Clinical Focus

The Importance of Morphological Awareness in Bilingual Language and Literacy Skills: Clinical Implications for Speech-Language Pathologists

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Purpose: This clinical focus article will highlight the importance and role of morphological awareness (MA) across orthographies, in particular, the role it plays in reading development, specifically with bilingual populations. MA supports reading acquisition and development beyond other predictors of reading, such as phonological awareness, orthographic knowledge, and rapid automatic naming to name a few. While MA aids in the development of decoding fluency, vocabulary development, and reading comprehension, explicit morphological instruction does not occur regularly in reading intervention. For English learners (ELs), instruction should focus on improving MA, semantic awareness, and orthographic processing, which in turn would exert a positive influence on reading accuracy, fluency, and comprehension. This clinical focus article aims to provide speech-language pathologists with applicable tasks to measure MA and strategies to guide explicit morphological instruction.

Method: The role of MA in reading development will be described with regard to its importance beyond other predictors and the role it plays in theoretical models of reading development. Then, MA will be described across orthographies, with a focus on cross-linguistic influences. Finally, measurement tasks will be described, and clinical implications will be discussed in terms of using different strategies and tools to explicitly address MA.

Conclusion: Clinical implications of morphological instruction should be further explored and incorporated in current practices. With regard to ELs, it is important that we provide effective and specific instruction to better bridge the academic achievement gaps and increase overall language and literacy skills. Morphological instruction should be explicit and provided in conjunction with other domains of language. Equally important is leveraging families of ELs to promote their children's oral language and literacy in their first language.

With the number of English learners (ELs) steadily rising over the past decade, over 4.9 million ELs in U.S. public schools, as reported by the Nation Center for Education Statistics (2016), the need for targeted language and literacy interventions is greater than ever. The term "English learners" is used to refer to students who are learning English for academic and social purposes and speak a language other than English in their home. The National Center for Education Statistics (2016) affirms a shift in demographics as nearly 10% of students enrolled in public schools nationwide are ELs. According to data from the U.S. Census Bureau 20% of the total population speaks a language other than English at home, and by the year 2030, it is predicted that 40% of all U.S. students will be ELs (Ryan, 2013; Thomas & Collier, 2002). Studies have shown that ELs disproportionately demonstrate reading difficulties at different grade levels, and ELs who enter U.S. schools in kindergarten face challenges while learning to read, increasing their risk for early reading difficulties, as indicated by gaps in academic achievement (Nation Center for Education Statistics, 2016). It is also known that some ELs often come from lower socioeconomic backgrounds, and these students, monolinguals and ELs alike, are at high risk for language and literacy difficulties due to their limited access to resources supporting language and literacy development (Kieffer, 2010). It is because of these rapidly

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increasing numbers and the vulnerability of these students that speech-language pathologists (SLPs) should be equipped with specific and targeted techniques to address reading difficulties and literacy development.

The purpose of this clinical focus article is to review the literature on morphological awareness (MA), as it relates to the development of literacy skills and serves as an instructional guide for SLPs tackling related difficulties for all students. This discussion highlights the role of MA as a key linguistic skill in literacy across orthographies and provides examples of MA tasks and strategies for explicit morphological instruction.

MA

Over the years, there has been growing interest in MA and the influence it has on language and literacy skills. MA refers to a child's understanding of the morphemic structure of words and the ability to combine or decompose words into their different morphemes (Carlisle, 1995, 2000; Kirby & Bowers, 2018). Morphemes describe the smallest unit of meaning and are categorized as three types in the English language: inflections, derivations, and compounds. Inflectional morphemes include suffixes such as –s, –ed, and –ing, which mark the changes in the person, number, and tense but do not change the word's class (e.g., a noun remains a noun). Unlike inflectional morphemes, derivational morphemes change the class of the word and cause semantic shifts (e.g., "*quick/quickly*"). The last type of morpheme is the compound morpheme, which occurs when two words are combined in one lexical entity (e.g., "*ringtone*," "*makeover*"). Morphemic categorizations apply across most orthographies and underlie a complex process of intertwining morphology with the other domains of language—phonology, orthography, semantics, and syntax (Carlisle, 2003; Kieffer & Lesaux, 2008; Kuo & Anderson 2006; Ramirez et al., 2010). It should be noted here that languages differ with their morphological structures. For example, Indo-European languages are characterized by linear morphological structures, whereas Semitic languages (e.g., Arabic and Hebrew) combine both, linear and non-linear morphology.

Predictors of Reading Development

Early development of reading skills develops in conjunction with several cognitive processing skills such as phonological awareness (PA), orthographic knowledge, rapid automatized naming (RAN), working memory (WM), vocabulary knowledge, and MA. Robust literature underscores that PA plays a prominent role in the emergence of literacy skills for children across different orthographies; it is one of the major cognitive determinants of the development of early reading skills (Caravolas et al., 2013; Wagner & Torgesen, 1987). PA involves a set of linguistic and metalinguistic skills concerned with children's sensitivity to the sound structure of spoken words and their ability to detect and manipulate sounds (Manis et al., 2004; Torgesen et al.,

1994). In order for children to develop early reading skills, it is paramount that they have established PA. Difficulties with this foundational skill will compromise the child's ability to develop skilled reading (Torgesen et al., 1994). In developing reading skills, children must first be able to perform PA tasks such as counting syllables, rhyming, and segmenting words into individual phonemes (Liberman & Liberman, 1990). Children's ability to perform segmenting tasks is also dependent on their orthographic knowledge (Share, 1999), as they begin to learn the relationships between alphabetic symbols and corresponding phonemes (Adams, 1990). Becoming a skilled reader means that children have developed a level of PA and sensitivity to different sound segments in speech to understand the relationship between graphemes and phonemes.

Along with PA and orthographic knowledge, a skilled reader must have the ability to retain material. Whether the material is presented orally or visually, a skilled reader must be able to store this information in their WM, another established predictor of reading development (Baddeley, 2003; Scarborough, 1998; Snowling, 1995). Children are expected to be able to simultaneously process and store information regarding phonemes and their corresponding graphemes. Furthermore, WM is also linked to a child's success in both reading fluency and reading comprehension (Cain et al., 2004). Difficulties with WM can impact a child's ability to access stored phonological or orthographic information, hindering reading accuracy and speed (Catts, 1993). Rapid retrieval of phonological or orthographic information is typically assessed by RAN tasks (Cutting & Denckla, 2001; Wagner et al., 1999). These tasks examine the accuracy and speed (efficiency) with which children can retrieve stored information during tasks such as naming a series of colors, digits, symbols, or letters. In the literature RAN, sometimes referred to as "naming speed," is used to assess individuals' efficiency (accuracy and speed) for retrieving codes from long-term memory. Wolf and Bowers (2000) have identified that difficulties with RAN are often indicative of an independent core deficit in reading difficulties (Tibi & Kirby, 2018a, 2019). Performance on RAN has also been found to predict a child's reading accuracy, fluency, speed, pseudoword reading accuracy, and pseudoword reading speed, all vital components of reading development (Wolf & Bowers, 2000). Whereas phonemic awareness has robust effects in the early grades, RAN has shown to be a stronger predictor for reading fluency in the later grades (Grades 3–5; Kirby et al., 2003; Tibi & Kirby, 2019). Schatschneider et al. (2004) found that the relationship between RAN and reading skills shifts with age and accounts for unique variance in reading comprehension in kindergarten and in word identification and fluency by Grade 2. It should be noted though that there is a discrepancy in the literature on the developmental relationship between RAN and reading. For example, some researchers (e.g., Landerl & Wimmer, 2008; Scarborough, 1998) find RAN's relationship to reading in general increasing as children automate reading, whereas other researchers (Georgiou et al., 2008; Roman et al., 2009) believe its influence decreases in

later grades (Georgiou et al., 2009). Alongside the previous mentioned components, children's lexical development heavily predicts their future reading and academic success. Deficits in reading comprehension have been linked to low vocabulary levels and several studies have found strong correlations between the depth of their vocabulary and their reading skills at the word level (Bowers & Kirby, 2010; Kieffer & Lessaux, 2008; Schwartz & Katzir, 2012; Stahl & Nagy, 2006). It is important to consider the two dimensions of vocabulary knowledge, that is, vocabulary breath as well as vocabulary depth (Kirby, 2019; Li & Kirby, 2014), especially when assessing and teaching second language learners. Interestingly, vocabulary breadth (size) and depth enhance knowledge of word segments such as roots and affixes (Bowers & Kirby, 2010). In other words, word formation skills deepen one's understanding of vocabulary.

Finally, when controlled for the previously mentioned skills, there is evidence to support the complex relationship between MA and literacy in the early years across orthographies (Carlisle, 1995, 2000; Kirby & Bowers, 2018; Kirby et al., 2012; Levesque et al., 2017; Nagy et al., 2006; Tong et al., 2011). The following section explores how MA impacts reading development, beyond the mentioned predictors.

The Role of MA in Reading

MA develops with exposure to oral and written language in children as young as 4 years of age (Berko, 1958; Kirby et al., 2012). Researchers have found correlations between students' MA skills and their emergent skills in reading, spelling, and vocabulary (Carlisle, 1995, 2000; Kirby & Bowers, 2018; Kirby et al., 2012; Levesque et al., 2017; Nagy et al., 2006). Moreover, the predictive ability of MA in different literacy skills has been documented in the literature above and beyond robust predictors such as cognitive abilities, PA, naming speed, and word reading itself (Deacon & Kirby, 2004; Deacon, Kirby, & Casselman-Bell, 2009; Kirby et al., 2012). MA has also been shown to be a relative area of strength, compared to phonological deficits, in populations with reading difficulties such as dyslexics and poor readers (Casalis et al., 2004; Deacon, Parrila, & Kirby, 2008; Elbro & Arnbak, 1996). Moreover, Kieffer et al. (2013) provided evidence for the role of MA in reading comprehension of a population known as language minority learners (Spanish speakers learning English). Kieffer and colleagues measured MA using English derivational decomposition tasks and found that English derivational awareness positively impacted English (second language [L2]) vocabulary and reading comprehension among students in Grades 6, 7, and 8. Specifically, Kieffer and colleagues underscored the role of MA in reading comprehension for these language minority learners.

Previously, researchers believed that MA measured the same abilities as PA or that MA served as a compensatory strategy for children with phonological deficits (Fowler et al., 1995; Reed, 2008). However, in a study by Richards et al. (2005), the idea that MA and PA measured the same abilities was debunked by functional magnetic resonance imaging demonstrating that different areas of the brain were activated during MA and PA tasks. MA has been found to influence sight word reading and decoding skills as it aids in rapid word recognition and written word pronunciation (Apel & Diehm, 2014; Deacon & Kirby, 2004; Wolter & Collins, 2017). When looking at word form, morphology plays a large role in decoding and spelling as English is "morphophonemic" in nature, where phonological and morphological processes interact when combining words (Chomsky & Halle, 1968; Kirby & Bowers, 2018; Venezky, 1999). English spelling skills rely on morphological rules and knowledge of phonemic patterns that influence the spelling and pronunciation of a morphologically complex word. While PA contributes to phonological decoding and word reading in the early years, through growth and exposure, MA contributes to phonological decoding as it provides readers with patterns and clues to facilitate pronunciation, which, in turn, influences naming speed and reading fluency (Reed, 2008).

Deacon and Kirby (2004) emphasize how the awareness of inflections and simple derivations emerge early and the understanding of more complex derivational relationships come into play later, as more morphologically complex words are introduced with each grade children encounter. Many researchers note that the role of PA steadily decreases around fourth grade, at which time students rely more heavily on morphology to read polymorphemic words that occur in grade-level textbooks (Kearns et al., 2016).

Current research underscores the contributions of MA in facilitating reading comprehension through the growth of vocabulary knowledge (Bowers & Kirby, 2010; Good et al., 2014; Goodwin & Ahn, 2013; Kieffer et al., 2013; McBride-Chang et al., 2005). Often, readers apply their knowledge of morphemes to infer the meanings of unfamiliar words, a vital skill given that a substantial amount of English words are composed of roots and affixes (Nagy & Anderson, 1984).

Morphology and the Models of Reading Development

Although most models of reading do not explicitly include morphology as a component, morphology remains significant in reading development as it carries meaning through changes in word structures. A developmental model of reading that implicitly includes morphology as a component is Ehri's (1999) phases of development model. In this model, Ehri describes reading development in four phases: pre-alphabetic, partial alphabetic, full alphabetic, and consolidated alphabetic. The pre-alphabetic phases consist of nonreaders and are characterized by sight word learning at the earliest period. Children then progress to the partial phase when they learn the names or sounds of alphabet letters but have not yet formed consistent connections. Once they begin the learn sight words by forming complete connections, they have progressed into the full alphabetic phase. In this phase, children rely on grapheme–phoneme correspondence and are able to segment pronunciations by

grapheme and phoneme. The role of morphology emerges in the consolidated phase; although it is not explicitly said, it is implied that children begin to rely on larger grapheme–phoneme connections while reading familiar letter patterns. These larger connections formed from morphemes become unitized and support improved word recognition for multi-syllabic words.

A popular and frequently cited model of reading, referred to as the "simple view of reading" (Gough & Tunmer, 1986), posits that skilled decoding and language comprehension are the two components of the reading process central to the development of skilled reading. Although not stated explicitly in this model, morphological skills could very well serve as a bridge between decoding and comprehension, allowing readers to decode novel morphologically complex words and thereby improving their ability to infer meanings of novel words in text. Oliveira et al. (2020) conducted a study with Portuguese-speaking children and found the relation between MA and reading comprehension is fully mediated by word reading and listening comprehension, supporting the points of the "simple view of reading."

The triangle model (Seidenberg, 2005) is another model of reading development, which displays the fundamental aspects of word knowledge through connections between phonology, orthography, and semantics. Morphology serves as the "binding agent" that connects all language domains in the reading network, placing it at the center of the model, as shown in Figure 1 (Kirby, 2019; Kirby & Bowers, 2018).

It should be noted that Perfetti (2007) first introduced the term "binding agent" in his lexical quality hypothesis, as a component of language that relates the domains (semantics, phonology, and orthography) to one another in order to strengthen mental representation. Morphemes are easily related to semantics as they carry meaning and can alter words. They also relate to phonology in the way that children learn to parse words into morphemes, proving them with clues for pronunciation. Morphemes also relate

to orthography in the way they provide children with clues for spelling and letter patterns. In English, morphemes keep orthographic consistency despite changes in pronunciation, which facilitates spelling. Essentially, morphemes help in solidifying relationships among semantics, phonology, and orthography as a learner learns to read.

In summary, the theoretical models and research studies previously reviewed clearly support the notion that MA plays a positive role in literacy development for English readers. We now look to current literature to see how these concepts translate across different orthographies and how it impacts ELs.

MA Across Orthographies

Empirical research supports the relationship between MA and early literacy skills across orthographies, including Arabic (Tibi & Kirby, 2017, 2019; Tibi et al., 2019), Chinese (Lam et al., 2012; McBride-Chang et al., 2005; Pasquarella et al., 2011; Tong et al., 2011; Wang, Yang, & Cheng, 2009; Zhang, 2016), French (Deacon et al., 2009; Quemart et al., 2011), Greek (Pittas & Nunes, 2014), Hebrew (Leikin et al., 2010; Ravid & Malenky, 2001), Italian (Angelelli et al., 2014), Japanese (Muroya et al., 2017), Korean (Wang, Ko, & Choi, 2009), Portuguese (Oliveira et al., 2020), and Spanish (Ramirez et al., 2013, 2010).

Morphological features may differ depending on whether the orthography is opaque or transparent. The term "opaque orthography" refers to those languages that have a complex grapheme–phoneme relationship, such as the case with English (Seymour et al., 2003), whereas "transparent" is used to describe orthographies where the grapheme–phoneme correspondences are consistent, such as the case with Spanish (Ramirez et al., 2013) or Finnish (Aro, 2006). Carlisle (2003) argued that opaque orthographies create barriers for the understanding of orthographic, phonological, and semantic relationships between morphologically complex words. A lack of phonological and orthographic transparency may create difficulties for students' awareness of morphological relationships.

In today's rapidly changing world, many children are exposed to more than one language, whether it is at home, school, or in society. With the number of bilinguals steadily increasing, there have been numerous studies that involve bilingual learners (Genesee et al., 2004; Kieffer & Lesaux, 2012; Paradis et al, 2011; Wofford & Tibi, 2018). Accordingly, the context of cross-linguistic transfer is frequent in research on bilingualism. Specifically, the concept of cross-linguistic transfer is crucial in bilingual reading literacy development as it affords educators and therapists with linguistic and literacy opportunities to improve L2 learning via first language (L1).

Cross-Linguistic Transfer

Kuo et al. (2016) defines cross-linguistic transfer theory as the idea that learning an L1 facilitates the learning of an L2. The literature is filled with several cross-linguistic transfer frameworks: the contrast-typological framework

Figure 1. The triangle model of reading with morphology added, adapted with permission of Taylor & Francis Group from Kirby (2019, pg. 53) and Kirby and Bowers (2018, pg. 218).
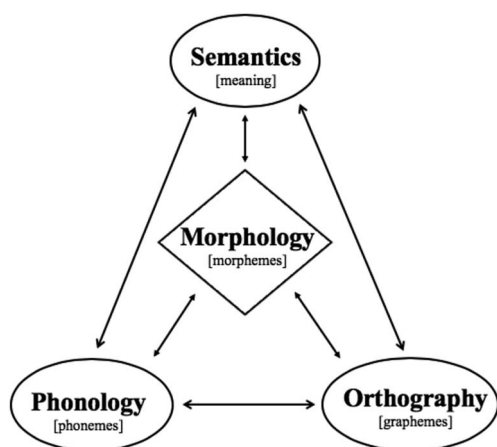
(Lado, 1964), the linguistic interdependence framework (Cummins, 1981), the common underlying cognitive process (Geva & Ryan, 1993), the transfer facilitation model (Koda, 2008), and the interactive transfer framework (Chung et al., 2018). In what follows, we briefly describe each framework and provide examples of different types of cross-linguistic transfer.

First, the contrastive typological transfer (Lado, 1964) focuses on the notion that L2 learners make the most out of their L1 and that differences in L2 acquisition can be predicted using a systematic analysis and comparison approach. Specifically, it is possible to predict which features of the L2 will be easy to acquire and which will be more difficult for the learner. These predictions are all on the basis of positive and negative transfers. For a positive transfer to occur, the two languages must share a linguistic feature, such as similar phonological structures, and the shared linguistic features must be more prominent and complex in the L1 than in the L2. Positive transfers of L1 are unlikely if these conditions are not met. For example, when two languages share cognates, there may be positive transfer of lexical knowledge, such as in French and English (Hipfner-Boucher et al., 2016), and for alphabetic languages, you may see positive transfer of grapheme–phoneme recognition, similar to what Spanish-speaking children do with English as L2 (Ramirez et al., 2010).

When orthographic structures between languages are very different from each other, children may demonstrate negative transfer or "interference" (Geva, 2014; Kuo & Anderson, 2010). Negative transfer is likely to occur in the less dominant language when the dominant language is the one with a simpler or less salient linguistic features. This interference yields predictable errors as children rely on the influence of their L1. For example, in a study by Wang and Geva (2003), Cantonese-speaking ELs had difficulties hearing the difference between /θ/ and /s/, attributable to the fact that the phoneme /θ/ does not exist in Cantonese. Without the acquisition of the /θ/ phoneme, the ELs would be more likely to incorrectly hear the /θ/ phoneme in words and make spelling errors. Another example of negative transfer was also observed by Robertson (2000) as Chinese-speaking ELs would underuse the article "the" in English contexts since it is not used in Chinese. The same type of negative transfer with the definite article "the" in addition to other errors (e.g., sentences without verb to be) were reported by Tibi et al. (2016) among native Arabic university students learning English as L2. While this contrastive approach to predicting L2 acquisition may be helpful, not all transfer errors can be classified as "positive" or "negative," and this framework does not explain much with regard to linguistic or metalinguistic skills related to reading.

Second, we take into consideration the extent that instruction in one language (L1) is effective in promoting proficiency in that language and how this proficiency will transfer to L2 given that the learner receives adequate exposure to that L2. This concept underscores the linguistic interdependence hypothesis (Cummins, 1981), which proposes that proficiency developed in one's L1 can facilitate L2 learning. According to this hypothesis, children must meet the "threshold skill level" before they can build novel linguistic concepts. Also, lacking the foundation of one's native language will have adverse effects on L2. Although this hypothesis is useful in explaining implicit knowledge necessary for performance, it may be too general and not appropriate for identifying specific skills or abilities that may be transferred.

Another framework is the common underlying cognitive process (Geva & Ryan, 1993), which focuses on identifying the cognitive constructs that may predict specific L1 and L2 language and literacy skills. According to this framework, shared cognitive processes explain the observed relationships between an L1 and L2. That is to say, the skills and ability to perform a task in L1 or L2 are not what transfer, rather the general cognitive processes that underline these skills, such as WM, PA, and RAN, are what transfer. This framework also underlines how individual differences in reading skills in L1 and L2 can be predicted by general underlying cognitive processes (Chung et al., 2018).

Another framework, proposed by Koda (2008), is the transfer facilitation model, and it explains how metalinguistic skills developed in one language contribute to the development of reading skills in another language. Koda argues that transfer is dynamic and that metalinguistic skills developed in the L1 are accessible across modalities (e.g., oral or written). To illustrate this framework, we review the empirical research on cross-linguistic transfer, specifically transfer of the metalinguistic skill of MA. Last, but certainly not the least, is the interactive transfer framework proposed by Chung et al. (2018), which they describe as a complex and interactive process that is influenced by multiple cognitive and linguistic factors such as L1 and L2 distance, proficiency levels in L1 and L2, and L1–L2 complexity. Chung et al., 2018 also underscored the sociocultural and sociolinguistic factors and the varying educational settings, which all, when combined together, contribute to the heterogeneity of the bilingual population.

The past two decades have seen an increasing body of research on the topic of cross-linguistic transfer among bilingual learners. For the purpose of this clinical focus article, we will review some of the literature that pertains to MA transfer. It should be noted, though, there is no consensus on the direction of transfer (L1 to L2 or L2 to L1). For example, Ramirez et al. (2013) reported that Spanish derivational awareness among Spanish fourth- and seventh-grade students accounted for unique variance in English word reading, but not from English to Spanish. Conversely, transfer has been noted to occur from L2 (Arabic) to English (L1) among English–Arabic children residing in Canada (Saiegh-Haddad & Geva, 2008), which is an indication of transfer occurring from a dense and more opaque morphology (linear and nonlinear) to English (more transparent and linear morphology). Deacon et al. (2007) reported that English (L1) inflectional awareness accounted for variance in French (L2) word reading among Grades 1 and 2 students studying in French immersion programs. They explained that transfer occurred from the more proficient language

(English) to the less proficient language (French) in the early stages of learning L2. In their study, Deacon et al. specifically looked at past-tense markers in the two languages and revealed findings supporting cross-linguistic transfer of MA to reading. Although past-tense markers have different phonological manifestations in both languages (e.g., English involves the addition of a /t/ or /d/ sound at the end of verbs, whereas in French, it requires an auxiliary *avoir* or *eˆtre* and the word-final "é" added), the students demonstrated positive transfer of this metalinguistic skill, but this transfer depended on their language proficiency level.

Similar evidence of cross-linguistic transfer of MA was found in a study exploring Chinese (L1) and English (L2) bilinguals (Pasquarella et al., 2011). This study revealed that English compound awareness was a significant predictor of Chinese vocabulary, but transfer was only observed from English to Chinese. The investigators measured compounds since both languages share rules in compound formation (i.e., compounds are "right-headed," meaning the right morpheme specified a category and the left morpheme modifies the meaning with a subcategory; such as in "*sunrise*," *rise* is the category and *sun* is the modifier). This one-directional transfer is probably due to the fact that 75% of Chinese words are formed through compounding, whereas most English words are derivational or inflectional. These findings suggest that transfer of MA may be influenced by morphological structure of the language or relative proficiency levels of L1 and L2, consistent with the cross-linguistic theory. Based on the available empirical evidence to date, there is a solid evidence for bidirectional or interactive transfer between L1 and L2. Cross-linguistic influences may also be a result of other processes such as cognate awareness, root knowledge, and awareness of cross-language correspondences further explored in the following sections.

Cognate Awareness

Cognate awareness is a metalinguistic skill described as the ability to recognize the "cognate" relationship between words in two related languages (Chen et al., 2012; Hipfner-Boucher et al., 2016). There is evidence to support that cognate awareness allows children to use lexical knowledge from their L1 to support L2 vocabulary learning, consequently supporting word reading and reading comprehension as they are related (Chen et al., 2012). Cognates describe words that have the same linguist derivation or similar roots and are usually similar in pronunciation, spelling, and meaning. For example, "*accident*" in English is "*accidente*" in Spanish; the two words share similar linguistic derivations, almost identical pronunciation and spelling, and the same meaning.

Cognate awareness has been reported to facilitate positive language transfer. For example, Ramirez et al. (2013) found positive transfer of Spanish (L1) derivational awareness to English (L2) cognate vocabulary and reading comprehension. Chen et al. (2012) also looked at the impact of English–Spanish cognate awareness on Spanish-speaking ELs, but also compared them to English L1 children and

Chinese-speaking ELs. They compared their performance on English words with and without Spanish cognates and found that English L1 students outperformed the other two groups, but the Spanish-speaking ELs performed better than the Chinese-speaking ELs. These results suggest that cognate awareness may reduce the gap for Spanish-speaking ELs and their English-speaking monolingual peers with regard to English vocabulary development. Hipfner-Boucher et al. (2016) found similar results in their study with English (L1) speaking French (L2) immersion students and also revealed that cognate awareness is present as early as first grade.

Root Knowledge

Awareness of the root (base) in words has been shown to contribute to reading and spelling in different languages. For example, Deacon and colleagues (Deacon, Conrad, & Pacton, 2008; Deacon & Bryant, 2006; Deacon & Dhooge, 2010) found evidence for children's (ages 7–9 years old) awareness of "root consistency," which refers to root of a word maintaining its spelling across related derived words. This sensitivity toward the root was also reported by Deacon and Dhooge (2010) in the spellings of Grades 2 and 4 students for both inflected and derived words. In Semitic languages, root awareness has also been shown to predict different reading outcomes (Arabic: Tibi & Kirby, 2019; Tibi et al., 2019; Hebrew: Ravid & Malenky, 2001). It should be noted here that the term "root" in Semitic languages refers exclusively to consonantal roots and is always a bound morpheme (for a review, see Tibi et al., 2019).

Crosson, McKeown, Moore, and Ye (2019) explored the impact of explicit root instruction on EL students' academic vocabulary learning. In their study, root knowledge entailed the understanding of how the meaning of the bound root, for example, "*nov*" meaning "*new*," connects to the meaning of words such as "*innovative*" or "*renovate.*" They found similar effects on learning academic words for students who received morphological intervention with root instruction and those who received morphological intervention without root instruction. However, root instruction was found to have larger treatment effects for morphological problem solving for unfamiliar words, suggesting positive effects of learning root relationships between Latinate orthographies.

Cross-Language Suffix Correspondence

Cross-language suffix correspondence refers to the awareness that some prefixes and suffixes carry the same meaning and alter words the same way across different languages. It differs from "cognate awareness" as it solely focuses on the affixes. Heightened awareness of cross-language correspondences can facilitate decomposing and defining novel morphologically complex words. For example, the French suffix –*eux* and English suffix –*ous* both change a noun into adjective. Therefore, a child who is able to understand and match the suffix they see in "*nerveux*" will be better able to draw on this knowledge to understand the word "*nervous*" in English. Lam et al. (2019) studied the

transfer of MA across English (L1) and French (L2) and looked more closely at the impact of this type of awareness in French emersion second- and third-grade students. They found that the degree of awareness of suffix meanings across the two languages predicts variance in French reading comprehension, demonstrating the importance of explicitly bringing explicit awareness to shared suffix correspondences between two languages. Altogether, these findings add to the evidence of cross-linguistic transfer of MA and the impact MA has on literacy skills across languages. Accordingly, fostering such a foundational skill of morphological knowledge in students' L1 could heavily impact their development in L2 across different literacy outcomes. Deacon et al. (2011) stated that "progress in MA in one's first language might set the pace for development in this domain in the second" (p. 742). If children are able to use their L1 foundational skills to aid in their developing L2 skills, their experience with literacy may be a less taxing one. It is vital that SLPs build off the transfer research and work to improve academic performance in reading through MA instruction in both languages. However, before addressing the issues germane to MA instruction, different measures used to assess MA are reviewed.

Measures of MA

There is a wide range of MA tasks (Apel, Diehm, & Apel, 2013), and these tasks vary considerably in their degree of explicit–implicit level of awareness. In fact, there are even differences across the items of the same test (Kirby & Bowers, 2018). For these reasons, Deacon, Conrad, & Pacton, 2008 developed a taxonomy for MA measurement tasks with three task dimensions: modality of input/output, content, and process. These dimensions apply across orthographies, taking into account different factors that may impact students' performance on a task. All of these facts of MA measures must be considered when developing MA measures.

According to Deacon, Conrad, & Pacton, 2008 taxonomy, oral and written modalities may challenge children in different ways. As previously mentioned, input modality (oral vs. written) can create challenges for children with underlying difficulties in orthography, phonology, and WM; the same applies for output. Responding to a task orally can stress some students' articulatory system, whereas written responses can stress their WM and processing speed (Deacon, Conrad, & Pacton, 2008).

Task demands may be influenced by the choice of inflectional or derivational morphemes, as well as tasks including words with phonological or orthographic shifts. In English, for example, inflectional morphemes are learned earlier than derivational morphemes, and there are fewer inflectional forms. Individual differences on MA tasks can be a result of phonological, orthographic, and semantic shifts or lack of vocabulary. Phonological and orthographic shifts in words are more difficult because of changes in pronunciation and/or spelling. Carlisle (2000) found that challenges for students learning to read arise when words

undergo phonological shifts, such as "*sign*" and "*signal.*" Furthermore, Deacon, Conrad, & Pacton, 2008 note that a task requiring children to compose a word using a derivational or inflectional morpheme ("*sing*" to "*singer*") differs in difficulty from a task expecting children to decompose a word ("*happiness*" to "*happy*").

It is clear that some tasks require implicit knowledge, such as the lexical decision tasks, whereas others require children to work out changes in words at a more explicit level such as breaking a complex word into its constituent morphemes. In this context, we should note that some researchers (Kirby & Bowers, 2018; Nagy et al., 2014) acknowledged that MA tasks vary across a continuum ranging from explicit to implicit but cautioned that some tasks draw on both level of processing.

Considering these task dimensions, it is important for an SLP to take all factors into account when developing MA measures (e.g., the child's L1, their age, type of exposure to L2, their underlying cognitive abilities, metalinguistic skills) while at the same time including a variety of tasks to control for external factors. When developing and/or using MA measurements, the following questions should be considered: (a) Does the task require implicit or explicit morphological knowledge? (b) Does the task require morphological production, composition, or judgment? (c) Is the task presented in an oral or written format? (d) Does the task require an oral or written response? (e) Does the task assess MA at the word level or the sentence level? (f) What type of morphemic structures are being measured (i.e., inflectional, derivational, or compounds)? (g) Does the task include phonological and/or orthographic shifts? and (h) What degree of short-term memory engagement is needed to complete the task? (Deacon, Conrad, & Pacton, 2008; Tibi & Kirby, 2017, 2019). For example, a young child (preschooler or kindergarten) and a child with writing difficulties maybe administered an oral MA task.

Examples of Morphological Tasks

MA has been assessed using a wide range of tasks and across different modalities (e.g., oral and written). Many of these tasks have been based on or adapted from Carlisle (1985, 1988, 1995, 2000), who is a major contributor to our knowledge of this construct in reading.

For example, derivational knowledge can be assessed by the ability to decompose words into their constituent morphemes (e.g., "*un+believe+able*"). Another derivational task requires changing a base word embedded in a sentence (e.g., *"Teach: The boy wants to become a _____ when he grows up."*; *"teacher"*). Alternatively, a decomposition task asks the student to shorten a morphologically complex word to its base word to create a syntactically correct sentence (e.g., *"Happiness. The dog makes the girl _____."*; *"happy"*). Another type of task (based on Carlisle & Nomanbhoy, 1993) is a morphological relation judgment task that assesses relational knowledge of morpheme families. For example, children are asked to judge by saying "*yes*" or "*no*" if pairs of words are related to each other in meaning (e.g., *"corn"–"corner"; "help"–"helpful"*). Also, children can be

asked to complete a word pair analogy (e.g., "*laugh–laughed*": *walk–?*; Nunes et al., 1997), which can be administered to different age groups and in different languages.

All of these examples can be completed using real words or pseudowords (Berko, 1958). For example, when administering a derivational task, the SLP can provide students with pseudowords to assess their MA. In a study by Tighe and Schatschneider (2015), several MA measures were administered to a group of adults and among these measures was a morphological construction task using pseudowords. Based on the work of Berko (1958), students were required to manipulate syntactic information to create a new word that would accurately fill the blank space. For example, "*This is a gugalob, it is used for dancing. Now we have six of them. We have six _____.*" The student is expected to answer with "*gugalobs,*" demonstrating knowledge of the plural "*–s*" morpheme. The use of pseudowords instead of real words can help control level of vocabulary, while assessing specific morphemic constructs. Table 1 provides a list of several MA tasks, descriptions, and examples. To avoid decoding difficulties, presenting the tasks orally and visually may be more effective.

Tasks of this nature can be used across orthographies, taking into consideration the specific morphological nature of different languages. To date, there is a wide range of MA tasks developed for different orthographies. For example, Tibi and Kirby (2017) used developed and used 10 MA tasks to predict reading in Arabic-speaking third-grade students. Tibi et al. (2019) also validated the construct and predictive validity of root awareness, which is instrumental for a language such as Arabic characterized by the salient nature of its consonantal roots and nonlinear derivational process. Lam et al. (2012) used derivational awareness tasks for Chinese-speaking ELs, and Ramirez et al. (2013) used a morphological production test to assess derivational awareness of Spanish-speaking ELs.

To illustrate, let us look at this English derivational task example where children are given a base and are asked to change the base and fill the blank depending on the syntactic context of the sentence. For example, "*(dance); the girl is a good _____ (dancer); and the girl is _____ (dancing).*" This task can be applied in Spanish; for example, the previous example translated would look like: "*(bailar); la niña es una buena ____ (bailadora); la niña esta _____ (bailando).*" An example in a nonlinear morphological process as the case with Arabic, a similar task would be: "*/**kataba**/ (to write); He is a famous /**kaatib**/ (writer/author).*" It is worth noting here that Arabic derivations are performed by interleaving the consonantal root (bold letters) onto the mostly vocalic word pattern (for a review on this, see Tibi & Kirby, 2017). Upon assessing a child's MA abilities, it is important to be aware of the morphological structure of the child's L1.

Clinical Implications of Morphological Instruction

As previously stated, MA has a positive impact on word reading, spelling, vocabulary, and reading comprehension.

Recent interests in the effects of explicit morphological instruction have grown in the field of language and literacy. As noted by the National Reading Panel (2000), although phonological instruction, along with supplemental activities for robust vocabulary instruction, should be the primary focus of early instruction, much remains to be explored with regard to morphological instruction.

Several studies support the provision of morphological instruction in conjunction with other aspects of literacy preparedness (Bowers et al., 2010; Carlisle, 2010; Carlisle et al., 2010; Goodwin & Ahn, 2013; Kirby, 2019; Kirby & Bowers, 2018; Nagy et al., 2014; Reed, 2008). Morphological instruction does not aim to replace explicit phonemic instruction but, instead, should be used to bind together the decoding, vocabulary, and comprehension skills undergirding literacy. Berninger et al. (2010) concluded that PA alone is insufficient for developing literacy skills and recommends that reading instruction include MA. Although few studies have explicitly explored the impact of MA instruction in isolation versus in combination with other component literacy skills, support for the consideration of morphology as a binding agent for literacy knowledge across other domains of language suggests that it is likely to be important component skill for literacy instruction (Kirby & Bowers, 2018), especially for students who struggle with both decoding and comprehension.

Using morphological instruction to address vocabulary knowledge should also have positive outcomes for ELs. Vocabulary knowledge in English has been shown to be an area of difficulty for ELs, a skill that directly impacts reading comprehension abilities (Crosson, McKeown, Robbins, & Brown, 2019; Kirby, 2019). Given the previously mentioned benefits for MA transfer, explicit morphological instruction would not only promote MA in English (L2) but also increase their ability to analyze and interpret the meaning of novel words leading to improvements in a students' reading ability. In fact, Levesque et al. (2018) found that reading comprehension is predicted by a students' ability to analyze a word by its parts through knowledge of derivations and the capacity to problem solve. With students of varied language backgrounds, Kieffer and colleagues (Kieffer & Box, 2013; Kieffer & Lesaux, 2012) showed evidence for direct and indirect contributions (via vocabulary) of MA to reading comprehension

Following a systematic review of the literature on morphological instruction, Bowers et al. (2010) reported that instruction in this domain is most beneficial for younger and less able students. Goodwin and Ahn (2013) also addressed the effectiveness of morphological instruction on less able readers and reported results similar to Kirby et al.'s (2012) findings, indicating that morphological instruction benefits all learners, specifically the less able students. With regard to students with learning impairment/challenges, Berninger et al. (2010) found that students receiving morphological instruction improved significantly more in efficiency of phonological decoding than those receiving phonology instruction supporting the thesis that decoding benefits from the interaction of phonological and

Table 1. Morphological awareness measures.

Task name	Description	Example
Base Form Morphology Task Adapted from Carlisle (2000) and utilized in Tighe & Schatschneider (2015)	Students are asked to decompose target words and identify the base word. They are provided with a derived word followed by a short sentence with a blank space in it. They are prompted to fill in the blank with the correct base word.	Sentence: "Happiness. The students were _____ to hear that they were all getting pizza after the field trip." Correct response: "happy"
Derived Form Morphology Task Adapted from Carlisle (2000) and utilized in Tighe & Schatschneider (2015)	Students are asked to transform base words into more complex, derived words. They are provided with a derived word followed by a short sentence with a blank space in it. They are prompted to fill in the blank with the correct base word.	Sentence: "Thank. She was _____ for the support of her family and friends during tough times." Correct response: "thankful"
Derivational Suffix Choice Test of Pseudowords Adapted from Mahony (1994) and utilized in Tighe & Schatschneider (2015)	Students are asked to manipulate morphemes using pseudowords. They are read aloud a sentence with a blank, followed by four choices of pseudowords. They are asked to choose the correct pseudoword.	Sentence: "I've always wanted to learn how to _____." Choices: "bamb, bambles, bambling, bambled" Correct response: "bamb"
Morphological Skill Task Adapted from Derwing (1976), Mahony (1994) and utilized in Tighe & Schatschneider (2015)	Students are asked to distinguish morphological relatedness between derived and base words. They are presented with a morphologically complex word and three answer choices; they are asked to pick the correct base.	Word: "uncomfortable" Choices: "uncomfort, comfort, comfortable" Correct response: "comfort"
Morphological Construction Task Adapted from Berko (1958) and utilized in Tighe & Schatschneider (2015)	Students are asked to manipulate syntactic information to construct new pseudowords. They are presented with scenarios, orally and visually, that include a pseudoword. The scenario ends with a blank and students are asked to fill it with the correct derived form of the pseudoword.	Scenario: "This is a jifar. Now I have 3 of them. Now I have three _____." Correct response: "jifars"
Morphological Analogy Real Word Task Adapted from Nunes et al. (1997) and utilized in Tighe & Schatschneider (2015)	Students are presented with an analogy format of A:B:: C:D. They are presented, orally and visually, with an inflected word pair (A:B) followed by the first word of the second word pair (C). Students are asked to complete the analogy.	Analogy Presentation: "happy: unhappy :: lock:___" Correct response: "unlock"
Morphological Analogy Pseudoword Task Utilized in Tighe & Schatschneider (2015)	Similar to the morphological analogy real word task, except students are provided with pseudowords. They are still provided with real words for the first pair (A:B), but are given a pseudoword for the second pair (C) and are expected to complete the analogy using the pseudoword.	Analogy presentation: "quick: quickly :: gumb:___" Correct response: "gumbly"
Morphological Relation Task Adapted from Derwing (1976) and Carlisle & Nomanbhoy (1993) and utilized in Tibi (2016)	Students are asked to judge if two words are related. They are presented with word pairs and need to respond with "yes" or "no," depending on whether or not the word pairs are related in meaning.	Pair: "*act* and *actor*" Correct response: "yes" Pair: "*corn* and *corny*" Correct response: "no"

MA (Kirby & Bowers, 2018; Wolter & Dilworth, 2014). When addressing spelling, word reading, and vocabulary, inclusion of explicit morphology instruction may yield the most effective outcomes, Kirby and Bowers (2018) noted that this effect may be stronger for less able readers and early learners. To illustrate, Wolter and Green (2013) also reported on significant gains in PA, vocabulary, and reading comprehension after providing morphological instruction to an 8-year-old boy with speech-language and literacy disorders

When considering students from low socioeconomic status homes where there a disproportionate number of ELs, Apel, Brimo, Diehm, and Apel (2013) conducted an intervention study on a group of about 60 students in kindergarten, first grade, and second grade. The students received a 9-week intervention focused on increasing MA through affix awareness and the relationship between base words and their inflected/derived forms in groups of four to five students, 4 times a week for 25 min a day. They found significant gains in word reading, spelling, and reading comprehension in students from kindergarten to Grade 2. Aside from providing evidence to support morphological instruction, the study also provides evidence supporting instruction for children as young as kindergarten. Overall, there is evidence to support benefits of morphological instruction for all learners with academic challenges regardless of age, ability, or language.

Intervention Tools and Strategies

Prior to the implementation of morphological instruction, it is important that SLPs instruct students on basic terms and concepts of morphology. The SLP should define morphology, affixes, and the concept of MA to the student while providing a rationale for why working on MA is important to the successful development of their language and literacy skills (Wolter & Collins, 2017). A rationale can be as simple as "it'll help you learn new words" or more detailed as in "working on our MA can help us read better, improve our spelling, define unfamiliar words, and even improve our reading comprehension." Wolter and Collins (2017) also explore the notion that the student must become aware of the active process of MA, where they must actively reflect on word parts and their meaning.

Researchers promote a problem-solving instructional strategy for helping students find and analyze patterns in words. Several studies explored the approach of using students as "detectives" (e.g., Berninger et al., 2003; Bowers & Kirby, 2010; Kirby, 2019) and found that this game-like theme increased students' motivation and enjoyment of the tasks. Furthermore, researchers recommend that this type of instructional strategy be used to promote morphological knowledge across the curriculum (Baumann et al., 2003; Kirby, 2019; Kirby & Bowers, 2018). For example, students in a science class can learn about the prefix *bi–* and play detective as they try to see how often it appears in their textbook. Integrating morphological instruction across content areas not only improves their ability to analyze morphologically complex words but also increases their ability to acquire new vocabulary outside of language arts.

Specific to ELs, previously mentioned literature provides extensive evidence in the potential benefits of explicitly drawing a student's attention to the structures shared between their languages (e.g., Lam et al., 2019; Ramirez et al., 2013). SLPs may draw on the benefits of positive cross-linguistic transfer to facilitate instruction. These concepts apply strongly when addressing children learning two languages that share orthographic and morphological features, such as Latinate languages. Building intervention around children's strengths and their L1 should serve as strong foundation for L2 acquisition. As with assessment, when looking into intervention activities and instruction, service providers should also take into consideration the specific morphological features of L1 and L2 (e.g., linear or nonlinear), the frequency of roots and bound morphemes, and whether or not they are alphabetic languages.

There has been empirical support in the literature for MA instruction and its benefits to learners of English as a second language (Goodwin & Ahn, 2010, 2013; Kieffer & Box, 2013; Kieffer & Lesaux, 2012; Oliveira et al., 2020). Specific tools have been designed to help facilitate instruction, for English speakers and learners of other languages. Several examples from the work of Bowers et al. (see Bowers & Kirby, 2010; Kirby & Bowers, 2018) are described below. Using these tools to devise activities, the SLP can facilitate the learning of morphology using independent problem-solving strategies. Oliveira et al. (2020) argue that MA instruction might be most effective if paired with instruction on how morphology impacts both word reading and oral language. The following sections describe specific tools used to provide MA instruction; descriptions and examples of the following tools and others are available on several websites.[1]

Word Sums

This tool is designed to delineate the written morphological structure of words (Kirby & Bowers, 2018). Students decompose words into morphemes or assemble morphemes to create words. They use addition symbols to denote adding a prefix or suffix and use a forward slash in cases where a silent <e> is being changed. They complete the equation with a forward arrow, which symbolizes "…is rewritten as." For example, if a student is given the word "*displeasing,*" they would create a word sum that looks like "*dis + please/ + ing ➔ displeasing.*" If they were to verbally present this word sum, they would say "*dis*" plus

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[1]Lyn Anderson's "Beyond the Word" website (http://wordsinbogor. blogspot.ca) offers resources about morphological instruction methods for younger children, with several posts on how to introduce morphology and different ways to implement the tools. Peter Bowers' "Word Works Kingston" website (http://www.wordworkskingston.com) offers several resources and examples of morphological instruction. In his YouTube channel, you will find authentic videos of MA instruction. Videos include how to introduce morphological word sum in preschool, kindergarten, and first grade; lessons targeting grapheme–phoneme correspondences using word sums; and video seminars describing Structured Word Inquiry.

"please" plus "–ing" is rewritten as "displeasing." Word sums present a visual and concrete way for students to signal different spelling rules such as dropping the silent *"e"* in certain words. For more examples of words sums, see Kirby and Bowers (2018).

Word Matrix

This is another valuable tool that is designed to show the relations between words of any morphological family (Bowers & Kirby, 2010; Kirby & Bowers, 2018). In a word matrix, children are shown the base of a word accompanied by all the members of its morphological family. Figure 2, adapted from Kirby (2019), shows the base "*duce*" and all the members of their word family, accompanied by word sums.

Figure 3 shows how this tool can be used in other languages, such as Spanish. As shown, the base of the word would be in the middle of the matrix, whereas several prefixes are on the left and the different suffixes are on the right, the word families. Children can be taught to identify the bases and how different affixes alter their meaning. They provide concrete representations of morphological structures. This tool brings awareness to the different morphemic units in words, their respective orthographic representations, and the way these structures change meaning. Bowers and Kirby (2010) also use word matrices and word sums to teach about morphology in a more problem solving–based approach, encouraging students to use these tools to hypothesize, test, and confirm new words. This approach is explored in the following section.

Structured Word Inquiry

Structure word inquiry describes the idea of doing a "scientific word investigation" to better understand a word, its spelling, and its meaning (Kirby 2019). This activity asks that the student conducts inquiry-based problem solving with the guidance of their teacher or SLP. In the word sum and matrices, a student can combine multiple words and affixes to come up with new words, but they are left to test whether or not the word they have created is real or not. The SLP may guide this investigation by asking "What does the word mean?" If a student does not know the meaning, the provider can follow up the question with, "Well, how is it built?" Here, the students are expected to use their word sums or word matrices to identify and explain the bases and affixes of the word. Then, the student is asked "What other related words can you think of?" in efforts to make morphological families. To answer this question, the students can look back at their word matrix and think of related words or use etymological relations to understand the origin of the word. Finally, the student is asked "What are the sounds that matter?"; here, the student applies their grapheme–phoneme correspondence skills to fit the letter together and build a correctly spelled word.

Bowers and Kirby (2010) also refer to an idea of conducting structure and meaning test, similar to SWI, where the students are expected to test the basis of their morphological analyses. Students must determine if the new word they came up with is supported or rejected by the evidence. Structurally, words must be coherent, meaning each morpheme must have a similar purpose in another word and all suffix conventions must be followed (such as dropping the silent –*e*). They must also pass the meaning test, where students refer to a word's etymology to reject or accept their analyses. Through investigating a word's structure, root meaning, and spelling, a student becomes an inquiry-based problem-solver and is responsible for their own investigations. It should be noted that any of these morphological strategies or tools could be employed in other languages. The exception would be the inapplicability of word sums or word matrices in languages with nonlinear morphology as the case with Arabic. For examples on nonlinear morphological instruction, semantic diagrams, and color-coding of the root consonants, see Tibi and Kirby (2018).

Suggestions for Families

Although explicit instruction in educational settings is important for adequate L2 exposure, carryover of strategies through family involvement and at-home activities are paramount for building the home-language knowledge. The homelife of an EL does not typically involve exposure to the child's L2 but rather to a more implicit and spontaneously occurring L1. As service providers, it is important that we capitalize on this exposure and encourage families to engage with their children with the goal of L1 development and culture perseverance.

There are several direct and indirect ways for parents to promote literacy skills, specifically MA, in the home, including shared reading, writing experiences, storytelling,

Figure 2. Word matrix and selected word sums for *duce* in English, adapted with permission of Taylor & Francis Group from Kirby (2019, pg. 59).

Figure 3. Word matrix and selected word sums for *duce* in Spanish.

Word Matrix	Word Sums

con de e in intro		ar	ción

Word Matrix

con de e in intro	**duce** "guiar, llevar"	ar	ción
		ir ible ido/a	
sobre	pro		

Word Sums

e + duce/ + ar → educar

pro + duce → produce

con + duce/ + ir → conducir

de + duce/ + ible → deducible

sobre + pro + duce/ + ir → sobreproducir

and oral language–building strategies. These strategies can be manifested across different modalities and in conjunction with other literacy activities. The parents can also work with their children on word structures and semantic relatedness between words.

In a shared book reading activities, the child and their caregiver can engage in reading a book together. They discuss the contents of the pictures in the book and the vocabulary used and go over the content and meaning behind the story (Wofford & Tibi, 2018). In relation to MA, caregivers can talk about base words and their meaning and point out any affixes and discuss how it alters the word structure while maintain the general semantic field. They can also discuss different bases they can add to the affix and vice versa. For example, during the shared book reading in Spanish, the family may come across the word "*rápidamente*" (quickly), discuss its meaning, refer to the pictures, and discuss how it is used in the story. They can then follow up with a discussion of what other word "*rápidamente*" resembles or sounds like, to which the child may respond "*rápido*" (quick) or the caregiver can prompt for a response. In this instance, the caregiver can also explicitly talk about suffixes and how they change the word. They can also talk about other bases such as "*lento*" (slow) and how you can also add the Spanish suffix –*mente* to it to change it to an adverb. The possibilities are endless.

MA can also be enhanced with writing activities. If the family does not have access to children's books in their native language, they can write a "book" or words derived from the same base on their own. This gives caregivers the liberty to be creative and control the language/content they expose their child to. For example, if they explicitly want to target past-tense markers in French, then they could write a book where they use past-tense verbs several times. While working on it, caregivers can also address grapheme–phoneme correspondence and letter patterns to increase orthographic knowledge and MA (e.g., frequent suffixes). The child can also write word matrices and word sums and can challenge their caregivers to see who can think of the most words for one base and then discuss the meaning of each new word.

Oral presentation of language is another modality families can use to promote literacy and MA at home. The caregiver and child can take turns telling stories, encouraging children to use morphologically complex words as they tell the story. This activity also warrants the discussion and reflection on words' smaller parts and their meaning.

If possible, the family can also tie in the similarity between words in L1 and L2 (cognate awareness). For example, in the first scenario where the family is discussing "*rápidamente*," they can talk about the similar root "*rapid*" in both languages. All of these strategies provide children with multiple opportunities to learn about words, their structure, and meaning. Coaching parents, perhaps by the help of interpreters, to promote their children's L1 oral and written language is extremely important and has been shown to have a positive impact on children's vocabulary and biliteracy development (for more recommendations, see Wofford & Tibi, 2018). Educators, SLPs, and language brokers should be aware of the fact that diminished input in L1 puts the child at risk for language development in both languages and can be quite harmful to the child's academic, linguistic, and social adjustment (McBrien, 2005).

Conclusion

In conclusion, MA plays a pivotal role in language and literacy development in different orthographies and cross-linguistically. Therefore, educators, SLPs, and parents should capitalize on enhancing MA explicitly and implicitly to maximize gains in language and literacy of L1 and L2. It is also important to dispel the myth about L1 hindering the development of L2. SLPs are equipped with the necessary knowledge and skills about language and literacy. Therefore, they should work diligently on incorporating morphological instruction in their assessment and intervention as they attempt to close the achievement gaps of students experiencing difficulties in language, reading, and spelling. As previously mentioned, morphology acts as the binding agent (Kirby & Bowers, 2018) that brings phonology, orthography, and semantics together in efforts to build a stronger literacy foundation. SLPs providing services to bilingual learners should pay explicit attention to the shared connections across languages. Utilizing tools such as word sums and matrices would help ELs to make better sense of shared roots and word formation, which in turn would bolster the learners 'breadth and depth of their

vocabulary, word reading, reading comprehension, and spelling.

Acknowledgments

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