and psychopathology. *Education and Treatment of Children*, 32, 631-653.
- Benner, G. J., Nelson, J. R., Allor, J. H., Mooney, P., & Dai, T. (2008). Academic processing speed mediates the influence of both externalizing behavior and language skills on the academic skills of students with emotional disturbance. *Journal of Behavioral Education*, 17, 63-78.
- Benner, G. J., Nelson, J. R., Ralston, N. C., & Mooney, P. (2010). A meta-analysis of the effects of reading instruction on the reading skills of students with or at risk or behavioral disorders. *Behavioral Disorders*, 35, 86-102

- Bentin, S., Deutsch, A., & Liberman, I. Y. (1990). Syntactic competence and reading ability in children. *Journal of Experimental Child Psychology*, 48, 147-172.
- Blackorby, J., & Wagner, M. (1996). Longitudinal post school outcomes of youth with disabilities: Findings from the national longitudinal transition study. *Exceptional Children*, 62, 399-413.
- Bryan, K., Freer, J., & Furlong, C. (2007). Language and communication difficulties in juvenile offenders. *International Journal of Language & Communication Disorders*, 42, 505-520.
- Carnie, A. (2002). *Syntax: A generative introduction*. Malden, Maine: Blackwell.
- Carrow-Woolfolk, E. (1999). *Comprehensive assessments of spoken language*. Torrance, CA: Western Psychological Services.
- Carver, P. R., & Lewis, L. (2010). *Alternative schools and programs for public school students at risk of educational failure: 2007–08* (NCES 2010–026). U.S. Department of Education, National Center for Education Statistics. Washington, DC: Government Printing Office.
- Catts, H. W., Hogan, T. P., & Adolf, S. M. (2005). Developmental changes in reading and reading disabilities. In H. W. Catts & A. G. Kamhi (Eds.), *The connections between language and reading disabilities* (pp. 25-40). Mahwah, NJ: Lawrence Erlbaum Associates.
- Catts, H. W., Hogan, T. P., & Fey, M. E. (2003). Subgrouping poor readers on the basis of individual differences in reading-related abilities. *Journal of Learning Disabilities*, 36, 151-164.

- Cizek, G. J. (2003). Test review of the Woodcock-Johnson III. In B. S. Plake, J. C. Impara, & R. A. Spies (Eds.), *The fifteenth mental measurements yearbook*. Lincoln, Nebraska: Buros Institute for Mental Measures.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159.
- Crumpton, N. L. (2003). Review of the Gray Oral Reading Tests, fourth edition. In B. S. Plake, J. C. Impara, & R. A. Spies (Eds.), *The fifteenth mental measurements yearbook* (pp. 216-218). Lincoln, Nebraska: Buros Institute of Mental Measurements.
- Cutler, A., Dahan, D., & van Donselaar, W. (1997). Prosody in the comprehension of spoken language: A literature review. *Language and Speech*, 40, 141-201.
- Daane, M. C., Campbell, J. R., Grigg, W. S., Goodman, M. J., & Oranje, A. (2005). *Fourth-grade students reading aloud: NAEP 2002 special study of oral reading* (NCES 2006-469). U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics. Washington, DC: Government Printing Office.
- Daniel, S., Walsh, A., Goldston, D., Arnold, E., Reboussin, B., & Wood, F. (2006). Suicidality, school dropout, and reading problems among adolescents. *Journal of Learning Disabilities*, 39, 507-514.
- Denton, C. A., Barth, A. E., Fletcher, J. M., Wexler, J., Vaughn, S., Cirino, P. G., Romain, M., & Francis, D. J. (2011). The relations among oral and silent reading fluency and comprehension in middle school: Implications for identification and instruction of students with reading difficulties. *Scientific Studies of Reading*, 15, 109-135.
- Denton, C. A., & Vaughn, S. (2008). Reading and writing intervention for older students with disabilities: Possibilities and challenges. *Learning Disabilities Research & Practice*, 23, 61-62.

- Dowhower, S. L. (1991). Speaking of prosody: Fluency's unattended bedfellow. *Theory into Practice, 30*, 165-174.
- Edmonds, M. S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K.K., & Schnakenberg, J. W. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of Educational Research, 71*, 262-300.
- Eisenmajer, N., Ross, N., & Pratt, C. (2005). Specificity and characteristics of learning disabilities. *Journal of Child Psychology and Psychiatry, 46*, 1108-1115.
- Ekstrom, R. B. , Goertz, M. E., Pollack, J. M., & Rock, D. A. (1986). Who drops out of high school and why? Findings from a national study. *Teachers College Record, 87*, 356-373.
- Eldredge, J. L. (2005). Foundations of fluency: An exploration. *Reading Psychology, 26*, 161-181.
- Faul, F., Erdfelder, E., Lang, A.G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Methods, 39*, 175-191.
- Fisher, J., Plante, E., Vance, R., Gerken, L., & Glattke, T. J. (2007). Do children and adults with language impairment recognize prosodic cues? *Journal of Speech, Language, and Hearing Research, 50*, 746-758.
- Foley, R. M., & Pang, L. S. (2006). Alternative education programs: Program and student characteristics. *The High School Journal, 89*(3), 10-21.
- Frazier, P., Tix, A., & Barron, K. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*, 115-134

- Gelfand, L. A., Mensinger, J. L., & Tenhave, T. (2009). Mediation analysis: A retrospective snapshot of practice and more recent direction. *The Journal of General Psychology, 136*, 153-176.
- Greenbaum, P. E., Dedrick, R. F., Friendman, R. M., Kutash, K., Brown, E. C., Lardierh, S. P. & Pugh, A. M. (1996). National adolescent and child treatment study (NACTS): Outcomes for children with serious emotional and behavioral disturbance. *Journal of Emotional and Behavior Disorders, 4*, 130-146.
- Grigg, W. S., Daane, M. C., Jin, Y., & Campbell, J. R. (2003). *The nation's report card: Reading 2002*. Washington, DC: U.S. Department of Education. Institute of Education Sciences. National Center.
- Gough. P. B., Hoover, W. A., & Peterson, C. L. (1996). Some observations on a simple view of reading. In C. Cornoldi & J. Oakhill (Eds.), *Reading comprehension difficulties: Processes and interventions* (pp. 1- 13). Mahwah, NJ: Lawrence Erlbaum Associates.
- Hammill, D., & Newcomer, P. L. (1996). *Test of language development-intermediate*. San Antonio, TX: The psychological Corporation.
- Hasbrouck, J., & Tindal, G. A. (2006). Oral reading fluency norms: A valuable assessment tool for reading teachers. *The Reading Teacher, 59*, 636-644
- Heward, W. L. (2006). *Exceptional children: An introduction to special education* (8th ed.) Upper Saddle River, NJ: Pearson Education.
- Hock, M. F., Brasseur, I. F., Deshler, D., Catts, H. W., Marquis, J. G., Mark, C. A., & Stribling, J. W. (2009). What is the reading component skill profile of adolescent struggling readers in urban schools? *Learning Disability Quarterly, 32*, 21-38.

- Hoover, W. A., & Gough P. B. (1990). The simple view of reading. *Reading and Writing: An Interdisciplinary Journal*, 2, 127-160.
- Huck, S. W. (2004). *Reading statistics and research* (4th ed.). Boston, MA: Pearson Education.
- Hudson, R. F., Pullen, P. C., Lane, H. B., & Torgesen, J. K. (2009). The complex nature of reading fluency: A multidimensional view. *Reading & Writing Quarterly*, 25, 4-32.
- IDEA 2004 Summary. (n.d.). LD OnLine: *The world's leading website on learning disabilities and ADHD*. Retrieved from <http://www.ldonline.org/>
- Jaffe, L. E. (2009). Development, interpretation, and application of the W score and the relative proficiency index (Woodcock-Johnson III Assessment Service Bulletin No. 11). Rolling Meadows, IL: Riverside Publishing.
- Judd, C. M., & Kenny, D. A. (1981). Process Analysis: Estimating mediation in treatment evaluations. *Evaluation Review*, 5, 602- 619.
- Jusczyk, P. W. (2002). How infants adapt speech-processing capacities to native-language structure. *Current Directions in Psychological Science*, 11, 15-18.
- Kauffman, J. M., & Landrum, T. J. (2009). *Characteristics of emotional and behavioral disorders of children and youth* (9th ed.). Upper Saddle River, NJ: Merrill/Prentice Hall.
- Klammer, T., Schulz, M. R., & Volpe, A. D. (2012). *Analyzing English grammar* (7th ed.). New York: Pearson Longman.
- Klauda, S. L., & Guthrie, J. T. (2008). Relationship of three components of reading fluency to reading comprehension. *Journal of Educational Psychology*, 100, 310-321.
- Kleiner, B., Porch, R., & Farris, E. (2002). *Public alternative schools and programs for students at risk of education failure: 2000–01* (NCES 2002–004). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

- Koriat, A., Greenberg, S. N., & Kreiner, H. (2002). The extraction of structure during reading: Evidence from reading prosody. *Memory & Cognition, 30*, 270-280.
- Kuhn, M. R., & Stahl, S. A. (2003). Fluency: A review of developmental and remedial practices. *Journal of Educational Psychology, 95*, 3-21.
- Kuhn, M. R., Schwanenflugel, P. J., & Meisinger, E. B. (2010). Aligning theory and assessment of reading fluency: Automaticity, prosody, and definitions of fluency. *Reading Research Quarterly, 45*, 230-251.
- LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6*, 293-323.
- Lane, K. L., Gresham, F. M., & O'Shaughnessy, T. E. (2002). Serving students with or at-risk for emotional and behavior disorders: Future challenges. *Education and Treatment of Children, 25*, 507-521.
- Leach, J. M., Scarborough, H. S., & Recorla, I. (2003). Late-emerging reading disabilities. *Journal of Educational Psychology, 95*, 211-224.
- Lee, M. S. (2009). *Contributions of student characteristics that lead to success in alternative learning settings in American public schools*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses database (UMI No. 3360951)
- Lee, J., Grigg, W., & Donahue, P. (2007). *The nation's report card: Reading 2007* (NCES 2007-496). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.
- Leikin, M., & Assayag-Bouskila, O. (2004). Expression of syntactic complexity in sentence comprehension: A comparison between dyslexic and regular readers. *Reading and Writing, 17*, 801-822.

- LeVasseur, V. M., Macaruso, P., Palumbo, L. C., & Shankweiler, D. (2006). Syntactically cued text facilitates oral reading fluency in developing readers. *Applied Psycholinguistics*, *27*, 423-445.
- LeVasseur, V. M., Macaruso, P., & Shankweiler, D. (2008). Promoting gains in reading fluency: A comparison of three approaches. *Reading and Writing*, *21*, 205-230.
- Logan, G. D. (1997). Automaticity and reading: Perspectives from the instance theory of automatization. *Reading & Writing Quarterly*, *13*, 123-147.
- MacWhinney, B. (2002). Extending the competition model. In R. Heredia & J. Altarriba (Eds.), *Bilingual sentence processing* (pp. 31-58). Amsterdam, Netherlands; Elsevier Science.
- Mann, V. A. (2006). Language processes: Keys to reading disability. In H. L. Swanson, K. R. Harris, & S. Graham (Eds.), *Handbook of learning disabilities* (pp. 213-228). New York: Guilford Press.
- Marshall, C. R., Harcourt-Brown, S., Ramus, F., & van der Lely, H. K. (2009). The link between prosody and language skills in children with specific language impairment (SLI) and/or dyslexia. *International Journal of Language & Communication Disorder*, *44*, 466-488.
- Matheson, D. V., Allington, R. L., & Solic, K. L. (2006). Hijacking fluency and instructionally informative assessments. In T. Rasinski, C. Blachowicz, & K. Lems (Eds.), *Fluency instruction: Research-based best practices* (pp. 106-119). New York: Guilford.
- Miller, J., & Schwanenflugel, P. J. (2006). Prosody of syntactically complex sentences in the oral reading of young children. *Journal of Education Psychology*, *98*, 839-853.
- Mokhtari, K., & Thompson, H. B. (2006). How problems of reading fluency and comprehension are related to difficulties in syntactic awareness skills among fifth graders. *Reading Research and Instruction*, *46*, 73-93.

- Morgan, J. L. (1996). Prosody and the roots of parsing. *Language and Cognitive processes, 11*, 69-106.
- Nation, K., & Snowling, M. J. (2000). Factors influencing syntactic awareness skills in normal readers and poor comprehenders. *Applied Psycholinguistics, 21*, 229-241.
- Nelson, J. R., Benner, G. J., & Cheney, D. (2005). An investigation of the language skills of students with emotional disturbance served in public school settings. *The Journal of Special Education, 39*, 97-105.
- Pedhazur, E. J. (1997). *Multiple regression in behavioral research: Explanation and prediction* (3rd ed.). Toronto, Ontario: Thomson Learning.
- Perfetti, C. A. (1985). *Reading ability*. New York: Oxford University Press.
- Pinnell, G. S., Pikulski, J. J., Wixson, K. K., Campbell, J. R., Gough, P. B., & Beatty, A. S. (1995). *Listening to children read aloud: Data from NAEP's integrated reading performance record (IRPR) at grade four*. (Report No. CS 011970). Washington D.C.: National Center for Education Statistics (ED). (ERIC Document Reproduction Service No. ED378550)
- Raffaele-Mendez, L. M., Knoff, H. M., & Ferron, J. M. (2002). School demographic variables and out-of-school suspension rates: A quantitative and qualitative analysis of a large, ethnically diverse school district. *Psychology in the Schools, 39*, 259-277.
- RAND Reading Study Group Report. (2002). *Reading for understanding: Toward a R&D program in reading comprehension*. Office of Educational Research and Improvement (OERI) (Document No. MR- 1465-OERI, 2002).
- Rasinski, T. V. (2004). Creating fluency readers. *Education Leadership, 61*(6), 46-51.

- Schreiber, P. A. (1980). On the acquisition of reading fluency. *Journal of Reading Behavior*, *12*, 177-186.
- Schunk, D. H. (2008). *Learning theories: An educational perspective* (5th ed.). Upper Saddle River, NJ: Pearson
- Schwanenflugel, P. J., Hamilton, A. M., Kuhn, M. R., Wisenbaker, J. M., & Stahl, S. A. (2004). Becoming a fluent reader: Reading skill and prosodic features in the oral reading of young readers. *Journal of Educational Psychology*, *96*, 119-129.
- Scott, C. M. (2006). Syntactic contributions to literacy learning. In C. A. Stone, E. R. Silliman, B. J. Ehren, & K. Apel (Eds.), *Handbook of language & literacy: Development and disorders* (pp.340-362). New York, NY: Guilford. Press
- Siegel, L. S., & Ryan, E. B. (1988). Development of grammatical- sensitivity, phonological and short-term memory skills in normally achieving and learning disabled children. *Developmental Psychology*, *24*, 28-37. doi:10.1037/0012-1649.24.1.28
- Shafer, V. L., Shucard, D. W., Shucard, J. L., & Gerken, L. A. (1998). An electrophysiological study of infants' sensitivity to the sound patterns of English speech. *Journal of Speech, Language, and Hearing Research*, *41*, 874-886.
- Snow, D., & Balog, H. L. (2002). Do children produce the melody before the words? A review of developmental intonation research. *Lingua*, *112*, 1025-1058.
- Snow, C.E., Burns, M.S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Snyder, K. A. (2003). Review of the comprehensive assessment of spoken language. In B. S. Plake, J. C. Impara, & R. A. Spies (Eds.), *The fifteenth mental measurements yearbook* (pp. 216-218). Lincoln, Nebraska: Buros Institute of Mental Measurements.

- Soderstrom, M., Seidl, A., Kemler, D. G. K., & Jusczyk, P. W. (2003). The prosodic bootstrapping of phrases: Evidence from prelinguistic infants. *Journal of Memory and Language* 49, 249-267.
- Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of Child Psychiatry*, 45, 20-40.
- Wald, J., & Losen, D. J. (2003). Defining and redirecting a school-to-prison pipeline. *New Directions for Youth Development*, 99, 9-15.
- Wexler, J., Vaughn, S., Edmonds, M., & Reutebuch, C. K. (2008). A synthesis of fluency interventions for secondary struggling readers. *Reading and Writing*, 21, 317 -347.
- Whalley, K., & Hansen, J. (2006). The role of prosodic sensitivity in children's reading development. *Journal of Research in Reading*, 29, 288-303.
- Wiederholt, J. L., & Bryant, B. R. (2001). *Gray Oral Reading Tests*. Austin, TX: Pro-Ed.
- Wolf, M., & Katzir-Cohen, T. (2001). Reading fluency and its intervention. *Scientific Studies of Reading*, 5, 211
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III Tests of Achievement*. Rolling Meadows, IL: Riverside Publishing.
- Young, A., & Bowers, P. G. (1995). Individual difference and text difficulty determinants of reading fluency and expressiveness. *Journal of Experimental Child Psychology*, 60, 428-45.

APPENDIXES

APPENDIX A

Student's Copy: Screening Assessment

Soon	The	House	Was
Stool	Watching	While	Mom
Dinner	Dad	Wouldn't	Be
Jason	Wandered	Outside	Trying
His	Thoughts	Kept	Returning
Walking	Toward	Not	All
What	When	Got	There
Wished	Could	Turn	Legs
Between	Bales	Hay	Hear
Lifted	Lid	Most	Cuddly
Pretty	Scared	Huh	Fellow
Going	Love	Secretly	After
Know	Anyway	Would	Excitement
Buzzing	With	Happy	Megan
And	Aunt	Nancy	Prepared
Back	For	At	Least
To	Think	Of	Something
Box	In	Barn	He
Sure	Glimpse	Instead	Heard
Hoping	Just	a	Coming
Carried	Into	Him	Saw
Loud	Wailing	Cries	Leaning
Puppy	Had	Ever	Seen
Said	Quietly	As	Held
Knew	That	Been	Wanting
Sat	Birthday	Two	Do
He'd	Strange	From	It
Over	You	Wiggly	Probably
On	Own	Hours	But
Started	Noise	Inside	Sitting
Carefully	Must	Dog	Didn't

Appendix B

Passage for Phrase-Level Prosody Assessment

Excerpt from "The Box in the Barn," by Barbara Eckfeld Conner,

Soon the house was buzzing with excitement. Megan sat on the stool watching while Mom and Aunt Nancy prepared the birthday dinner. Dad wouldn't be back for at least two hours. Jason wandered outside trying to think of something to do, but his thoughts kept returning to the box in the barn. He started walking toward the barn, not at all sure what he'd do when he got there. He was hoping for just a glimpse of the box. Instead he heard a strange noise coming from inside the box. He wished he could just turn back to the house, but his legs carried him into the barn. Jason saw the box. It was sitting between two bales of hay. He could hear loud wailing cries. Leaning over, Jason carefully lifted the lid. There was the most cuddly puppy he had ever seen! "You must be pretty scared, huh, fellow?" Jason said quietly as he held the wiggly dog. "Megan's going to love you!" He secretly wished the puppy was for him. After all, Mom and Dad knew that he had been wanting his own puppy. Probably Aunt Nancy didn't know that, and anyway Megan would be happy.

*Appendix C*Adapted NAEP Oral Reading Fluency Scale
Scoring Rubric

4. Reads primarily in larger, meaningful phrase groups. Although some regressions, repetitions, and deviations from the text may be present, these do not appear to detract from the overall structure of the story. Preservation of the author's syntax is consistent. Reads at an appropriate rate.
3. Reads primarily in three- and four-word phrase groups. Some smaller groupings may be present. However, the majority of phrasing seems appropriate and preserves the syntax of the author. Generally reads at an appropriate rate.
2. Reads primarily in two-word phrase groups with some three- and four-word groupings. Some word-by-word reading may be present. Word groupings may seem awkward and unrelated to the larger context of the sentence or passage. Reads significant sections of the text excessively slowly or fast.
1. Reads primarily word-by-word. Occasional two- or three-word phrases may occur – but these are infrequent and/or they do not preserve meaningful syntax. Reads text excessively slowly.

A score of 1 should also be given to a student who reads with excessive speed, ignoring punctuation and other phrase boundaries, and reads with little or no expression.

Adapted by Klauda & Guthrie (2008) from the NAEP Fluency Reading Scale (Pinnell et al., 1995)

Place Sticker

Appendix D

Word List Screening

Instructions for Assessment: Slash through each word read incorrectly and circle those skipped.

Read the direction below before beginning the assessment:

"Read the words in each column quickly but carefully. Go down each column to the end then up to the next column. (Indicate on the student's page that he should read down each column and not across). If you come to a word you do not know, skip it and go the next word. Keep your finger on the words so you do not lose your place. Get ready, begin."

1. Soon	32. The	63. House	94. Was
2. Stool	33. Watching	64. While	95. Mom
3. Dinner	34. Dad	65. Wouldn't	96. Be
4. Jason	35. Wandered	66. Outside	97. Trying
5. His	36. Thoughts	67. Kept	98. Returning
6. Walking	37. Toward	68. Not	99. All
7. What	38. When	69. Got	100. There
8. Wished	39. Could	70. Turn	101. Legs
9. Between	40. Bales	71. Hay	102. Hear
10. Lifted	41. Lid	72. Most	103. Cuddly
11. Pretty	42. Scared	73. Huh	104. Fellow
12. Going	43. Love	74. Secretly	105. After
13. Know	44. Anyway	75. Would	106. Excitement
14. Buzzing	45. With	76. Happy	107. Megan
15. And	46. Aunt	77. Nancy	108. Prepared
16. Back	47. For	78. At	109. Least
17. To	48. Think	79. Of	110. Something
18. Box	49. In	80. Barn	111. He
19. Sure	50. Glimpse	81. Instead	112. Heard
20. Hoping	51. Just	82. a	113. Coming
21. sitting	52. Into	83. Him	114. Saw
22. Loud	53. Wailing	84. Cries	115. Leaning
23. Puppy	54. Had	85. Ever	116. Seen
24. Said	55. Quietly	86. As	117. Held
25. Knew	56. That	87. Been	118. Wanting
26. Sat	57. Birthday	88. Two	119. Do
27. He'd	58. Strange	89. From	120. It
28. Over	59. You	90. Wiggly	121. Probably
29. On	60. Own	91. Hours	122. But
30. Started	61. Noise	92. Inside	123. Sitting
31. Carefully	62. Must	93. Dog	124. Didn't

Word-List Screening Result

124 - _____ (# of words read incorrectly) = _____ (total # of words read correctly)

Total # of words read correctly = _____ / 124 = _____ %;

Reading less than 80% of the words correctly (i.e., 98 words or less) indicates the student did not pass the screening

CIRCLE ONE: This student **did** / **did not** pass the Word-List Screening Assessment

- Students who **DID** pass the screening will be administered the Passage Comprehension subtest of the WJ-III.
- Students who **DID NOT** pass the screening will be excluded from the study.

Appendix E
Participant Data Sheet

Name	4-digit Code	DOB	Sped Status	Type of Disability	Race/Ethnicity
1.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
2.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
3.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
4.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
5.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
6.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
7.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
8.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
9.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
10.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
11.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
12.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
13.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
14.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
15.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
16.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
17.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
18.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
19.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
20.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
21.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
22.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
23.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
24.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
25.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
26.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
27.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
28.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
29.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
30.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
31.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
32.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
33.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
34.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other
35.		__/__/__	Yes No	LD B/D MID Other	Cau AA Latino Asian Other

Place Sticker

Appendix G

Fidelity and IOA Checklist for the Rate Subtest of the GORT-4

Assessor's Initials _____ Date _____

Fidelity/ IOA: Yes or NO Observer Initials _____

1. Has Material ready: Profile/Examiner Record Booklet; Student Book; Timer; pencil		Y	N										
2. Says to the Student: "I want you to read some stories out loud to me. Read them as carefully and quickly as you can and as well as you can. Before you read each story, I will tell you something about it. Then I'll give you the book I want you to read from. When I say 'begin' start reading out loud. Let's start now."		Y	N										
3. Gives the student the Student Book and turn to either: (a) Story 5 (for 6 th -8 th graders) or (b) Story 9 for 9 th -12 th graders		Y	N										
4. Says "Begin"		Y	N										
5. Starts timer when student begins to read		Y	N										
6. Follows along as the student reads the story		Y	N										
7. Places a slash mark (/) on each word that is not read correctly (*see criteria below for incorrectly read words)		Y	N										
8. Stops timer when the reader finishes.		Y	N										
9. Records the number of seconds the student took to read the story in the space marked "Time"		Y	N										
10. Records the number of slash marks in the space marked "Deviations from Print"		Y	N										
11. Convert Deviations from Print and Time to 1- 5 point Rate & Accuracy score using the conversion table		Y	N										
12. Record 1-5 point Rate & Accuracy, then add and record Fluency Score		Y	N										
13. Follows Basal Rule: Fluency Score of 9 for a story- if Story 3 is less than 9 – assess Story 2; if Story 2 is less than 9 assess Story 1.		Y	N										
14. Follows Ceiling Rule: Fluency Score of 2 or less for a story; continue until score is 2 or below.		Y	N										
Total yes: Total no: Fidelity _____/14 _____%													
Assessment Administration IOA: IOA = ____ / (____ + ____) x 100 = ____ % Agree / Agree + Disagree													
28/28=100%; 27/28=96%; 26/28=93%; 25/28=89%; 24/28= 86%; 23/28=82%; 22/28=79%; 21/28=75%; 20/28=71%;19/28=68%; 18/28=64%													
Agree = A; Disagree = D													
1	2	3	4	5	6	7	8	9	10	11	12	13	14
A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D
Story Rate Scoring IOA													
1	2	3	4	5	6	7	8	9	10	11	12	13	14
A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D	A / D
*Criteria for incorrectly read words:													
1. Word is read incorrectly;													
2. Student pauses for 5 seconds without making an attempt to read a word;													
3. If the student attempts to sound out the word give the student 10 seconds to decode; then say the word.;													
4. For self-corrections, place a slash on the gap before the word corrected;													
5. If the student adds words place a slash between the words where the addition is made;													
6. For repetitions, place a slash mark after the word repeated;													
7. Do not mark deviations based on regional pronunciations;													
8. If the reader skips a line, stop the time, direct the student's attention to the correct line, and commence timing when the first word is said. This is scored as one deviation.													

Place Sticker

Appendix I

Word List Screening for Phrase-level Prosody Assessment

Assessor's Initials _____ Date _____ Total Correct _____

Fidelity: Yes or No (see Appendix H) IOA: Yes or No; Initials _____

Instructions for Assessment: Slash through each word read incorrectly and circle those skipped.

Read the direction below before beginning the assessment:

"Read the words in each column quickly but carefully. Go down each column to the end then up to the next column. (Indicate on the student's page that he should read down each column and not across). If you come to a word you do not know, skip it and go the next word. Keep your finger on the words so you do not lose your place. Get ready, begin."

	IOA		IOA		IOA		IOA		IOA		IOA
soon	A D	the	A D	house	A D	was	A D	loud	A D	cries	A D
stool	A D	watching	A D	while	A D	mom	A D	puppy	A D	ever	A D
dinner	A D	Dad	A D	wouldn't	A D	be	A D	said	A D	as	A D
Jason	A D	wandered	A D	outside	A D	trying	A D	knew	A D	been	A D
his	A D	thoughts	A D	kept	A D	returning	A D	sat	A D	saw	A D
walking	A D	toward	A D	not	A D	all	A D	he'd	A D	leaning	A D
what	A D	when	A D	got	A D	there	A D	over	A D	seen	A D
wished	A D	could	A D	turn	A D	legs	A D	on	A D	held	A D
between	A D	bales	A D	hay	A D	hear	A D	wailing	A D	two	A D
lifted	A D	lid	A D	most	A D	cuddly	A D	had	A D	him	A D
pretty	A D	scared	A D	huh	A D	fellow	A D	quietly	A D	didn't	A D
going	A D	love	A D	secretly	A D	after	A D	that	A D	from	A D
know	A D	anyway	A D	would	A D	excitement	A D	birthday	A D	wiggly	A D
buzzing	A D	with	A D	happy	A D	Megan	A D	strange	A D	wanting	A D
and	A D	aunt	A D	Nancy	A D	prepared	A D	you	A D	into	A D
back	A D	for	A D	at	A D	least	A D	own	A D	hours	A D
to	A D	think	A D	of	A D	something	A D	noise	A D	inside	A D
box	A D	in	A D	barn	A D	he	A D	must	A D	dog	A D
sure	A D	glimpse	A D	instead	A D	heard	A D	started	A D	it	A D
hoping	A D	just	A D	a	A D	coming	A D	carefully	A D	carried	A D
sitting	A D	do	A D	but	A D	probably	A D		A D		A D

Total # of words read correctly = _____ / 124 = _____ %;

If youth reads less than 80% (i.e., 99 words) of the words correctly then do not administer the Adapted NAEP Fluency Assessment.

This student will / will not be taking the oral phrase-level prosody assessment

IOA = _____ / (____ + ____) x 100 = _____ %

Agree / Agree + Disagree

Appendix J

Fidelity and IOA Oral Reading Recording of the Adapted NAEP Oral Fluency Scale Assessment

Assessor's Initials _____ Date _____

Observer Initials _____

1. Records the students ID # on a master list	Y	N
2. Reads the instructions to the student	Y	N
3. Prompts the student: "Read the story as if you are telling a story to another person."	Y	N
4. Speaks the students ID # into the recorder	Y	N
5. Say "Begin"	Y	N
6. Does not provide words for the student when asked	Y	N
7. Turns off the recorder when the student finishes	Y	N
8. Indicates on the master list whether the student completed the assessment or not	Y	N

Fidelity _____/13 _____% Total Yes _____ Total No _____

Agree = A; Disagree = D

$$\text{IOA} = \frac{\text{A}}{\text{A} + \text{D}} \times 100 = \text{_____}\%$$

