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**Reading Comprehension Predictors and Interventions for Bilingual
Adolescents: A Review of Best Practices**

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**Reading Comprehension Predictors and Interventions for Bilingual
Adolescents: A Review of Best Practices**

by

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Report

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**Reading Comprehension Predictors and Interventions for Bilingual Adolescents: A
Review of Best Practices**

by

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English language learners (ELLs) comprise a large and growing portion of the United State’s school population. Many ELLs experience difficulty acquiring English reading comprehension. These deficits grow larger as students age due to the Matthew effect and can contribute to significant difficulty accessing the educational environment. This review addresses the skills that contribute to reading comprehension outcomes to identify the key predictors of reading comprehension outcomes for bilingual adolescents. Vocabulary, syntax, and facility in managing cross-linguistic factors emerge as the linguistic skills most directly correlated to reading comprehension abilities. This review concludes by addressing best practices in intervention within these three areas to identify evidence-based approaches to mediate reading comprehension deficits in adolescent ELLs.

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I. Introduction

Harris and Hodges (1995) define reading comprehension as a process of “intentional thinking during which meaning is constructed through interactions between text and reader.” The exact processes underlying reading comprehension have been most succinctly described as the integration of decoding and language comprehension abilities, in what is called the simple view of reading. Decoding, which refers to the translation of written words into their sound structures is a complex process. Decoding skills are influenced by phonological awareness, morphological awareness, and visual orthographic processing (Apel & Swank, 1999). Linguistic comprehension, the other key skill in reading comprehension, emerges from vocabulary, syntactic skill, and comprehension of spoken language (Catts, Adlof, & Weismer, 2006). For English language learners, or ELLs, reading comprehension and performance in the six underlying processes outlined above, is also influenced by cross-linguistic factors, including linguistic transfer, cognate awareness, and orthographical similarities and differences across languages. Transfer refers to the students’ ability to take reading strategies learned in one language and use those same approaches when reading in another language. In translation, students can take unfamiliar terms in one language and decipher their meaning by literally translating each component of the term into their other language. Cognate awareness refers to identifying words that share phonetic, orthographic, and semantic features between languages. English and Spanish in particular share a large number of cognate words where only small orthographic and phonetic changes occur to convey the same concept

across languages. Decoding, linguistic comprehension, and cross-linguistic awareness are the three key skills underlying reading comprehension development for ELL students.

School curriculums in the United States typically expect students to have sufficient reading comprehension to be able to learn new material via reading by the third grade. For the 4.4 million ELL students that the National Center for Education Statistics cited as attending U.S. schools in 2012, this can pose a serious challenge. ELL students, who account for 9.2 percent of the total school population, can experience serious, long-term effects of delayed reading comprehension skills due to the Matthew Effect. This phenomena describes how students who do not attain reading comprehension with their peers experience more and more difficulty academically as they mature. Peers with strong reading comprehension experience the opposite and continue to improve their skills, further widening the gap for struggling readers (Stanovich, 1986). The Matthew Effect is especially relevant for ELL students, who have been shown to fall further and further behind monolingual peers as they age (Farnia & Geva, 2013). ELLs who are unable to extract meaning from texts in late elementary school and beyond will have difficulty accessing their educational environment and succeeding academically. Reading comprehension can influence educational outcomes at all levels of the educational system and is therefore an important target for intervention at all ages.

Interventions for reading comprehension vary widely. As reading comprehension in ELLs emerges from the complex combination of decoding, language comprehension, and cross-linguistic awareness, intervention approaches are equally complex. These three

core skills may be targeted individually or in tandem, and approaches differ in which component skills they target. For example, linguistic comprehension could be addressed through vocabulary or grammar interventions. This review will investigate which components of reading comprehension interventions have the greatest impact for ELL adolescents. Additionally, this review will explore the different intervention approaches within these key components, with special focus on vocabulary, syntax, and cognate-awareness interventions. It aims to identify best practices in reading intervention for this growing population.

II. Predictors of Reading Comprehension

Reading comprehension deficits can be the result of breakdowns in decoding, oral language comprehension, or both. Evidence shows that different skills function as predictors of reading comprehension outcomes depending on age, language background, and language impairment. This review will examine the literature to isolate the strongest predictors of reading outcomes from the three core areas of bilingual reading development and their component skills: decoding, language comprehension, and cross-linguistic awareness.

Research generally shows that while word-level decoding is a strong predictor in younger children, it only weakly predicts reading skills in older children (Catts, Fey, Zhang, & Tomblin, 1999). However, some studies (Kieffer & Lesaux, 2012; Kieffer, 2014) have observed links between weaknesses in morphology and deficits in reading comprehension in adolescents. Goodwin (2013) addresses these conflicting findings in a recent study, suggesting that this effect may be explained by the relationship between morphology and vocabulary (Silverman et al., 2015). Specifically, they point out that morphological awareness, which refers to the ability to understand how suffixes and prefixes modify the meaning of root words, can aid in vocabulary comprehension scores. Therefore, to the extent that vocabulary knowledge influences reading comprehension, morphological awareness will also make an indirect contribution. In other words, the evidence suggesting that morphological awareness is a key predictor may not support the importance of decoding skills, but rather indicate that morphological awareness is tied to

vocabulary, which functions as a strong predictor. Therefore, the research on the impact of morphology on reading comprehension does not provide strong support for using it as an independent predictor of reading comprehension or selecting it as a core area of intervention. Morphological awareness may have a role as a minor supplement to vocabulary interventions, but it has not emerged as a key predictor of reading comprehension in older bilingual students.

Geva and Farnia's (2012) study provides additional evidence for linguistic comprehension as the core predictor of reading in adolescents. This study tracked students from first to sixth grade, with especial focus on data collected in the second and fifth grades. The authors measured how linguistic factors and cognitive processes affect reading outcomes, concluding that language competencies have a large impact on reading development in the older student. No strong influence was noted for morphological awareness in this study. That is, phonological awareness, morphological awareness, and visual orthographic processing, the key factors to decoding ability, did not emerge as key factors in reading comprehension prediction in this study.

Further research by Farnia and Geva (2013) supports their earlier conclusions against decoding as a key predictor and delves into the key skills within language comprehension that predict reading outcomes. In this study, Farnia and Geva (2013) examined decoding and language comprehension more precisely by assessing their component skills. They selected vocabulary, syntax, and listening comprehension as their three focal areas within the general skill of language comprehension. The authors used an

augmented simple view of reading (SVR) model, where cognitive processes were analyzed in addition to the core skills of decoding and language comprehension. The authors therefore collected data on general cognitive processes (meta-cognition, working memory, nonverbal ability), decoding (phonological processes, word-level reading, pseudo-word reading, etc.), and language comprehension (receptive vocabulary, syntax, listening comprehension, etc.) during the first and fourth grade and used these factors to predict reading outcomes in second and sixth grade respectively. Data was obtained via a combination of experimental measures and standardized tests such as the Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 1981), and single subtests from standardized measures to obtain information about specific skills.

Consistent with earlier findings, decoding skills were not shown to have a significant effect on reading comprehension outcomes for the later ages. The authors found that language comprehension, vocabulary, and syntax all independently influenced reading comprehension. However they saw a larger effect for syntax. Specifically, students who scored highly on measures of syntax and low on vocabulary measures outperformed students with high vocabulary and low syntax. While this data provides strong support for the identification of syntax as a key predictor, the authors posit that their data on vocabulary may underrepresent the importance of vocabulary for reading comprehension. Their vocabulary data collection via the PPVT may not have made sufficient cognitive demands to mimic those required to access vocabulary when reading. As such, the correlations and conclusions made by the study regarding vocabulary should

be interpreted with caution. To accurately assess vocabulary's role in reading comprehension, additional information and higher quality measures are needed. Recent research by Silverman and colleagues (2015) provides more sophisticated data on vocabulary's relationship to developing reading comprehension.

Silverman et al. (2015) investigated the skills implicated in the simple view of reading with a strong focus on vocabulary and syntax. This study assessed reading comprehension for bilingual students in grades two through five. Although the participants in this study are younger than the target population of this review, the focus on linguistic contributions to reading make this study relevant to the current discussion. In this study, the authors focused on vocabulary breadth, vocabulary depth, syntactic skill, and morphological awareness as predictors of reading comprehension outcomes. They define vocabulary depth as the extent to which students understand the relationships between words and different uses for words based on context. Vocabulary breadth deals with the range of the student's vocabulary and the amount of words in their lexicon. The 386 participants, 55% of whom were English monolinguals and 45% of whom were Spanish-English bilinguals, were given five components of standardized measures of English language to assess the factors of interest. The students' abilities on these five distinct skills were compared to their reading comprehension outcomes as measured by three full standardized tests. The authors conducted a variety of sophisticated statistical analyses to identify how, when, and how strongly each of the five linguistic skills correlate to reading comprehension outcomes. They found that early vocabulary depth

and syntactic skill, but not morphological awareness, corresponded to later reading comprehension, thereby confirming the appropriateness of focusing on language comprehension when addressing reading comprehension for ELLs. This evidence supports further investigation in both syntax and vocabulary as key oral language factors in reading comprehension.

Cisco and Padrón (2012) provide a detailed systematic review describing three distinct measures that augment understanding of the crucial role of vocabulary in reading comprehension outcomes. They found that vocabulary deficits can lead to low scores on reading comprehension tests even when students comprehend the passage. In these cases, students were able to decipher implicit meanings in the passages, but struggled to decode the vocabulary used on the multiple choice answer options. The authors found that low vocabulary was the universal predictor of reading comprehension deficits for both English monolinguals and English-Spanish bilingual students. Further studies by Jimenez (1995, 1996, as reviewed in August, 2005) suggest that struggling ELL readers often depend on comprehension of key vocabulary to decipher meanings of passages, further supporting the focus on vocabulary in ELL reading comprehension intervention. Cisco and Padrón (2012) provide strong support for vocabulary as a target of intervention when working towards improved reading comprehension for adolescent English Language Learners.

Foorman, Koon, Petscher, Mitchell, and Truckenmiller (2015) provide an additional look at reading comprehension predictors. Their large-scale study focused on

Limited English Proficient (LEP) students, who were considered by the authors as bilinguals, and their monolingual peers in fourth through tenth grades across 18 schools. The authors noted that data was not available for all students regarding language background. The authors treated all students with missing language background data as English-only monolinguals, but noted that it is possible that bilingual students were mislabeled. Another challenge of identifying bilingualism using LEP designation, is that highly proficient bilingual students may not be identified, since the qualification is based on limitations in English instead of general language background. The difficulty in accurately isolating all bilingual students in this study sample reduces the strength of the evidence provided. However, the study's large sample size and the relevance of its research question warrant its inclusion in this review. The authors measured the impact of syntax, vocabulary, and decoding fluency on reading comprehension competency and found that neither vocabulary nor syntax could independently predict reading comprehension outcomes. Instead they postulate a general oral language factor where overall language skill, or the culmination of syntax, vocabulary, and listening comprehension, makes a larger contribution than any skill in isolation.

When looking at language comprehension as a whole for bilingual children, Cisco and Padrón (2012) assert that cross-linguistic awareness functions as a third predictor of reading comprehension. Specifically, they suggest that ELL readers can improve reading outcomes through their awareness and use of transfer, translation, and cognate awareness. The authors discuss the importance of accessing the students' existing first language

knowledge to boost their English reading abilities. In further support of this approach, both Jimenez et al (1996, as reviewed in Cisco & Padrón, 2012) and Garcia and Nagy (1993, as reviewed in Cisco & Padrón, 2012) found that cognate awareness was linked to beneficial reading comprehension outcomes. Research in this area is sparse but positive in its implications for the ability of cross-linguistic awareness to predict reading outcomes.

Although important differences exist between the identified predictors in each of these studies, the results converge to support syntax and vocabulary as the crucial skills for reading comprehension development. Farnia and Geva (2012) show how decoding skills are the least influential aspect of adolescent reading. These results are further supported by the evidence found by Farnia and Geva (2013), who saw the strongest effects for syntax and vocabulary, not decoding skills. Additional inquiry in this area by Silverman et al. (2015) found that while vocabulary and syntax are crucial skills, the type of vocabulary and the way it is taught modifies the impact on reading comprehension outcomes. Vocabulary depth and ability to understand semantic relationships, and different word meanings across contexts has a greater effect on reading than the amount of vocabulary the student knows at a general, surface-level. These results are supported by Foorman, Koon, Petscher, Mitchell, and Truckenmiller, (2015) who suggested that while syntax and vocabulary are key indicators of reading comprehension success, it is best to address these issues as part of a generalized effort to improve overall oral language. Cross-linguistic awareness was only explicitly analyzed by Farnia and Geva

(2012) and in Cisco and Padrón's (2012) systematic review. While there is minimal evidence on this particular factor, when comprehension and use of cross-linguistic factors are viewed as supplemental methods of augmenting syntax and vocabulary skill, they emerge as clear, valid additions to syntax and vocabulary interventions. The validity of including cross-linguistic knowledge is further supported in the intervention studies analyzed below. This research on the key predictors of language suggest that intervention approaches must address the areas of vocabulary and syntax, but provide the interventions in the context of the child's overall language development and background.

III. Best Practices in Intervention

Evidence supports a focus on syntax interventions, vocabulary interventions and the use of supplemental strategies utilizing the child's knowledge in their first language as the best practices in mediating reading comprehension deficits. When examining interventions for ELLs, it is always vital to further consider the language of intervention when determining the best approach to remediating deficits. Although there is a strong, ever-growing evidence base supporting bilingual or first-language intervention, as many as 80% of all bilingual children receive monolingual services in their second language (Jordaan, 2008). As of 2013, only 7,214 speech-language pathologists certified by the American Speech-Language-Hearing Association met qualifications to be deemed bilingual interventionists (ASHA 2014). This comprises only five percent of practicing speech and language professionals in the United States. This disparity between prevalence of bilingualism and availability of bilingual practitioners is especially wide at the secondary level. In secondary schools, 58% of all ELL students receive services in English-only; only 3% of students receive services in their home language, with the remaining 39% receiving services that fell somewhere on the spectrum of bilingual intervention (ASHA 2012). Given that the majority of service provision is in an English-only model, this review will include studies discussing efficacy of English-language interventions. English-only services have not been shown to be the most effective method for this population, however it is the method practiced by 95% of all clinicians in the

United States (ASHA 2014) and is therefore worthwhile to identify best practices that match the capabilities and language background of most clinicians.

Within English language interventions, this review will examine best practices in vocabulary, cognate-awareness, and syntax interventions. Cognate awareness and other cross-linguistic strategies are found in the research primarily as a supplement to vocabulary interventions. As such, we will examine the efficacy of vocabulary-only interventions as well as vocabulary interventions augmented with cross-linguistic awareness strategies.

Vocabulary interventions

Vocabulary interventions vary from incidental to direct approaches. Incidental learning, where students acquire new vocabulary from context clues without any direct instruction has only been found to be successful when passages contain 2% novel words or fewer (Carlo et al., 2004). As such, incidental learning is not a promising approach for struggling readers who are learning English as a second language. Instead, direct instruction is needed to improve vocabulary skills. In both vocabulary-only interventions and augmented-vocabulary interventions, a major challenge is selecting target vocabulary. August, Carlo, Dressler, and Snow (2005) suggest using available inventories listing the words typically known by English-only children at each grade level when working with ELL students. Target selection will be touched on in the efficacy studies detailed below, however more research is vital to determining best practices in target

selection. While there is clear merit in teaching grade-level vocabulary, August and colleagues (2005) summarize the research support behind vocabulary interventions, with and without paired cognate awareness training, and provides recommendations for providing evidence based vocabulary interventions.

August et al (2005) reviewed a 1981 study by Perez which compared four approaches to vocabulary intervention for Spanish-English ELLs. The four treatment groups received one or more of the following interventions: learning definitions, semantic mapping, predicting word meanings, developing matrices showing word relationships, and completing cloze sentences. One group focused on word definitions and pronunciation, another intervention paired making semantic maps and predicting word meanings, a third group used matrices to map word relationships and predicted meanings, and the fourth group combined matrices and cloze sentence approaches. All children completed a reading comprehension task to measure the effectiveness of the vocabulary intervention. The group that combined matrices of word meanings and completed cloze sentences outperformed all other groups. August et al (2005) conclude that reading comprehension outcomes are best improved by vocabulary interventions that require active interaction with word meanings.

In their review of best practices in vocabulary intervention, August and colleagues (2005) review a 1990 study by Vaugh-Shavuo. This study compared vocabulary outcomes resulting from either an intervention presenting target vocabulary in single-sentence contexts or one that combined narratives, picture cards, and producing sentences

with the target word (Vaughn-Shavuo 1990). The authors found that the latter intervention, where the students more actively processed and interacted with the novel vocabulary, led to improved vocabulary comprehension. Although the authors did not directly extrapolate their findings to reading comprehension, this study provides additional support for active interaction with new vocabulary, as suggested by Perez (1981). August and colleagues (2005) concluded that the evidence best supports engaging tasks where vocabulary knowledge must be actively used while also providing rich semantic contexts for practicing new vocabulary knowledge. Best practices in vocabulary-only intervention are further reviewed in a recent study by Hwang and colleagues (2015).

A recent study by Hwang, Lawrence, Mo, and Snow (2015) evaluated the response of proficient ELLs to vocabulary interventions, using thirteen California middle schools. The schools were matched on important variables to create control and treatment groups that were as similar as possible. The treatment group received a Word Generation vocabulary intervention, while the control group was taught the standard curriculum. The Word Generation intervention taught five academic vocabulary words each week, presented them in topical contexts, and were used by the students in writing, reading, listening, and speaking tasks throughout the week. While the efficacy of the Word Generation program had been well established for monolingual students, a study by Lawrence, Capotosto, Branum-Martin, White, and Snow (2012) implied that students with limited English proficiency would not benefit from this intervention. Hwang and

colleagues (2015) therefore explicitly examined the extent to which bilingual students could benefit from the program. They investigated the effectiveness for monolingual English speakers, highly English-proficient ELLs, and limited English proficient students to determine at what level of English ability ELL students were able to benefit from this evidence-based program. Hwang and colleagues found that, while English-only and proficient ELL students outperform limited English proficiency adolescents following the Word Generation intervention, all students showed improved reading comprehension after the intervention. This suggests that vocabulary interventions focusing on academic language are effective for all students, but the largest gains will be seen in students with more advanced English skills; students with limited English proficiency may be best suited to vocabulary intervention that targets less complex language. Alternatively, the depressed gains of the LEP students could be explained by their added difficulty comprehending the direct instruction they received in English or the limitation of their lower vocabulary knowledge on drawing connections between words. Additional research on the performance of LEP students with this approach and an investigation as to the factors behind the disparity between LEP and highly proficient ELLs would be highly beneficial. While further research is needed to further explore the clinical applications of the Word Generation and similar programs, this study provides sufficient support for its continued implementation and study. The success of this program, which teaches vocabulary using a wide variety of writing, reading, speaking and listening tasks

supports August and colleagues' (2005) conclusions that vocabulary learning happens best when students are actively engaged in using the new vocabulary.

Cognate awareness interventions

Another important approach to improving reading comprehension is cognate awareness training. Cognate awareness interventions take advantage of the many words in shared between English and Spanish. It aims to help students improve their reading comprehension by identifying unknown words via their known cognates. In her review of the literature, August, Carlo, Dressler, and Snow (2005) concluded that an understanding of cognate relationships is linked to improved reading comprehension in English, and benefits English morphological development. Cognate relationships are most useful for words that are semantically, orthographically, and phonologically similar between languages. Hancin-Bhatt and Nagy (1994) found that the ability to use cognates to facilitate reading comprehension improves with age, making this technique especially beneficial for adolescent populations. This approach enables students to actively improve their novel word decoding skills and to more independently expand their vocabularies.

Carlo et al. (2004) used a quasi-experimental design to evaluate the efficacy of pairing direct vocabulary instruction with meta-linguistic strategies where students are taught to recognize and use cognates to bolster their vocabulary. Their 254-student sample, consisting of 142 ELLs and 112 monolingual English speakers, was randomly assigned to treatment and control groups. The control groups were not given specialized

instruction; the classroom teachers taught their typical curriculum without any modifications. The treatment group followed a weekly program to boost vocabulary. Specifically, they used relevant, meaningful narratives to introduce novel vocabulary, gave students opportunities to review material in their first language prior to reading it in English, presented target words and discussed how to identify their meanings from context, completed cloze sentences, and discussed multiple meanings of words and cognate awareness (Carlo et al., 2004). The authors found that the treatment group improved on vocabulary measures, understanding of multiple meanings, and on reading comprehension outcomes. Benefit was seen for monolingual students as well as bilingual children. This study strongly supports the use of active, engaging tasks to teach vocabulary and shows positive results for the inclusion of cognate awareness.

For bilingual students learning English as a second language, vocabulary intervention and cognate awareness are vital tools in improving their ability to comprehend language and decode novel English words. The studies evaluated in this review offer strong support for these methods of vocabulary and cross-linguistic strategy intervention. While evidence supports the use of these methods, further information regarding implementation and target selection is crucial to make sure interventions are as effective and appropriate as possible. While future research should focus on selecting appropriate target words for children based on their age, language proficiency, and the presence or absence of specific language impairment, enough information is available to

soundly incorporate these methods into intervention for reading comprehension gains in ELL adolescents.

Syntax interventions

In contrast, little research is available in the area of syntax intervention that targets ELLs, adolescents, and reading comprehension outcomes. Syntax instruction, while implicated in research on predictors of reading comprehension, is absent from the majority of the literature on reading comprehension mediation for ELLs. Given the paucity of appropriate research, this review will include studies discussing syntax intervention for monolingual children, children with specific language impairment (SLI) and younger children to provide information on general best practices in syntax instruction.

Cirrin and Gillam (2008) reviewed a wide range of language and speech targets and briefly examined best practices in syntax intervention. They isolated three high-quality intervention studies dealing with syntax. A total of 72 participants, ranging from six to eight years of age participated in the three studies included in Cirrin & Gillam's (2008) review. One of the reviewed studies, by Weismer and Murray-Branch (1989), compared the efficacy of syntax interventions where clinicians only provided models of correct forms to approaches pairing modeling with child attempts to produce the grammatical form. Their study did not show any significant difference between treatment groups. Cirrin and Gillam (2008) reviewed a second study, by Connell and Stone (1992),

which continued to examine whether modeling alone was sufficient to make grammatical changes. They found that modeling alone was less successful than adding a stage of student imitation. In the third study included in Cirrin & Gillam's review, Bishop, Adams and Rosen (2006) further investigated whether altering rate of speech or both rate and frequency of speech would impact students' ability to comprehend syntax. They found no differences across groups. While one study indicated that interventions pairing imitation with modeling were more successful than modeling alone, two of three high-quality studies were unable to find significant data to support their proposed treatment methodologies. This review highlights the lack of empirical evidence supporting syntax interventions.

Recent studies by Phillips (2014) and Ebbels (2007) make some strides toward developing a research base in this area. Phillips (2014) investigated the effect of small-group syntax interventions on 354 pre-kindergarden through first grade students. The intervention consisted of direct syntax instruction focusing on prepositions and connectives that denote causal and temporal significance, passive sentence structures, and complex phrases (Phillips, 2014). The foci of intervention varied depending on the grade level of the participant. Younger students learned prepositions, and negation while older students learned conjunctions and passive structures. These constructs were taught in 20-minute brief lessons. The students' progress was tracked using researcher-designed measures containing cloze sentences, receptive identification items, questions eliciting expressive responses, and listening comprehension tasks. While the lack of standardized

measures is a weakness in generalizing the results of this study, the study provides a strong level of detail regarding its procedures and utilizes a large sample size, meriting its consideration. The authors found that the interventions led to improved listening comprehension outcomes for their students, which is one of the key contributing factors to reading comprehension. These authors did not follow up with longitudinal reading comprehension data for these young participants, but the improvements in listening comprehension suggest that reading outcomes could see a similar positive effect for older students receiving similar modular syntax interventions.

Ebbels (2007) provides more evidence regarding the efficacy of syntax interventions for our target age range. In that work, Ebbels investigated the use of an explicit syntax instruction using visual coding. This approach differs from many approaches in its use of direct teaching instead of implicit learning. As seen in the area of vocabulary, implicit learning becomes more challenging for students who are learning the language and are therefore at a disadvantage for learning from context. This suggests that an explicit teaching approach will be beneficial for ELLs. In this study, Ebbels (2007) examined the response of three adolescents to a shape coding syntax intervention. The shape coding method provides visuals by linking colors to syntactical structures and word classes and using a code of arrows to denote verb morphology. These visual systems can be used to support accuracy in crucial grammatical forms such as subject-verb agreement. The coding system, while complex, provides intuitive aids for grammatical comprehension and accuracy. Ebbels (2007) found that the participants were able to

acquire previously unmastered grammatical forms and improve their accuracy in applying varied grammatical rules. While the authors show beneficial results for their small cohort of participants, this study provides only preliminary research and has yet to prove this system is a viable option for widespread intervention. That said, this study suggests that benefits may be seen by providing visual supports and systems to help students navigate complex grammatical concepts.

Although research is sparse regarding using syntax intervention to improve performance on reading comprehension measures for adolescent ELLs, the available research supports the use of active tasks where the student must engage with the material. Modeling alone is not best practices for improving syntax. Preliminary studies by Phillips (2014) supports the use of short lessons where grammatical forms are modeling, used, and produced by students. Ebbels (2007) showed initial benefit for providing visual assistance to codify new grammatical concepts and boost accuracy. This review has been unable to truly identify the best practices in syntax intervention for this population and purpose, as the research base is too sparse. Additional studies are strongly needed to improve understanding and practices.

IV. Conclusions

For ELL students in the United States, reading comprehension is a vital skill for academic success. At the secondary level, demands increase as the Matthew Effect places struggling readers further and further behind their peers and therefore their teachers' expectations. Research shows that the needs of these students are best met through holistic interventions that support the three key areas that predict reading comprehension outcomes in this population. While there is contention regarding the exact role syntax, vocabulary, and cross-linguistic factors play in reading development generally speaking, a strong consensus emerged from our review of the literature to support the focus on these three areas when working with adolescent language learners.

Intervention for improved reading comprehension in these three areas resulted in the strongest gains in reading comprehension when the approach was compelling, meaningful to the student, and engaging. For vocabulary and syntax, approaches where the student was provided exclusively with modeled language or asked to memorize definitions consistently showed the least improvement. Providing tasks where students actively participate in determining word meanings, identifying relationships between words and identifying relationships across languages was found to be the strongest indicator of intervention success. Activities such as creating word-meaning matrices, completing cloze sentences, and using visual coding systems showed strong results for reading comprehension gains. The key similarity between the studies included in this review was that approaches which incorporated tasks aimed at developing depth of

knowledge were more successful than those aimed at expanding breadth. Further research is needed to support evidence-based practices for this population to ensure that ELLs are given the best interventions and opportunities possible to succeed academically and beyond.

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