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Discovering the third grade non-reader:
Isolating factors which impede reading proficiency.

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Abstract

In order to address the needs of struggling third grade readers, it was important to understand the factors that possibly impeded their successful acquisition of reading skills. This study was designed to begin to identify salient characteristics of third graders who were reading below proficiency as determined by the Reading Minnesota Comprehensive Assessment [II](MCA/MCA-II) and isolate those factors which may influence or predict reading success. The effect of English proficiency, socioeconomic status, ethnicity, number of years in the school district and participation in Reading Recovery in 1st grade on the 3rd grade MCA/MCA II test scores was examined. The purpose of the study was consistent with current accountability and intervention expectations, which require schools to utilize well researched and targeted interventions to promote growth in core curricular areas such as reading. The results of the current study did not identify strong predictor factors, though SES did exert a small negative effect on MCA scores

Discovering the third grade non-reader:

Isolating factors which impede reading proficiency

Secure and fluent reading skills that effectively support reading comprehension are necessary to achieving most educational goals. Instructional strategies in increasingly demanding and abstract content areas which progress through subsequent grades and across educative domains are predicated on the learner's ability to read and understand the grade level materials. To that end, school districts work to ensure that their emergent readers receive appropriate reading instruction and, if necessary, effective reading interventions that promote reading proficiency. It is also for this reason that concerns are raised regarding third grade students who score below grade level proficiency on standardized reading measures (Elbaum, Vaughn, Hughs & Moody, 2000; Joseph, 2005). Third grade learners are moving out of a "learning to read" educational phase. Instead, they begin "reading to learn" as reading itself becomes an instrument of their education. In many local education areas the percentage of struggling third grade readers is 20-30% of all third graders.

In order to address the needs of these struggling third grade readers, it is important to understand the factors which may or may not be impeding their successful acquisition of reading skills. It is important as well to elucidate which existing skills, factors or strategies appear to support and promote good reading (Snow, Scarborough & Burns 1999). Once identified, the effect of these factors may be mediated, compensated for and/or leveraged through thoughtful planning and insightful decisions regarding appropriate and efficient interventions.

This study addressed those factors which are increasingly regarded as having the most profound influence on the development of skilled reading. These factors include socioeconomic status and English language proficiency (Davis, Lindo & Compton, 2007; Horton-Ikard

Weismer, 2007; Noble, Farah & McCandliss, 2006; Raizada, Richards, Meltzoff & Kuhl, 2008), and response to early reading intervention. Included in this paper is an overview of the generally accepted theory of the development of reading, a description of the neural substrates of reading and subsequent reading disabilities, as well as an explanation of the philosophy and strategies of Reading Recovery, the early reading intervention in offered to the students in this research study at time of the data collection.

Reading and reading disabilities

Skilled readers understand that printed text conveys a message from which they are able to obtain meaning (Nation & Norbury, 2005; Snow, Scarborough & Burns 1999; Torgeson, 2000, 2002). Achieving this skilled level of reading begins very simply with an understanding that oral language is comprised of discrete sounds. This is called phonemic awareness and it is widely considered to be the primary foundational skill in the development of reading (Burns, 2003; Hudson, High & Al Otaiba, 2007; Simmons, et al. 2007; Shaywitz & Shaywitz, 2004; Uhry & Shephard, 1997). Children with secure phonemic awareness are able to employ early decoding strategies that allow them to decipher orthographic symbols and relate them to sounds that can be blended into meaningful words. Upon this foundation of phonemic awareness and phonological processing, more mature and efficient reading strategies develop (Uhry & Shephard, 1997). Increasingly skilled readers are able to recognize and rely on larger units of sound. These larger units, called morphemes, carry meaning and are used to more efficiently decipher the printed text. Finally, increased automacy is achieved and efficiency is enhanced through a greater reliance on visual memory. Visual memory is supported by a growing sight-word vocabulary that diminishes the need for the reader to decode each individual word. Automacy supports increased fluency which ultimately facilitates comprehension as less

cognitive energy is dedicated to decoding efforts, leaving more processing power available for comprehension strategies (Hudson, et al. 2007; Nation & Norbury, 2005; Shaywitz & Shaywitz, 2004; Snow, et al, 1999; Torgeson, 2002).

One widely accepted neurological model of reading and, by extension, of reading disabilities (RD), identifies the neurological substrates that support reading processes and is leading to a greater understanding of the strategies used by successful readers and in which poor readers require remediation (Pugh, et al., 2001; Shaywitz & Shaywitz, 2001, 2004). Imaging studies have identified two left hemisphere (LH) neural pathways that are active during efficient reading. One pathway develops early, is foundational and rule-based. It is relatively slow and is highly related to word decoding: phonemic awareness and phonological processing. In successful and maturing readers, a secondary pathway then develops that is faster and relies more heavily on visual recognition and morphemic representations. The development of this second neural circuit is dependent on the successful establishment of the primary decoding pathway. It is this second pathway that supports rapid and fluid reading (Ferguson & Besner, 2006; Hudson, et al. 2007; Pugh, et al, 2001; Shaywitz & Shaywitz, 2004).

Conversely, neural imaging studies show that poor readers, who have been identified as having a RD, make little use of the primary, decoding pathway (Hudson, et al. 2007; May, 2006). Rather, in imaging studies of these children, right hemisphere (RH) correlates to the more frontal and visual secondary LH pathways are activated during reading tasks, suggesting that RD students rely more on visual cues than on decoding strategies (Hudson, et al. 2007; Pugh, et al. 2001; Shaywitz & Shaywitz, 2001, 2004). This is consistent with an increasingly stable “phenotype” of a poor reader: one who has poor context-free or non-word reading skills and deficiencies in phonological processing skills (Harm, McCandliss, & Seidenberg, 2003;

Shaywitz & Shaywitz, 2004; Snow, et al., 1999; Torgeson, 2002; Tunmer & Chapman, n.d.). Therefore weak phonological decoding skills are suggested to be a key characteristic of poor readers. Further research has identified additional factors that act as impediments to the acquisition of these primary reading abilities, inhibiting progress toward proficient reading .

Influential factors

Socioeconomic status

Studies have indicated that children from families with a lower socioeconomic status (SES) or who are English language learners (ELLs) are at an increased risk for delays in the development of early reading skills (Horton-Ikard & Weismer, 2007; Klingner, Artiles & Barletta; 2006; Raizada, Richards, Meltzoff & Kuhl, 2008; Snow, Burns & Griffin, 1998; Wise, Sevcik, Morris, Lovett & Wolf, 2007) and further, that the relationship between low SES and low reading ability is significant and robust (Noble, et al., 2006). This may be due to environmental factors which limit the student's exposure to those activities that enhance or facilitate the development of the decontextualized language abilities that promote early literacy skills which are in turn highly predictive of reading success (Snow, et al., 1999; Torgeson, 2002).

A lower parental education level often contributes to a poorer home language environment. These home language models tend to inadequately utilize complex, varied, decontextualized and abstract language patterns. Associated environmental SES risk factors include limited access to print materials and less time spent in shared reading with a parent, both of which exert a detrimental influence on the development of a child's receptive and expressive language ability including his/her phonemic awareness, vocabulary, and word bank (Snow, et al., 1999, Wise et al., 2007).

It is important to note that it is often difficult to tease out the precise effect of the multiple factors which have an impact on early reading achievement. Lack of access to, or participation in, quality early education experiences may appear as a reading delay or potential disability but without the concomitant neurological deficits or differences that are the hallmark of a true or persistent reading disability (Wise et al., 2007). Additionally, further research suggests that the presence of protective environmental conditions associated with a higher SES – higher parental education level, access to print resources and early education experiences – will often mediate the effects of a predisposition to weak phonemic awareness, whereas a lower SES exacerbates innate weaknesses (Noble et al., 2006).

Further concerns are raised, however, in additional brain-imaging studies indicating that these impoverished early reading and language experiences may manifest in differences in both the structure and function of neural linguistic pathways (Raizada, et al., 2008). While the mechanisms for producing the neural differences are multifactorial, from limited linguistic input to the allied environmental risk factors associated with a lower SES (stress, quality of health care and nutrition), the neurological differences present similarly regardless of etiology. Additionally, Raizada (2008) states that compensatory neural strategies (such as employing RH correlates to the limited LH language/decoding areas – similar to findings by Shaywitz and Shaywitz (2004, 2007)) are evidenced to a lesser degree in poor readers from a lower SES than in poor readers from a high SES, suggesting that SES is an important factor to consider when designing interventions for the remediation of RD.

Interventions

Decisions regarding interventions often relate to *who* receives the intervention, *what* type of intervention is appropriate, and *when* is the optimal time for intervention, and *how* long should

the student continue in the intervention (Foorman, Breier & Fletcher, 2003; Jenkins, Hudson & Johnson, 2007). Students who continue to struggle with reading into third grade are at greater risk for failure in other educational areas. Therefore, interventions that are appropriately targeted, timely, and effectively designed are an important means of interrupting and redirecting a child's otherwise failing trajectory before reading difficulties stymie growth and further hinder that child's access to educational content (Simmons, et al., 2007; Schwartz, 2005; Snow, et al., 1999). Too, as schools are operating with diminished resources and increased accountability demands, they are compelled to make prudent and fiscally judicious decisions regarding the equitable distribution of limited human and financial resources.

Schools, then, must make accurate choices regarding which students demonstrate both the need and the potential for success with a particular intervention (Joseph, 2005; Schwartz, 2005). Screening strategies should be sufficiently discriminating in order to distinguish those students who will not make progress without intervention from those students who may present as low readers, but who will make adequate progress with the general classroom instruction (Jenkins, Hudson & Johnson, 2007, Torgeson, 2002). The question becomes: Which children, with what risk factors are the 'true positives?' (Davis, Lindo & Compton, 2007, p33; Schwartz, 2005) Is it possible for districts to accurately assess the true risk factors that indicate the presence of a potential reading disability that requires an early intervention for remediation?

Once a student has been identified as needing early reading intervention services, subsequent decisions need to be made regarding the design and implementation strategy of the intervention. It behooves schools to be sensitive to the potential of uniformity in deficits in poor readers for two reasons. First, the consistency of the difficulties across students implies that differentiation to an individualized degree for all aspect of the reading intervention may not be

necessary. If students share similar deficits, reading interventions may, in fact, be at least as effective, if not more so, in small group tutoring as in individualized approaches (Elbaum, Vaughn, Hughs & Moody, 2000; Foorman, Breier & Fletcher, 2003). Secondly, not only is the degree of similarities important in designing interventions, but so is the type of similarities. If research consistently demonstrates that poor readers experience deficits in one type of reading strategy, (e.g. phonemic awareness and phonological decoding) best practices would suggest that interventions should be designed to support and enhance those particular areas of reading for maximum benefit (Burns, 2003; Snow, Scarborough & Burns 1999). That is, this phenotype (which is presumed to apply to the majority, but clearly not all RD students) suggests that an intervention strategy premised on strengthening PA and PD strategies would be highly effective (National Reading Panel, 2000; Foorman, et al., 2003; Hudson, High & Al Otaiba, 2007; Simmons, et al., 2007; Snow, et al, 1999; Torgeson, 2000, 2002; Uhry & Shephard, 1997).

Lastly, the timing of the intervention will exert influence over the ultimate success of any strategy. Early intervention for RD, kindergarten or first grade, for example, is widely understood to be the most beneficial timing that wields the greatest impact (Foorman, Breier & Fletcher, 2003; Torgeson, 2002). However, in practice, schools face a high turnover of students, particularly in those groups with the greatest additional risk factors - ELL and lower SES – and they may not have the opportunity to address reading deficits in the earliest grades. A school's population of third grade poor readers may, in fact, be a very different group of students from those identified for intervention in first grade. Identifying the mobility rate of the third grade non-proficient readers will help guide decisions about the importance of providing necessary intervention resources across the primary grades.

Philosophy, structure and approach of Reading Recovery

For the purposes of this paper, it is important to address Reading Recovery (RR) as one type of early intervention strategy, because it is the intervention used with the pool of students from which the sample of students is drawn.

The Reading Recovery Council of North America (RRCNA) (2007) states that the goal of RR is to “dramatically reduce the number of first-grade students who have extreme difficulty learning to read and write and to reduce the cost of these learners to educational systems” n.p. RR seeks to achieve this goal by providing intensive one to one instruction to students who have been identified as requiring reading intervention (Schwartz, 2005).

Incoming first graders are screened using the Marie Clay’s Observation Survey of Early Literacy Achievement. RR research demonstrates that the Observation Survey of Early Literacy Achievement has high degree of construct validity with the Iowa test of Basic Skills (RRCNA, 2007). Based on the results of this survey, children are selected for participation in RR. The RRCNA states that RR identifies and serves the lowest readers in one-to-one pull out instruction/tutoring for 30 minutes every day (Elbaum, Vaughn, Hughs & Moody, 2000). Typically, children who successfully complete the program are discontinued after twenty weeks of instruction, but there are special cases where students may be discontinued (successfully completed), dismissed (not progressing) or for another reason be exited prior to the full 20 weeks. The student is discontinued when s/he is able to read at his or her grade level, which is a local norm calculated on the average reading level of the class which is has been computed using Observation survey data from a control group consisting of students from the class (Ebaum, et al, 2000).

The philosophy and instructional strategies for RR tutoring sessions were developed through Marie Clay's work, but they are highly related to the Whole Word approach to reading instruction (Groff, 2004; Kazloff, 2004). Lessons are built on a consistent framework that includes having students read familiar (predictable) books, work with letters and words using magnetic letters, write a story and read a new book. Teachers encourage students and follow their lead, helping them to develop successful "Self-extending" reading strategies (RRCNA, 2007, United States Department of Education [USDE], 2007).

The underlying tenets of RR are that reading is social and consists of more than simply reading printed words, multiple aspects of the text are available to assist the students who use text-level cues to guide their reading, and automacy develops as the child becomes more secure in these strategies (D'Agostino & Murphy, 2004). Predictions about the book, shape and size of words, pictures, word order and past experience are all text-level cues used to decode text (Kozloff, 2004). Students may be guided in using letter – phonics cues for decoding when other cues are insufficient to decipher meaning.

Purpose

This study was designed to begin to identify those salient characteristics of third graders who are reading below proficiency as determined by the Reading Minnesota Comprehensive Assessment [II](MCA/MCA-II) and isolate those factors which may influence or predict reading success. This research reflected current understanding of the foundational nature of effective and efficient reading skills and their necessity for adequately accessing the increasingly complex learning demands through subsequent grades as well as across domains. Additionally, it was consistent with current accountability and intervention expectations, which require schools to

utilize well researched and designed interventions that promote sufficient growth in core curricular areas such as reading.

As exemplified by the research questions, the factors to be considered in the study are structured reading intervention participation (no participation, partial, or full), English language proficiency, socioeconomic status, and number of years in the school district. This last point was included in order to account for accessibility to the first-grade-only reading intervention, as well as in recognition of mobility as a risk factor to learning.

Research questions

a). Is there significant variation on the mean MCA/MCA-II Reading score depending on intervention status of 200 non-proficient third graders readers? Intervention status fell into 4 groups, two no intervention groups and two intervention groups. The two groups that did not receive the intervention were comprised of students that either weren't in the district at the time of the intervention, or were in the district but were not selected for participation. The two intervention groups were made up of students who received either the complete intervention or partial intervention.

a). Hypothesis:

Mean MCA/MCA II test scores for students having been identified and selected for intervention yet only receiving the partial intervention will be significantly lower than the other groups.

b). Is there significant variation on the mean MCA/MCA-II Reading score depending on ethnicity: Non-White/Hispanic, Caucasian, or Hispanic?

b). Hypothesis:

The mean score of non-majority culture ethnic groups, especially the Hispanic group for whom language barriers may exist, will be significantly lower than the mean score of the other ethnic groups.

c). Is there significant variation on the mean MCA/MCA-II Reading score depending on English Proficiency: Proficient or Non-Proficient?

c). Hypothesis:

Limited English Proficiency will be a risk factor to the MCA/MCA-II reading test scores and the mean test score for students with LEP will be significantly lower than the mean score for students who are proficient in English

d). Is there significant variation on the mean MCA/MCA-II Reading score depending on Socio-economic Status using Free and Reduced Lunch program data as proxy?

d). Hypothesis:

Low SES is a well researched risk factor for early literacy and the mean MCA/MCA-II reading scores for students who qualify for the Free and Reduced Lunch Program will be significantly lower than the mean test score for those who do not qualify.

e). Is there significant relationship between MCA/MCA-II Reading scores and the number of months in the school district?

e). Hypothesis:

There will be a positive correlation between number of months in the school district and MCA/MCA-II scores.

f). Is there significant relationship between the MCA/MCA-II Reading scores of Reading Recovery participants and the number of session of the intervention?

f). Hypothesis:

There will be a positive correlation between number of Reading Recovery lessons and MCA/MCA-II scores.

Method

Participants

Subjects were 201 students from a rural district in the Midwest who took the third grade MCA/MCA-II Reading test in the years 2004-2007, and whose scores fell into the below grade level proficiency categories *Does not meet the standard* or *Partially meets the standard*. The sample included 111 males and 90 females, and approximately 45% of the sample qualified for the Free and Reduced Lunch program. One hundred and fifty one students were Caucasian, 46 Hispanic and 2 each African American and Asian. Seventy-nine percent of the sample was classified as proficient English speakers. Reading Recovery is the structured reading intervention for the school district and 74 students from this sample were served to some degree by Reading Recovery: 41 boys and 33 girls.

Apparatus

Students participated in a statewide standardized reading assessment in the spring of their third grade year. This assessment was called the Minnesota Comprehensive Assessment (MCA) prior to 2006. It is now referred to as the MCA-II. Student performance was assessed in reference to state academic standards and scores fall into one of four categories: Does not meet the standard, Partially meets the standard, Meets the standard or Exceeds the standard. The MCA/MCA-II tests were developed in accordance with strands, substrands and benchmark of the Minnesota state standards and results are used to compare school performance across the state. All students are required to take the test regardless of special education or LEP status. There is

no minimum score required for graduation. According to the Minnesota Department of Education (2006), “The test specifications achieve the goal of a technically sound test that ...have taken into account the grade and age of the students involved as well as various pedagogical concerns” (p 5). According to the Technical Manual for Minnesota’s Title I and Title III Assessments (2008), content validity for the reading scores was adequate. Reading test item development was noted to be the responsibility of the testing contractor and was subject to iterative and rigorous review by the MDE. Reading passages were constructed based on the principles of Universal Design, and all items were reviewed by an expert panel for fairness and bias, relative to issues of gender, culture, diversity, language, religion, socioeconomic status and various disabilities. The internal reliability for the total reading score was found to be excellent ($\alpha=.91$) (MDE, 2006).

Statistical Analysis

Results

Descriptive

In order to determine if any demographic differences existed between the various groups in the study, a series of chi square tests were run. The Pearson Chi² for gender and Reading Recovery (χ^2 (N=201)= 4.611, $p> .05$), ethnicity and Reading Recovery(χ^2 (N=201)= .002, $p> .05$), gender and Special Education (χ^2 (N=201)= .045, $p> .05$) and ethnicity and Special Education (χ^2 (N=201)= 4.833, $p> .05$) were not significant for this sample. The Pearson Chi² test for Limited English Proficiency and Free and Reduced Program status was significant (χ^2 (N=201)= 63.524, $p< .05$). Therefore, it is suggested that Limited English Proficiency and Free and Reduced Program status are not independent variables and influence one another. Students who are identified as having limited proficiency in English were significantly more likely to qualify for the Free and Reduced Lunch program.

Descriptive statistics of the primary variables of interest: MCA/MCA-II scores, Minnesota percentiles scores for the MCA/MCA-II and months in the school district indicate that the mean MCA score was 1263 (min 850, max 1410) the mean MCA-II score was 334 (min 192, max 348), mean percentile was 11 (min 1, max 25) and the mean number of months the student was in the district prior to taking the MCA/MCA-II test was 35 months. The distributions of means of the MCA/MCA-II scores display a negative skew indicating the scores were more likely to fall in the upper range, which is also indicated in the frequency data for achievement levels (92 ach level 1 [does not meet standard] 109 ach level 2 [partially meets standard]). Kurtosis for all variables was normal.

Analysis

Analyses were conducted on the factors of interest which were hypothesized to influence the third grade MCA/MCA-II Reading scores. These were Free and Reduced Lunch Program (FRP) participation, English Proficiency (LEP) (Independent samples T-test), Ethnicity and intervention status (ANOVA, Multiple Regression) and number of sessions in the reading intervention and number of months in the school district (Bivariate Correlation). The analysis for each research question was performed for both the MCA data set ($N=79$) and the MCA-II ($N=122$) data set. The score range for the MCA was 380-2150 and the range for the MCA-II was 1-99, although scores for the third grade MCA-II are prefixed with a 3, indicating that the test was taken in third grade, therefore score ranges in this sample are shown as 301-399. Results are indicated for both groups.

1. Is there a significant variation on the mean MCA/MCA-II Reading score depending on intervention status: not in district, not selected, complete intervention or partial intervention?

Hypothesis: Mean MCA/MCA II test scores for students having been identified and selected for intervention yet only receiving the partial intervention will be significantly lower than the other groups.

The results of the one way ANOVA and intervention status (no intervention, not selected, partial and full) were not significant for the MCA- II scores ($F = .094, 3, p > .05$), but the difference in mean reading scores and intervention status was significant for the MCA ($F = 3.599, 3, p < .05$, Eta squared .084). Post hoc analysis indicated a significant difference (LSD $p = .002$) in scores for students who were not selected for participation ($M = 1220$) and those who received the partial intervention ($M = 1321$), however additional analysis with the more stringent Bonferroni post-hoc method was not significant. Because some students were not allowed to be selected for participation in the intervention because they were already receiving special education services, a follow-up ANOVA was used on a data set which excluded students who were not selected for participation in the reading intervention because they had previously received Early Childhood Special Education services. The results of this ANOVA were not significant ($F = 1.656, 3, p > .05$).

2. Is there significant variation on the mean MCA/MCA-II Reading score depending on ethnicity: Non-White/Non-Hispanic, Caucasian, Hispanic? Hypothesis: The mean score of non-majority culture ethnic groups, especially the Hispanic group for whom language barriers may exist will be significantly lower than the mean score of the other ethnic groups.

A one-way ANOVA was used to determine the significance of the mean score differences of three Ethnicity categories (Caucasian, Non-white and non-Hispanic, and Hispanic) on the MCA and MCA-II reading scores. The results of the one way ANOVA were not significant for either the MCA ($F = .837, 3, p > .05$) or the MCA-II ($F = .969, 3, p > .05$) scores.

3. Is there significant variation on the mean MCA/MCA-II Reading score depending on English Proficiency? Hypothesis: Limited English Proficiency will be a risk factor to the MCA/MCA-II reading test scores and the mean test score for students with LEP will be significantly lower than the mean score for students who are proficient in English

4. Is there significant variation on the mean MCA/MCA-II Reading score depending on Socio-economic Status using Free and Reduced Lunch program data as proxy? Hypothesis: Low SES is a well researched risk factor for early literacy and the mean MCA/MCA-II reading scores for students who qualify for the Free and Reduced Lunch Program will be significantly lower than the mean test score for those who do not qualify.

The results of the independent samples T-tests were not significant for MCA-II scores and LEP ($t = .075, p > .05$), or FRP participation ($t = .563, p > .05$). The independent samples T-test using MCA scores and LEP also was not significant ($t = .727, p > .05$). However, MCA reading scores and FRP was significant ($t = -3.168, p < .05$). A follow-up ANOVA was also significant ($F = 10.038, 1, p < .05$) with an Eta squared of .077, indicating FRP (SES) exerted a small influence and explained approximately 8% of the variance in the MCA scores (Cohen, 1988).

5. Is there a significant relationship between MCA/MCA-II Reading scores and the number of months in the school district? Hypothesis: There will be a positive correlation between number of months in the school district and MCA/MCA-II scores.

6. Reading Recovery participants – Is there a significant relationship between MCA/MCA-II Reading scores and the number of sessions of the intervention?

Hypothesis: There will be a positive correlation between number of Reading Recovery lessons and MCA/MCA-II scores.

Finally, two Bivariate Correlations were used to determine the relationship between number of sessions a student in the reading intervention received and MCA/MCA-II scores. The first correlation included all students who took either the MCA or the MCA-II regardless of participation status. The number of sessions of the intervention (range 0 – 102) was not significantly correlated with either the MCA ($N=122, r = -.115, p > .05$) or the MCA-II ($N = 79, r$

= -.003, $p > .05$) scores. The second correlation was run using only those students who had been selected for the intervention (# of session range = 25 – 102). This correlation was not significant for the MCA-II scores ($N = 18$, $r = -.121$, $p > .05$) and showed a moderate negative correlation at a marginal significance for the MCA scores ($N=51$, $r = -.268$, $p = .057$).

Discussion

The purpose of this study was to more fully describe the struggling third grader (non)reader and to attempt to identify those variables or factors which may influence reading proficiency. The variables were chosen as research literature has increasingly demonstrated the important role these factors play in a child's educational experience. These primary variables were ethnicity, language proficiency and SES, as well as the reading outcome variables on the MCA/MCAII. Additional variables reflect the current understanding of the importance of utilizing research based strategies to intervene with struggling readers. Students in this sample had access to the Reading Recovery intervention program; therefore participation (yes or no) and intervention intensity (number of sessions) were included as additional variables. Finally, because the intervention is offered only in first grade, the numbers of months the students were in the school district (indicating whether non participation in the intervention was because they were not in the district in first grade) was also added as a variable.

Overall, the results for the MCA-II did not support any of the hypotheses, while results for the MCA suggest marginal significance for differences in scores for student receiving partial intervention versus those students who were not selected for participation and for students who qualified for FRP (discussed below). The overall non-significant results are noteworthy for several reasons. First, the revision of the MCA to the MCA-II resulted in a lower overall number of students scoring below proficiency in third grade ($N = 122$ and $N=79$) and the smaller N

requires greater mean differences to achieve significance. Additionally, the Ethnic distribution is different (although not significantly) between the MCA and MCA-II data sets with fewer minority ethnicity represented in the MCA-II data. As demonstrated in the Pearson χ^2 with LEP and FRP, language proficiency loads heavily on SES factors which exerted a small effect on only the MCA scores. Finally, there were significantly fewer students who participated in Reading Recovery ($X^2=5.23, p<.05$) in the MCA-II than in the MCA (29% versus 41 %) data group. These results suggest that the MCA-II has lower proficiency standards for reading, the standard for participation in Reading Recovery was made more discriminating during this same period or children are demonstrating stronger reading skills, both in first grade with regard to selection for RR and in third grade as reflected in MCA-II Reading scores.

It is interesting to note that the scores of students receiving the complete RR intervention were not significantly higher than the scores of students receiving partial or no intervention for either the MCA or the MCA-II. This could be because there is little benefit for participation in the intervention, but it is more likely that the intervention has a moderating effect. That is, students who are selected for full participation are among the lowest scorers on the early literacy screener, and although the scores for these students do not appear to benefit from RR because they are not significantly higher scoring, perhaps the intervention has allowed their scores to not be significantly lower than the others'. This is borne out in part by results indicating that the mean score of students receiving the partial intervention was significantly higher than the scores of students not receiving intervention. Students selected for partial intervention are not the lowest scoring students on the literacy screener (thus not selected for full participation) but with the benefit of a limited number of intervention sessions, these marginally at risk students score better than those students who were not selected for participation (because their early literacy screening

scores were too high). Bivariate correlation results also support this finding, as among students who received some RR intervention, MCA scores were negatively correlated with the number of RR sessions they received. That is, the fewer sessions in which a student participated, the higher the MCA score. Presumably this is not due to some detrimental effect of the intervention! Instead, it is another example of students who required the fewest sessions demonstrated the stronger skill and students qualifying for the greater number of sessions demonstrating weaker skills. These results potentially indicate that the correct students are receiving the full versus partial intervention.

Again, predictor variables were not identified for the MCA-II group, but FRP qualification demonstrated overall significance in regression analysis with the MCA. Post hoc Least Significant Difference was also significant; however FRP as a predictive variable was not significant at the more stringent Bonferroni levels. FRP is used as the SES proxy in the public schools and SES is consistently demonstrated to be a risk factor to learning. Reading is particularly vulnerable to the effects of lower SES as the associated environmental language deficits have a profound impact on reading readiness skills. It is interesting to note that ethnicity and LEP were not found to be significant predictor variables despite the significant results of the Pearson Chi² for LEP and FRP. Challenges and deficits associated with SES exerted a greater impact on this sample of MCA scores than LEP or Ethnicity alone.

Correlations for number of months in the district and MCA/MCA-II Reading scores were not significant for either the MCA or the MCA-II suggesting that students are not at a greater risk for scoring below proficiency in third grade if they have not been available in this district for the first grade RR intervention. Perhaps these students are receiving similar intervention services

in previous districts, or as indicated above, the overall effect of RR participation is not significant.

Limitations

The primary limitation is that research questions and results would yield more useful interventions if comparisons and contrasts could be made to proficient readers. A suggestion for a follow-up study would be to use data sets that included all third graders who took the MCA or MCA-II. This would produce larger sample sizes with a greater score range. Additionally, similar research could be conducted on data comparing the results of students who took the MCA and students who took the MCA-II, to answer questions regarding the impact of the revision on student assessment results.

Additional limitations to this study relate to the limited variability in sampling. The ELL population is limited to Hispanic students whose primary home language is Spanish. Additionally, some cell sizes are small (student receiving only partial intervention) and therefore, those results should be treated with some caution.

Future research should continue to define the effects of SES as a predictor variable of reading development in particular and language processing in general. The impoverished language environment that manifests in inadequate cognitive readiness for reading development has far reaching implications. Classroom reading instruction and targeted reading interventions can only be as effective as the cognitive language structure of the listener can accommodate.

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