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Investigating Young Readers' Use of Visual, Textual, and Design Resources in Contemporary Picturebooks

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Abstract: The texts students encounter are becoming increasingly complex and multimodal. There remains a need to understand the semiotic resources students draw upon to make meaning with these multimodal texts. This study draws on social semiotics as a frame to explore the ways in which eight first graders with a wide range of literacy proficiency levels and first languages constructed meaning with selected multimodal picturebooks. Current assessment and text matching processes are documented and contrasted to the ways readers in this case study used the available semiotic resources, as measured by the Developmental Reading Assessment 2 (DRA2). The findings document the range and frequency of the resources first graders used when making meaning with the picturebook *We Are in a Book!* (Willems, 2010). We report findings related to the similarities and differences found among students with below and on/above literacy proficiency scores and among students who are bilingual and who speak only English. Finally, we report how two bilingual students (with below and above grade level literacy proficiency scores) used semiotic resources using an in-depth, qualitative cross-case analysis. The findings indicate students drew on a wide range of resources that are often missing from early literacy assessments.

Keywords: early literacy, meaning making, multimodality, picturebooks, reading comprehension



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Introduction¹

As the texts young readers encounter in and out of school settings become increasingly complex (incorporating visual, textual, digital design elements), the need for understanding the various semiotic resources students draw upon to make meaning with these multimodal texts only increases (Kress, 2010; Serafini, 2014). Teachers and researchers require more information about how students navigate the new and complex texts in order to better understand how to provide effective instruction and assessment as the field of children's literature evolves. This study examines and illustrates the inadequacies of commonly used early literacy evaluation and text matching procedures in relation to students' use of semiotic resources to make meaning with multimodal texts.

As part of a larger study, the researchers sought to investigate the ways in which eight first graders drew upon the visual, textual, and design elements associated with multimodal picturebooks, in

particular the works of award-winning author and artist Mo Willems (Kachorsky, Moses, Serafini, & Hoelting, 2017). In this study we wanted to understand the connections and associations between the language and literacy proficiencies of young readers and the types of semiotic resources they used to make sense of selected picturebooks.

We begin by examining the ways first-grade readers, with varying levels of literacy abilities and proficiencies as measured by the Developmental Reading Assessment 2 (DRA2, a standardized reading assessment used to determine a student's reading level) use the available semiotic resources associated with contemporary picturebooks, specifically the work of author-illustrator Mo Willems. Next, we provide a cross-case analysis of two selected Spanish-English bilingual students with significantly different performances on the DRA2 (one student scored 3, and the other student scored 16). Finally, we consider the ways students with varying language and literacy proficiencies approach, navigate, and comprehend

¹ We acknowledge that there is a gender spectrum and that myriad pronouns exist that we can use when referring to individuals in my writing. Throughout this article we will use "he" to refer to individuals who identify as male, "she" to refer to individuals who identify as

female, and "ze" for individuals who identify as gender-neutral. We have selected these pronouns because we believe they are more familiar for a diverse audience of readers.

the semiotic resources in the selected picturebooks as they work to construct meaning during these transactions.

The following research questions guided our study:

1. What semiotic resources did first graders use when making meaning with the multimodal elements in the picturebook *We Are in a Book!* (Willems, 2010)?
 - a. What similarities and differences were found among students with below and on/above DRA2 scores?
 - b. What similarities and differences were found among students who are bilingual and who speak only English?
2. How did two bilingual students (with below and above grade level DRA2 scores) draw upon various semiotic resources to make meaning with *We Are in a Book!* (Willems, 2010)?

Theoretical Framework

We draw on social semiotics to frame and situate our study. Social semiotics is a theory of representation and communication that asserts that meanings are constructed through various modalities that are created or interpreted by individuals in social and cultural contexts. Theorists working from a social semiotic theoretical perspective focus on how particular semiotic resources, or resources for making meanings, are used across a variety of modalities as means of representation and communication. Kress (2010) distinguishes between representation, which is focused on the needs, interests, and expectations of the rhetor giving material form through socially available semiotic resources, and communication that is a social activity focused on the interactions of the rhetor and others, and the needs, interests, and histories of the audience (p.51).

Systems of representations are not simply innocent means of representation and communication, but have been produced in the course of sociocultural histories stemming from specific interests and purposes. Systems of representation and communication offer meaning potentials or fields of possible meanings that are activated by producers and consumers of visual images and multimodal texts in the act of interpretation (Aiello, 2006).

A mode is a system of signs created within or across various cultures to represent and express meanings (Serafini, 2014). Each mode, for example photography, sculpture, written language, or painting, has a different potential for representing and communicating meanings, and has been created in sociocultural contexts to serve a particular purpose. A multimodal text is therefore a text that uses more than one mode to represent or communicate ideas, identities, and ideologies. Picturebook authors, illustrators, and designers draw upon a variety of modes to create narrative stories or share information.

Semiotic Resources and Picturebooks

Contemporary picturebooks are print-based or digital texts that use more than one mode to represent meaning potentials, where mode is defined as a socioculturally-shaped resource for meaning making (Kress, 2010). Each mode potentially adds to the complexity of a picturebook and represents and communicates in different ways through different material and semiotic resources. In general, a multimodal text is a “complex, multimodal entity that occurs in both print and digital environments, utilizing a variety of cultural and semiotic resources to articulate, render, represent, and communicate an array of concepts and information” (Serafini, 2014, 12-13).

In general, the modes used in contemporary, print-based picturebooks fall into three categories: 1) textual elements – written language, 2) visual images – photography, painting, graphs, drawings, and charts, and 3) design features– borders, typography and other graphic design features. Each of these elements of a picturebook serves as a separate, yet interconnected, system of meaning that provides information to the reader and supports and constructs the narrative in different ways. Although agreement on many of these terms has not been forthcoming in the field of multimodal research (Jewitt, 2014), for the purposes of this article, we use the term semiotic resource to refer to the visual and textual elements, for example use of color, typographical features, framing, layout, and design features (upfixes, reduplication, and speech bubbles). These semiotic resources we refer to are elements within and across various modes but do not constitute modes by themselves (Fei, 2004; Kress, 2014).

Literature Review

In this section, we explore literature related to three distinct areas: literacy assessment for young readers, young readers’ uses of semiotic resources in picturebooks, and language heritage and restrictive language policy.

Assessments of Reading Abilities in Young Readers

Widely-used elementary reading assessments in the United States such as the Fountas and Pinnell Benchmark Assessment Systems (2016), Developmental Reading Assessment 2 (DRA2, Beaver & Carter, 2009), and Rigby PM Benchmark Kit (Nelley & Smith, 2000) are intended to provide teachers with valuable information on students’ oral-reading

fluency, word accuracy, and comprehension abilities (Paris, 2002; Rabinowitz, Wong, & Filby, 2002). It is common practice in the United States for teachers of primary-aged students to use data from these assessments to differentiate reading instruction during guided reading sessions and to support independent reading.

Early reading assessments were also designed to help match readers to texts categorized by levels of text complexity in terms of concept, theme, vocabulary, length, etc. (Fountas & Pinnell, 2006). Text difficulty is primarily based on readability formulas that include the semantic and syntactic complexity of the written text (Hiebert, 2002). Word complexity is

measured by either a given list of words rated by difficulty or by the number of syllables per word. Often, the measure will relate to the decodability of the words in the text in relation to a student’s grade level. Syntactic complexity is measured by the number of words in a sentence. Teachers use these levels of text difficulty to match students to texts at their independent and instructional reading levels.

Unfortunately, these levels can also restrict students’ access to texts outside their level for independent reading options (Kontovourki, 2012; Rog & Burton, 2001). In this article, we problematize the limited scope and nature of these assessments in their ability to assess young students’ meaning making with multimodal texts and matching readers with appropriate texts for reading instructional purposes.

However, early reading assessments that often drive instruction continue to remain focused on the textual elements and literal comprehension. These assessments connected with leveling systems focused

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primarily on decoding abilities often fail to consider the role of semiotic resources available in postmodern picturebooks (Sipe & Pantaleo, 2008). Recent research on students' use of these resources to make meaning with texts provides an opportunity to reconsider the constraints and affordances of the assessments, leveling systems, and text matching practices in primary-aged classrooms (Kachorsky, Moses, Serafini, & Hoelting, 2017).

Assessment of bilingual readers

Assessments for bilingual/multilingual groups has long been problematic in the United States public schools (Gonzalez, 2012). Typically, bilingual students who are not in bilingual programs are assessed in English only, even though research supports the use of students' first language, among many considerations of learning contexts outside school, in order to evaluate and build on their strengths in their first language and cultural identity (Gonzalez, 2012). Additionally, many standardized assessments fail to provide culturally relevant material for bilingual readers. All of these components further challenge the efficacy of assessments for bilingual/multilingual students. These assessments are often used for grouping, instruction, and text matching. Next, we explore literature related to the text matching process.

Matching texts to readers

Although Shanahan (2011) claims there is little research to support the practice of matching children with books, Allington (2012) counters that the practice of matching readers to texts rests on research over the past seventy years that yields evidence that children, especially "struggling" readers, are more likely to learn to read when they have access to texts that they can read with a high level of accuracy, fluency, and comprehension (see also Allington, McCuiston, & Billen, 2015). However, Worthy and Sailors (2001) caution that in the pursuit of ensuring

that every child have access to "just right" books in terms of decoding and comprehension level, the field has overemphasized the importance of text difficulty to the effect that has skewed children's understanding of the purposes of reading. Some researchers have even termed this overemphasis as "leveling mania" (Dzaldov & Peterson, 2005). This "leveling mania" is based on text level difficulty research that emphasizes the relationship between text and students' decoding and fluency but fails to take into account other variables such as background knowledge, experiences, or receptive vocabulary (Billman, Hilden, & Halladay, 2009). There remains a need to reevaluate early reading assessments and placement criteria used to match students with texts (Halladay, 2008). In order to do that, we must first explore the leveling systems.

Text leveling systems

Text leveling systems emerged from Betts' (1946) findings that in order for students to read accurately and meaningfully, they needed to have access to appropriate texts. There exists some debate amongst researchers and educators on matching readers to leveled texts. Some leveling systems, like Lexile, level texts using a readability formula. Those concerned argue that leveling texts with readability formulas fails to take into consideration that reading difficulty may not be solely based on measurable, quantitative features such as length and complexity of vocabulary, but are also reliant on the text's subject matter, as well as the reader's engagement and conceptual knowledge (Davison & Kantor, 1982; Hiebert & Mesmer, 2013). Text leveling systems used in Reading Recovery (Clay, 1991) and guided reading programs (Fountas & Pinnell, 2006, 2017) include more qualitative features in leveling. When leveling texts, these systems take into consideration the text content, themes, and ideas, and the structure of the text (Hiebert, 2002).

With the rollout of the Common Core State Standards (CCSS) (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010) in the United States, came a tripartite definition and method of leveling for text complexity (Hodgkinson & Small, 2018). The CCSS (2010) still recommends the quantitative measures of readability: word length, word frequency, sentence length, text length, and text cohesion. However, it also calls for measuring qualitative elements and considering the reader and task in the leveling of texts. Qualitative elements (commonly found in Fountas & Pinnell's [2017] leveling system) the CCSS recommends examining when leveling include: levels of meaning, purpose, text structure, language conventions and clarity, and prior knowledge demands.

Texts can be leveled by letters or numbers ranging from emergent reader books with one word per page and matching pictures to high-school books with dense text and lacking pictures (Worthy & Sailors, 2001). Today, text leveling systems are considered an important tool for teachers in supporting students' reading instruction. Many teachers use collections of leveled books to teach reading at students' instructional level during guided reading. Additionally, many teachers level texts in their classroom libraries and restrict students' independent reading text selection to their level as assessed using the early literacy assessments (Kontovourki, 2012; Rog & Burton, 2001).

Seeking to address the complexity and problematic nature of text leveling systems, Glasswell and Ford (2011) argue that readers have rights to have access to age-appropriate, engaging texts that challenge their thinking about reading, as well as texts that match their reading levels. In the primary grades, many engaging, age-appropriate texts draw upon

multimodal elements and often contain metafictional or postmodern features, for example non-linear sequences, self-referentiality, parody, and metaleptic transgressions (Serafini & Reid, 2019; Sipe & Pantaleo, 2008). Unfortunately, within text leveling systems, many additional features in multimodal texts—bolded print, variation in font, variation in font size, variation in image/text layout (no longer just having a representative picture above the sentence), integration of “bubbles, strip or print, and other print/picture combinations” (Fountas & Pinnell, 2011, 297)—are suggested to create more challenges for readers. Yet, research on multimodal texts and children's uses of semiotic resources challenges this notion that the additional features create more challenges.

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Young Readers' Uses of Semiotic Resources in Picturebooks

Research has documented that children attend to available resources, such as image and visual design features, to make sense of multimodal texts (Arzipe & Styles, 2003; Serafini, 2015; Sipe, 1998). This article provides a more in-depth analysis from the authors' (2017) original study of monolingual English speaking and bilingual first graders' use of semiotic resources to make meaning when reading picturebooks. In the previous study, we found that students used five different types of meaning-making resources: paralinguistic, illustration, design feature, typography, and background knowledge. The most frequently used resource was the paralinguistic features. These were defined as relating to the text, but not linguistic in nature, such as punctuation (e.g., exclamation points and question marks, and capitalization). The second most used resource was illustration, meaning the images or characteristics of the images (e.g., characters' body positioning and facial expressions). Another resource students drew upon to make meaning was design features, defined

as aspects of a picturebook spread found outside the illustration, such as word bubbles, page numbers, motion lines, and effect words. In addition, the typographical features that students used to make meaning included the type of font, the font size, the weight of the font, and the usage of typographical emphasis: italics, bold, underlined. Lastly, students used background knowledge, defined as previous knowledge the reader has about another text (intertextual knowledge), another form of visual media (intervisual knowledge), social behavior/practice, content knowledge, or other information (Kachorsky et al., 2017).

As students drew upon these various resources while reading, Kachorsky et al. (2017) found that students articulated their meaning making in three different ways: explicitly, referentially, and through performance. When students were explicit in their meaning making, they identified the semiotic resource they used and explained why they used it to perform the reading in a particular manner (e.g., a student explained that he read the text more quietly and softly because the font was smaller than the surrounding font). When students articulated their meaning making of semiotic resources referentially, they made statements referring to a particular semiotic resource, but did not name the resource explicitly (e.g., a student pointed to the semiotic resource or spoke of the resource as “this” or “it”). Finally, when students articulated their meaning making of semiotic resources through performance, they often changed their reading or performed their reading in a particular way, but did not explain why they did so (e.g., a student read the text with rising intonation when a question mark appeared in the text, but did not explain that the question mark was the reason for reading with rising intonation).

Patterns among the use of the semiotic resources according to first language and literacy proficiency (as measured by the DRA2) are explored in this study

prior to providing a more in-depth cross-case analysis of two bilingual students with significantly different performances on the DRA2. The qualitative analysis reveals students’ use of semiotic resources and meaning making of a Mo Willems’ text contradicted their levels as defined by their early reading assessment scores.

Methods

We used a case study approach (Merriam, 1998) to examine students’ use of semiotic resources. Our case study involved multiple levels of analysis and considerations of meaning making. Initially, we examined the eight first graders as a bounded case representative of the classroom context (a wide range of literacy proficiency levels and first languages) to get a broader understanding of semiotic resources being used by the children. We then examined single units, within case analysis, with individual students in order to identify patterns (or lack thereof) related to first language or literacy proficiency levels. Finally, we used a cross-case analysis to gain a more in-depth understanding of how two bilingual students with varying literacy proficiency levels used semiotic resources to make meaning with the text.

Participants

This study took place in a Title I, first-grade classroom in the Southwest United States that used a student-centered and literature-based approach to reading and writing instruction. The first-grade teacher had nine years of experiences and was in the final year of her M.A. in Literacy Education.

The first-grade classroom had 28 students with a wide range of cultural, linguistic, and socioeconomic backgrounds. Students’ home languages included English, Spanish, Russian, and Arabic. The overall free and reduced lunch rate (a common measure of low-income) at the school in the year of the study was

67%. The students' literacy levels ranged from a year below grade level to nearly a year ahead as measured by assessments in place at the school (DRA 2 scores ranged from 0 to 16 at the beginning of the school year).

We used purposive sampling to select eight case studies. The selection criteria included first language and literacy proficiency level (as documented by the DRA scores). We first selected bilingual students with the highest and lowest male and female scores on the DRA (assuming a gender binary). Next, we selected monolingual English speakers with the closest scores and gender to match the bilingual students. For the more in-depth qualitative analysis, we then selected two Spanish-English bilingual students whose use of semiotic resources and meaning making in the study differed from their assessed literacy proficiency and associated reading level. Maria was a seven-year-old student who spoke Spanish at home. She was in a specialized classroom in kindergarten for students who did not meet proficiency in English on the state language assessment, so this was her first year in a general education classroom. Maria scored 3 on the DRA2, scoring at a kindergarten level with a suggested independent text level of C. Mateo was a seven-year-old student who spoke Spanish and English at home. Mateo demonstrated proficiency in English on the state language assessment in kindergarten and first grade. Mateo scored 16 on the DRA2, scoring at an advanced first-grade level with a suggested independent text level of I.

The first author (Lindsey Moses) participated in collaborative research in the first-grade classroom for the academic year. She co-taught, taught small groups, and conferred with students once a week. Students were comfortable and familiar with Lindsey as part of the classroom community. She conducted all of the data collection (reading interactions and interviews) with the students.

Context: Language Heritage & Restrictive Language Policies

This study took place in a state with restrictive language policies, so only English was spoken in school. Bilingual students did not receive any additional language acquisition instruction or support once they were transitioned into an English-speaking classroom. Although we vehemently disagree with the state laws and policies, these aspects were out of our control. However, we wish to briefly include the literature related to this aspect of our study.

Although the body of research on English language learning instruction suggests that bilingual education is consistently superior to English-only approaches in supporting students' academic achievement in both English and in their heritage language (Bialystok, 2018; Rolstad, Mahoney, & Glass, 2005), our state's restrictive language policies deny English language learners (ELLs) the opportunity to participate in dual language programs. These policies require schools to implement Structured English Immersion (SEI) methods of instruction in English only, disallowing the ability to use one's home language in the classroom. Additionally, the policies prescribe that all ELLs participate in the SEI model of English instruction for four hours per day until passing a test of English proficiency offered once per year (Garcia, Lawton, & Diniz de Figueiredo, 2013). Because of these language policies, ELLs are systematically isolated from their English-proficient peers and refused access to academic content area instruction, as they are subject to learning English up to 80% of the school day (Krashen, Rolstad, & MacSwan, 2007; Rios-Aguilar, González Canché, & Moll, 2012). Although waivers are available for parents to withdraw their child from SEI instruction, they are not readily accessible or openly offered to parents (Gomez & Cisneros, 2020). Thus, these education policies, which do not align with the scientific

research on English language learning instruction, restrict and marginalize ELLs and their families (Jimenez-Silva, Gomez, & Cisneros, 2014).

Data Collection

The eight students featured as our case studies were asked to independently read *We Are in a Book* (Willems, 2010). None of the students had previously read the text, but all had participated in read aloud sessions of Mo Willems' books in their classroom and had opportunities for reading other Mo Willems' texts during independent reading time. We specifically selected Mo Willems' book because students demonstrated high interest in his books; his books are representative of the new complex, multimodal, contemporary picturebooks with which students are engaging; and we knew none of the students had previously read the selected picturebook. The basic premise of the book is that the characters, Gerald and Piggie, realize they are in a book. They enjoy being the objects of the reader's attention and laugh out loud when making the reader read words they say in the book. The sophisticated nature of the metaleptic transgressions (when the boundary is broken between fiction and reality) is often a challenging concept for young readers, so we were interested in analyzing how our case studies would navigate and make meaning of this text (Serafini & Reid, 2019).

We used 14 blank sticky notes throughout the book as a cue to request student reflection related to what they noticed on that page spread. Seven sticky notes were placed on page spreads with distinct typographical and design features that influenced meaning, and seven sticky notes were placed on page spreads with no distinct typographical or design features. The goal of this design was to attempt to minimize influencing students' responses by the sticky note and prompting. The video camera was

placed so it captured the entire book and the student's face, hands, and upper body.

The researcher explained to each student that she was interested in watching and understanding how they read picturebooks. She told the students that this experience was not a test. She told students to read the book to her just as they would read it to their partner during partner reading. She suggested that if they came to a word they did not know, they should use the strategies they would use during partner reading. The researcher explained that she would be asking them to talk about the book during the reading, but also told them that they could talk to her about what they were thinking at any point. When a student came to a page with a sticky note, she would prompt the student to "Tell me what you notice or what you are thinking" or "Tell me what is happening on this page" (Kachorsky et al., 2017).

Data Analysis

The initial analysis of the eight case studies began with viewing and transcribing videos of each student reading *We Are in a Book* (Willems, 2010). The researchers created multimodal transcripts that included the following: "a) an image of the picturebook spread; b) the time stamp; c) the speaker(s); d) the written text that appeared on the spread; e) a transcript of what the student said using detailed transcription conventions to accommodate for detailed speech documentation, inflection, body movement, etc. and f) the transcribers' notes" (Kachorsky et al., 2017, p. 236). See Tables 4 and 5 for a sample transcript and analysis (for space purposes these tables only include the speaker, book reading, book text, book discussion, transcriber note, and response type and semiotic resource).

After the transcription stage, the research team again watched the videos with the accompanying multimodal transcription to begin coding. We used a three-step process of open coding, axial coding, and

selected coding (Strauss & Corbin, 1998). During open coding, we reflected on what we noticed in the videos and transcripts (e.g., imitating the characters' facial expressions, using/referring to a design feature or semiotic resource). We also created theoretical memos (Erickson, 1986) during this stage. The research team then drew connections among open codes to narrow the focus to a series of axial codes related to the various visual, textual and design resources being used by the children to make meaning (e.g., speech bubbles, punctuation, etc.). From this secondary analysis, we constructed five categories of resources that children used to make meaning with the multimodal text: typographical features, paralinguistic features, design features, illustrations, and background knowledge (Kachorsky, et al., 2017).

We compared the bilingual students' and monolingual English-speaking students' use of these resources, highlighting discrepancies between the two. At first, our comparison consisted of total counts of each student's use for each identified resource. It seemed that there were patterns between students' use of certain resources and language and literacy levels. However, with more in-depth analysis, we noticed that some students were merely more talkative or had significantly more total responses than others. For example, Maria responded to particular resources sixty times when reading, with twenty of those responses using paralinguistic resources. Aliya responded to particular resources thirty-seven times when reading, thirteen of those using paralinguistic resources. In order to better compare the discrepancies between students, we calculated the percentages of students' use of each resource in comparison to their total. When calculated as percentages, Maria responded to paralinguistic resources 33.3% of her total responses, and Aliya responded to paralinguistic resources 35.1% of her total responses. From these calculations, we found that many of the readers had similar

percentages in their use of various resources. We then selected the two bilingual students with the biggest discrepancies in their reading behaviors and DRA assessment scores for further analysis and a cross case comparison (Mateo scored a 16, but demonstrated significantly lower meaning making and use of the five identified resources; Maria scored a 3, but demonstrated a significantly higher meaning making and use of these resources).

Our data analysis involved three different approaches to comparing students' use of resources to a range of variables. The first analysis grouped students by language (e.g., bilingual students and monolingual English-speaking students) (see Table 1 for descriptive statistics). The second analysis compared students who scored below level with students who scored on or above level as assessed by the DRA2 (e.g., Alex scored a 4 on the DRA and was placed in the below level group. Mateo scored a 16 on the DRA2 and was placed in the on/above level group) (see Table 2 for descriptive statistics). The third analysis involved matching students according to gender and DRA2 score (as close as possible) to compare with different first language status (e.g., one monolingual English girl scoring a 4 compared to one bilingual girl scoring a 3) (see Table 3 for descriptive statistics).

Findings

To address our first research question, our first level of data analysis procedures generated findings related to patterns (or lack thereof) connected to first language and literacy proficiency level. The next level of data analysis included an in-depth qualitative analysis of how the two bilingual case studies with varying literacy proficiency levels used semiotic resources to make meaning with the text.

Table 1

Language Only Comparison

	Name	DRA Score	First Language	Typography	Para-linguistic	Design Features	Illustrations	Background Knowledge
Bilingual Students	Maria	3	Spanish	13.3%	33.3%	21.6%	25%	6.6%
	Alex	4	Russian	5.6%	44.4%	33.3%	16.7%	0%
	Aliya	16	Arabic	21.6%	35.1%	27%	16.2%	0%
	Mateo	16	Spanish	16%	32%	20%	24%	8%
Average Percentage				14.1%	36.2%	25.5%	20.5%	3.7%
Mono-lingual English Speakers	Amelia	4	English	11.1%	33.3%	17.4%	28.6%	9.5%
	Brandon	3	English	25%	35.7%	17.9%	21.4%	0%
	Adriana	10	English	16.7%	22.2%	16.7%	16.7%	27.8%
	Carter	16	English	23.7%	39.5%	18.4%	13.2%	5.3%
Average Percentage				19.1%	32.7%	17.6%	20%	10.7%

Finding One: First Language Comparison

Our initial analysis revealed no clear connections between students' use of the identified resources and their first language status. As Table 1 displays, students were grouped as either bilingual or monolingual English speaking. We calculated the averages for the bilingual students' use of each resource and did the same for the monolingual English-speaking students. While the bilingual students used paralinguistic and design features at a slightly greater frequency than the monolingual

English-speaking students, the monolingual English-speaking students used typography and background knowledge at a slightly greater frequency than the bilingual students. The use of design features was almost identical, with the bilingual students using design features 0.5% more than the monolingual English-speaking students.

Finding Two: Literacy Proficiency Level Comparison

Our second analysis revealed no clear connections between students' use of identified resources in relation to literacy proficiency levels. As Table 2

displays, students were grouped as either below level or on/above level as determined by DRA benchmarks. When attending to the typographical features, three students who scored below level (Maria, Amelia, and Alex) demonstrated less use of these features than the on/above level readers. However, one student in this category, Brandon, used typographical features 25% of his total use of identified resources, at a higher frequency than all of the on/above level readers. Both groups of students who scored below level and on/above level shared similar percentages in their use of paralinguistic features and design features. Two of the four students who scored below level (Maria and Amelia) demonstrated meaning making from illustrations slightly more than the readers who scored on/above level. Alex and Brandon (scored below level) used illustrations equally or at a slightly greater frequency

than students scoring on/above level: Aliya, Adriana, and Carter. However, Mateo (scored on/above level) used illustrations 24% of his total responses, which was greater than three students who scored below level (Maria, Alex, and Brandon).

Two readers who scored below level (Alex and Brandon) and one student who scored on/above level (Aliya) did not demonstrate making meaning using background knowledge. Two readers who scored below level (Maria and Amelia) and readers who scored on/above level (Mateo and Carter) demonstrated less than 10% use of background knowledge. Adriana (scored on/above level) used background knowledge at a much higher frequency than all students in the study (27.8%).

Table 2

Literacy Proficiency Comparison

	Name	DRA Score	First Language	Typography	Paralinguistic	Design Features	Illustrations	Background Knowledge
Below Level Readers	Maria	3	Spanish	13.3%	33.3%	21.6%	25%	6.6%
	Amelia	4	English	11.1%	33.3%	17.4%	28.6%	9.5%
	Alex	4	Russian	5.6%	44.4%	33.3%	16.7%	0%
	Brandon	3	English	25%	35.7%	17.9%	21.4%	0%
On/Above Level Readers	Aliya	16	Arabic	21.6%	35.1%	27%	16.2%	0%
	Adriana	10	English	16.7%	22.2%	16.7%	16.7%	27.8%
	Mateo	16	Spanish	16%	32%	20%	24%	8%
	Carter	16	English	23.7%	39.5%	18.4%	13.2%	5.3%

Finding Three: Same Gender, Similar DRA Score, and Different First Languages Comparison

Although some research documents gender discrimination such as how the amount of male talk in class might put bilingual females at a disadvantage for developing language proficiency (Parker & Riley, 2010), our third analysis revealed no clear patterns for students with the same gender and similar DRA scores but different first language status and their use of visual, textual, and design features. As displayed in Table 3, there were no clear differences between bilingual students’ and monolingual English-speaking students’ (sharing the same gender and similar DRA level) use of typography or paralinguistic features. Two monolingual English-speaking students (Brandon and Carter) used typography features and paralinguistic features more often than their bilingual student counterparts (Alex and Mateo); while two bilingual students from other pairs (Maria and Aliya) used typography features and paralinguistic features slightly more than their monolingual English-speaking counterparts (Amelia and Adriana).

In general, all of the bilingual students used design features more than the monolingual English-speaking students. However, the range for greater use of design features was from 1.6% (Mateo) to 15.4% (Alex). There was no clear pattern in students’ use of illustrations. Amelia, Adriana, and Brandon (monolingual English-speaking students) made meaning from illustrations minimally more than Maria, Aliya, and Alex (bilingual students). However, the final pair of comparison students countered that with Mateo (bilingual student) making meaning from illustrations slightly more than Carter (monolingual English-speaking student).

The data were similar for students’ use of background knowledge. Two monolingual English-speaking

students (Amelia and Adriana) demonstrated making meaning using background knowledge more than their bilingual counterparts (Maria and Aliya). One pair demonstrated no difference, as neither demonstrated making meaning using background knowledge (Alex and Brandon). The last pair showed that the bilingual student (Mateo) made meaning using background knowledge 3.7% more than the monolingual English-speaking student (Carter).

Table 3

Same Gender, Similar DRA Score, Different First Language Comparison

Name	DRA Score	First Language	Typography	Paralinguistic	Design Features	Illustrations	Background Knowledge
Maria	3	Spanish	13.3%	33.3%	21.6%	25%	6.6%
Amelia	4	English	11.1%	33.3%	17.4%	28.6%	9.5%
Aliya	16	Arabic	21.6%	35.1%	27%	16.2%	0%
Adriana	10	English	16.7%	22.2%	16.7%	16.7%	27.8%
Alex	4	Russian	5.6%	44.4%	33.3%	16.7%	0%
Brandon	3	English	25%	35.7%	17.9%	21.4%	0%
Mateo	16	Spanish	16%	32%	20%	24%	8%
Carter	16	English	23.7%	39.5%	18.4%	13.2%	5.3%

Table 4

Mateo's Reading Transcript and Analysis

Speaker	Book reading	Book text	Book discussion	Transcriber notes	Response type and semiotic resource
Mateo	Someone's looking at us.	Someone <i>is</i> looking at us!		Reads fast and does not appear to look at images	
Mateo	Who's looking at us? [<i>turns page</i>]	Who is looking at us?			

Cross-Case Comparison

We did not find considerable differences between students' language or literacy levels and their use of the five identified features. However, we did find that Mateo and Maria, two Spanish-English bilingual students, demonstrated noticeable divergences between their reading behaviors and DRA2 assessment scores (Mateo scored a 16, but demonstrated/referenced only 25 instances of using the five resources to make meaning; Maria scored a 3, but demonstrated/referenced 60 instances of using the identified resources to make meaning). To further understand these divergences, we compared Mateo and Maria's transcripts and videos of reading and recorded their differences when reading each page of the picturebook. This deeper analysis compared the students' reading, responses, and analysis of referenced, explicit, or performed meaning making with the identified resources. During the cross-case analysis, we found Mateo's responses to focus on the text and literal retell, whereas Maria attended significantly more to image and drawing inferences. This attention led to Maria providing over twice as many instances of using the identified resources than Mateo. We explore two specific instances that were

representative of the analysis in the following sections.

Reading Fast vs. Exploration and Explanation

We observed a stark contrast between Mateo's accurate and fast reading and Maria's sometimes lengthy exploration and explanation of her reading and thinking. Mateo spent a total of three seconds looking at and reading pages eight and nine of the book, and Maria spent nearly a minute. Tables 4 and 5 provide an overview of the analysis that includes both students' oral reading, the text that is in the book, discussions surrounding the book, transcriber notes, and our categories of response types for demonstration of use of the five identified resources. We include the transcriber notes because they also demonstrate the initial layer of analysis. Mateo quickly read the text in three seconds and flipped to the next spread without any discussion, and he did not seem to spend time looking at the images (See Table 4). Although Mateo accurately decoded the words on the page, he missed potential meanings that were available by overlooking the visual resources.

Table 5

Maria and Author 1's Reading Transcript and Analysis

Speaker	Book reading	Book text	Book discussion	Transcriber notes	Response type and semiotic resource
Maria	Someone is looking at us. (higher) *Someone is looking at us!*	Someone <i>is</i> looking at us!		Repeats line, maybe after noticing exclamation point? Intonation punctuation	Paralinguistic - performed Punctuation
Maria			[<i>studies and points at image</i>] It looks like he's putting his hands [<i>lifts hands up</i>] on something. [<i>folds hands</i>]	Physicality – Points to the image/touches the image Image - points to Piggy's hands	Illustration - referential Body Position
Author 1			Oh. Hm!		
Maria			[<i>points at image again</i>] Like on the book.	Positionality – the characters hands are on the inside of the book	Background knowledge - explicit
Author 1			((laughing)) Oh! Yeah, tell me what you're thinking about that. What did you notice?		
Maria			Look at like [<i>points at image</i>] it's-it's pink and-and he's like [<i>lifts hands to mimic</i>] touching, and they'll just ha-put their hands down instead of up.	Personal Experience – knows what people would do with their hands to touch something	Background knowledge - explicit Illustration Body Position Personal Knowledge - Color
Author 1			Oh. [Great.]		
Maria			[So if] they're touching something, they'll put their hands up. / Like if it's a TV and they were in the TV.	Making a real-world connection; perhaps seen a TV character do something similar	Background knowledge - explicit
Author 1			Hm.		
Maria	Who is looking at us? [<i>turns page</i>]	Who is looking at us?			

As seen in Table 5, Maria initially decoded the text accurately, but self-corrected for intonation/expression. After reading to the end of the sentence, she appeared to notice the punctuation and then reread the sentence with intonation that matched the punctuation- demonstrating her use of the paralinguistic resources (in this case, punctuation) through performance (intonation). She then studied the images and noticed that Piggie's hands were pressing against something. She noticed the lighter pink color and the positioning of the hands to connect to her background knowledge of when people inside a television put their hands up and touch the screen, thus signaling her understanding that Piggie is talking to the reader/audience. In this instance, she explored the pictures and drew on background knowledge to infer and construct different meanings. She articulated her meaning making and use of the resources (paralinguistic, illustration, and background knowledge) explicitly, referentially, and through performance.

Literal Recall vs. Inferring

In this section, we observed Mateo providing accurate literal recall on the same pages that Maria did, documenting her inferential thinking. On a double page spread where both characters are positioned in an intimate close up, they both directly gaze at the reader demanding the reader's attention and interaction. The hand position potentially suggests benevolence or happiness. The typography and punctuation also provide indications about appropriate intonation that would convey excitement.

In Table 6, Mateo quickly and accurately read the text presented in the speech bubbles. He read the pages without intonation or expression, all in a monotone voice. He tried to turn the page quickly, but the lead researcher asked him what he noticed on the pages

and what he thought might be going on. He looked back at the text and gave a literal retell of what the text said (Piggie tells Gerald it is a reader). Again, Mateo accurately read the page and was able to provide a literal recall of what was stated in the text, but he missed the potential meanings that would have been made available by examining the images, typographical features, and punctuation.

Maria, who scored at an end of kindergarten level on the DRA₂, encountered some decoding challenges with the first words on the pages (see Table 7). Although she originally miscued "really" for the word *reader*, she realized that it did not make sense and went back to try to sound it out before she read the entire phrase again with fluency where she used the exclamation marks and typography to read with intonation. When asked what she noticed on the page, Maria described and inferred characters' feelings with evidence when she said, "He's excited, and he's [*points at Gerald*] not. Like, if there's someone in this book? And they're happy that like they're in the book that somebody's reading them." Maria drew on multiple resources to make meaning (paralinguistic, typography, and illustration) and infer characters' feelings. She communicated this meaning making through her intonation/performed understanding of typography and punctuation and in her reference to the characters' expressions in the images. Although she was initially challenged by decoding, she was able to self-correct and continue on to a deeper level of comprehension and connection than was evident with Mateo's responses.

Limitations

Although we sought to explore ways in which children make meaning with contemporary picturebooks, we also recognize the limitations of our study. We had a small sample size, which limits the possibilities for generalization. We also conducted the study in a state that has restrictive language

Table 6

Mateo’s Monotone Reading and Retell

Speaker	Book reading	Book text	Book discussion	Transcriber notes	Response type and semiotic resource
Mateo	A reader.	a reader!			
Mateo	A reader is reading us. [<i>begins to turn page</i>]	A reader is <i>reading</i> us!		Reads fast – skips Author 1’s stickies; Author 1 has to take him back a step	
Author 1			Okay. [<i>stops turning page</i>] So what’d you notice? ((quietly)) Back here. ((normal level)) What do you notice on these pages? What’s going on?		
Mateo			Um, Piggy’s telling Gerald that it’s a reader. [<i>turns to the next page</i>]	Literal Retell/Reading – says what it says on the page	

Table 7

Maria Self Correcting and Inferring

Speaker	Book reading	Book text	Book discussion	Transcriber notes	Response type and semiotic resource
Maria	(higher pitch) A really-A rea:ad-reader! A reader!	a reader!		Self-corrects Miscue Fix Up – Self Corrects; Sounds it out	Paralinguistic - performed -Punctuation Typography-performed Size
Maria	(still high pitch) A reader is reading us!	A reader is <i>reading</i> us!		Pauses before beginning, noticing punctuation	Typography - performed Italics
Author 1			What do you notice about these two pages? [<i>child points at image</i>] What are you [thinking?]		
Maria			[He’s] excited and he’s [<i>points at Gerald</i>] not. Like, if there’s someone in this book and they’re happy that like they’re in the book that somebody’s reading them. [<i>turns page</i>]	Physicality – touches the image Image – looks at their expressions (?) Positionality – recognizes that the characters are in the book	Illustration - referential Facial Expression

policies, so we were unable to explore the students' proficiencies in their home language and identify ways they were able to draw on their bilingual knowledge to support this meaning making. Additionally, we conducted this study with one book by a popular author. Future studies could use a larger sample size including students in bilingual programs and using multiple texts by different contemporary authors.

Discussion & Conclusion

These findings are at once both expected and surprising. *We are in a Book!* (Willems, 2010) uses a number of visual, textual, and design features, including variation in font size, variation in image/text layout, and speech/thought bubbles, which have been suggested to present more challenges for readers (Fountas & Pinnell, 2011). As such, it might be expected that the text would present a challenging reading experience for Maria, who scored a 3 on the DRA2 assessment; while the text might prove less challenging for Mateo, with his DRA2 score of 16.

In the case of Mateo, his DRA2 score is predictive, to a certain extent, of his reading of the picturebook. He focused on reading the written narrative quickly and accurately, yet in a monotone voice, progressing from page to page without appearing to spend time looking at the visual images. As speed and accuracy are both skills emphasized on the DRA2 and similar assessments, this approach may not be surprising. Mateo was performing his reading of the text in a manner consistent with how he had been assessed in the past and what had been emphasized in those past assessments. Similarly, when asked to share his thinking about the text, Mateo focused on a literal retell of the printed text. For example, he told the researcher that "Piggie's telling Gerald that it's a reader," which was an accurate literal recall of the spread in question. Again, Mateo performed his

reading of the text in a manner consistent with how his reading has been evaluated in the past—as accurate literal recall of text—is also a skill valued in DRA2 and similar assessments. However, Mateo's quick and accurate reading of the text and his accurate literal retell did not reflect an in-depth understanding of the text. Although he was able to tell the researcher that "Piggie's telling Gerald it's a reader," his retell does not indicate that he understood that the "it" Piggie was referring to is the reader, who in this instance is Mateo himself. Mateo's literal recall of the words in the text missed the interaction occurring between the reader and the characters in which the characters look out from the story world to observe the reader.

Similarly, Maria's lower DRA2 score was predictive in some ways of her reading of the text. As might be expected based on her score, she encountered decoding challenges that caused the text to not make sense which in turn prompted her to sound out relevant words. In her fluent re-readings of the text, she read with intonation, which was reflective of her understanding of the characters' emotional responses.

Unlike Mateo, Maria did not focus her discussion of the text on literal recall. Instead, she inferred characters' emotions and discussed the interaction between the story world and the real world. She understood the text's premise that the characters are aware of and directly interacting with the reader. To reach this understanding, Maria drew meaning potential from the visual, textual, and design resources and drew from her own background knowledge. These practices are not often recognized in DRA and other early reading assessments. As such, her in-depth understanding of the text would not necessarily enhance or improve her DRA2 scores.

Although Mateo's and Maria's fluency when reading the texts aligns to some degree with their DRA scores,

these assessments were not reflective of their meaning making with the text. Maria demonstrated a much more in-depth and nuanced understanding of the picturebook than Mateo by drawing on a wider range of visual, textual, and design resources with greater frequency. This process is reflective of Halladay's (2008) finding that students' reading comprehension is not consistently related to students' oral reading accuracy. Most importantly, Maria understood a picturebook that many leveling systems would locate outside her independent reading level. In some classroom contexts, she might never have been given the opportunity to read this text based on her DRA2 scores. The results in this study call into question the continued practice of matching kids to texts through the explicit use of early literacy assessments (Kontovourki, 2012; Rog & Burton, 2001).

As mentioned in our literature review, existing literacy assessments such as DRA2, offer educators a resource to aid in matching readers to texts. These assessments score student's fluency, word accuracy, and comprehension (Paris, 2002; Rabinowitz, Wong, & Filby, 2002), which are then used to match readers to texts that fall within their independent and instructional reading levels (Allington, McCuiston, & Billen, 2015; Ford & Opitz, 2008). However, this process overemphasizes the relationship between the text's level of difficulty and readers' fluency and decoding at the expense of readers' background knowledge, receptive vocabulary, and personal experiences (Billman, Hilden, & Halladay, 2009). Our research further emphasizes this point and suggests

that existing early literacy assessments also fail to account for how readers make meaning with typography, punctuation, and image. It is important that educators recognize that these resources, rather than serving as a distraction for students, provide resources that support complex meaning making with multimodal texts. As such, relying solely on early literacy assessments, as they currently exist, to match readers with texts has the potential to unnecessarily limit readers' access to texts that are well within their ability to comprehend.

Furthermore, in recognizing that readers make meaning with modes beyond printed text, it is important for educators to make space for this sort of meaning making in the classroom. We assert, as have many other before us (e.g., Kress, 2010; Kress & van Leeuwen, 2006; Lankshear & Knobel, 2006; Luke, 1995; The New London Group, 1996), that literacy instruction must expand to include new pedagogies and instructional practices that support visual and multimodal literacies of readers. Expanding pedagogies and instructional practices to support visual and multimodal literacies also necessitates expanding literacy assessment practices to account for the multiple modes that readers rely on when making meaning with multimodal texts. Because current assessment practices foreground oral fluency and decoding, they do not account for and fail to acknowledge a large body of the comprehension work readers are doing in today's classrooms. Teachers need to find ways of assessing students that acknowledge and value multiple ways of making meaning with texts.

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