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Five overarching factors central to grammatical learning and treatment in children with developmental language disorder

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Abstract

Background: During grammatical treatment of children with developmental language disorder (DLD), it is natural for therapists to focus on the grammatical details of the target language that give the children special difficulty. However, along with the language-specific features of the target (e.g., for English, add *–s* to verbs in present tense, third person singular contexts), there are overarching factors that operate to render the children's learning task more, or less challenging, depending on the particular target.

Aims: In this paper, we identify five such factors that can play a role in the grammatical learning of children with DLD. We use English as our example language, and provide supporting evidence from a variety of other languages.

Main Contribution: We show that the relative degree of English-speaking children's difficulty with particular grammatical details can be affected by the extent to which these details involve: (1) bare stems; (2) opportunities for grammatical case confusion; (3) prosodic challenges; (4) grammatical and lexical aspect; and (5) canonical word order.

Conclusions: During treatment, therapists will want to consider not only the English-specific features of grammatical targets but also how these more general factors can be taken into account to increase the children's success.

Keywords

Developmental Language Disorder; Specific Language Impairment; Cross-Linguistic Language; Grammar; Language Development

Introduction

Children with developmental language disorder (DLD) are children who exhibit a significant deficit in language ability that cannot be attributed to impairments in hearing, cognitive ability, or neurological functioning. In the research literature, these children are most frequently referred to as children with specific language impairment (SLI). However, in recent years, the term DLD has been used, as an implicit acknowledgement that these children's significant language difficulties are sometimes accompanied by other (non-causative) weaknesses.

Declaration of interest

The authors report no conflicts of interest.

For several decades, our understanding of the grammatical deficits seen in these children has been largely shaped by evidence obtained from children acquiring English. Although the study of DLD in other languages has long been part of the scientific literature, only recently has the accumulating evidence from these languages forced us to take another look at the factors that are actually at play in the grammatical difficulties experienced by these children. In this review, we identify some of these overarching factors and apply them to grammatical strengths and weaknesses frequently identified in the literature. We use English as the example language, and show through cross-linguistic comparisons that some of the grammatical errors seen in English-speaking children with DLD are not always due to the factors once assumed. Conversely, some of the relative strengths seen in these children may be more a function of the language they happen to be acquiring than an inherent characteristic of DLD.

For a preview of the factors of interest, consider the questions in (a)-(g):

a. Why do English-speaking children with DLD often omit verb inflections and noun inflections, but Spanish-speaking children with DLD rarely make errors of this type?

b. Why do English-speaking children with DLD sometimes produce object pronouns (e.g., *her, him*) in place of subject pronouns (e.g., *she, he*) but German-speaking children with DLD rarely if ever do so?

c. Why do English-speaking children with DLD sometimes omit definite articles, but Swedish speaking children do not have special difficulty with definite forms?

d. Why do English-speaking children with DLD have no problems with pronouns in direct object position but direct object pronouns are frequently omitted by Italian-speaking children with DLD?

e. Why do English-speaking children with DLD seem to have no difficulty with progressive *–ing* but their Cantonese-speaking counterparts are quite inconsistent in using the progressive morpheme?

f. Why do English-speaking children with DLD have no problems with word order when producing simple active declarative sentences, but Dutch-speaking children with DLD often commit word order errors on these types of sentences?

g. Why are verb inflections generally more challenging than noun inflections for English-speaking children with DLD, but the reverse is true for children with DLD acquiring Turkish?

As can be seen, the first three questions, (a)-(c), deal with grammatical details known to be challenging for English-speaking children with DLD, but are much less so for children with DLD acquiring other languages. The questions shown in (d)-(f), in contrast, pertain to grammatical details that, at least on initial inspection, do not seem especially problematic for children with DLD acquiring English. However, for children with DLD acquiring other languages, they can be significant obstacles. The final question, (g), shows a more global cross-linguistic difference involving English-speaking children with DLD at one end of a continuum.

We believe that satisfactory answers to these seven questions rely on an awareness of five overarching factors. These factors are: (1) the status of bare stems in the language; (2) the use of grammatical case; (3) the role of prosody; (4) interactions between aspect and tense; and (5) the canonical word order of the language. Some of these factors are addressed by one or another theoretical account of DLD. For example, the status of bare stems is a topic addressed by the Extended Optional Infinitive account (Rice & Wexler, 1996) and the Morphological Richness account (Dromi, Leonard, Adam, & Zadunaisky-Ehrlich, 1999); the use of grammatical case is included in the Grammatical Agreement Deficit account (Clahsen, 1999) and the Agreement/Tense Omission Model (Wexler, Schütze, & Rice, 1998); prosody is a concern of the Surface account (Leonard, Eyer, Bedore, & Grela, 1997); and word order is one of several factors relevant to the Computational Grammatical Complexity account (van der Lely, Jones, & Marshall, 2011) and the Procedural Deficit account (Ullman & Pierpont, 2005). These accounts differ greatly in their assumptions, but none can provide a comprehensive explanation for all of the details covered by these factors.

Our goal is not to argue for a single account to handle these factors. Rather, we argue that these factors cross language boundaries and can lurk beneath the surface and contribute to a child's difficulty with the particular details of a language even when these factors are not conspicuous in their symptoms. Accordingly, clinicians working with English-speaking children will want to be mindful of all of these factors – even those not billed as central to English.

In Table 1, we list the five overarching factors and, as a preview, we provide some of their clinical implications using English as the example language. More detailed discussion of these factors and implications appear in their respective subsections.

Factor 1: the allure of bare stems

The first factor applies to question (a) and indirectly to question (b). In English, grammatical inflections can easily be viewed as challenging because they require the child to add something to a word stem (e.g., *run* + *s*). Having to add an inflection might be even more difficult when the information it reflects is relatively abstract (such as tense or agreement added to verbs) rather than semantically salient (such as plurals added to nouns). However, the articulatory act of adding material to a word and dealing with abstract grammatical features do not represent the complete picture.

Children learning English are deluged with bare stem forms. Most verbs used in present tense are bare stems (e.g., *I run, you run, we run, they run*), as are infinitives (e.g., *Watch the girl run, Did the girl run?*). The omnipresence of bare stems seems to contribute to the relatively slow acquisition of inflections by typically developing children in English relative to children in other languages (Legate & Yang, 2007), and might lead to an over-reliance on bare stems by English-speaking children with DLD. In principle, this effect might be observed not only in mainstream dialects of English where forms such as *she runs* are obligatory, but also in nonmainstream dialects where such forms are optional. This is because, even in the latter case, forms such as *she runs* are used in some contexts.

An example of the influence that bare stem input frequency can have on children's grammatical development is seen in the work of Hadley, Rispoli, Fitzgerald, and Bahnsen (2011). These investigators found that the rate at which young English-speaking children developed productive use of tense/agreement morphemes could be predicted by the degree to which their parents' speech contained *overt* tense/agreement morphemes (e.g., *-s, -ed, is*). Conversely, of course, the higher the proportion of bare stems in the input, the slower the rate of the children's tense/agreement growth.

Frequent exposure to verbs with overt tense/agreement marking can likely speed a child's development toward greater use of these inflections. However, this may not be the whole story. Within mainstream dialects, when children begin to use these inflections, they rarely produce them in incorrect grammatical contexts; productions such as *I runs fast* and *We likes ice cream* are quite unusual in English (e.g., Rice, Wexler, & Cleave, 1995). Yet children will persist in inconsistently using bare stems in contexts that require these inflections. This raises the possibility that the frequent presence of bare stem *infinitives* in the language is also having an influence on this protracted inconsistent use.

In two of the examples presented earlier – *Watch the girl run* and *Did the girl run?* – the third person singular subject (*girl*) directly precedes a lexical verb in infinitive form (*run*). This sequence (*girl run* in each instance) by itself is ungrammatical. Yet when used in these larger structures the sequence is appropriate. There is evidence that children with DLD who produce bare stems frequently do not grasp that sentence-internal subject–nonfinite verb sequences such as *girl run* are constrained by verbs appearing earlier in the same utterance (e.g., *watch, did* in these examples). As a result, these children may extract sequences of this type and use them as stand-alone utterances in their own speech. This possibility receives support from studies that introduce novel verbs to children with DLD and their typically developing peers (e.g., Leonard & Deevy, 2011; Leonard, Fey, Deevy, & Bredin-Oja, 2015). In these studies, when children were presented with novel verbs appearing exclusively in input sentences containing subject-nonfinite verb sequences (e.g., *Let's watch the dog tome*; *Does the cat mabb?*) they were more likely to subsequently produce the novel verbs in the same nonfinite form in contexts requiring tense/agreement (*Every day the horse tome; All day long the cow mabb*) than if the novel verbs were initially heard with tense/agreement morphemes (e.g., *The dog tomes; The cat mabbs*). Children with DLD were more influenced by the input than were both age-matched and younger children with typical language development.

Note that some of the sequences that involve a subject followed by a nonfinite verb can also contain a pronoun that would be clearly ungrammatical in an independent utterance. For example, *her run* and *him leave* are clearly incorrect when taken out of larger structures as in *Let's watch her run* and *I saw him leave*, respectively. When we discuss pronoun case confusion in the next section, the relationship between bare stems and pronoun errors will be revisited.

Although English-speaking children with DLD are especially prone to producing inappropriate bare stems, such productions are not unique to English. Bare-stem errors are also made by children with DLD who are acquiring Dutch (Blom, de Jong, Orgassa, Baker,

& Weerman, 2013; de Jong, 1999). There is a greater variety of tense/agreement inflections in this language than in English, but the first person singular form is a bare stem (e.g., *drink* '[I] drink'). Along with inappropriate bare-stem productions, these children sometimes produce tense/agreement substitutions (e.g., the third person singular inflected form in place of the third person plural inflected form, as in *drinkt* '[she] drinks' in place of *drinken* '[they] drink'), and infinitives (which have overt inflections, as in *drinken* 'to drink') in contexts requiring a tense/agreement inflection. (Inappropriate overt infinitive productions will be discussed later in the section on word order.) The appearance of tense/agreement substitution errors along with bare-stem errors differs from the findings for English, but this mix makes sense. In Dutch, there are more agreement inflections than in English – hence more room for substitution errors, but, as in English, some present tense forms are bare stems.

Recent evidence from Welsh also shows evidence of the allure of bare stems. Welsh is considered a Verb-Subject-Object (VSO) language, whose infinitive is an uninflected verb (Borsley, Tallerman, & Willis, 2007). The past tense is expressed in one of two ways. The most frequent violates this language's VSO tendency, involving the use of a sentence-initial auxiliary verb followed by, in order, the subject, the bare stem lexical verb, and the object (e.g., the Welsh equivalent of PAST AUXILIARY *girl see dog* 'the girl saw the dog'). The second type of past tense structure is less frequent in spoken language but conforms to the typical VSO word order, consisting of the lexical verb with an attached past tense inflection, followed by the subject and the object (e.g., the Welsh equivalent of *see*-PAST *girl dog* 'the girl saw the dog'). Chondrogianni and John (2018) tested Welsh-English bilingual children with DLD and age controls on both types of past tense. Although the children with DLD were less accurate than their age mates on both types, the difference was especially striking for items requiring the use of lexical verbs inflected for past tense. The children with DLD produced more responses with the correct VSO word order but with the verb left uninflected. They were also more likely to produce a response with SVO order where the verb was an uninflected lexical verb. The latter would be correct only if the subject was preceded by an auxiliary verb. Because these Welsh-speaking children had exposure to English by the time they were tested, it is worth considering whether their bare-stem productions could be attributed to the bare-stem dominance of English. One argument against such an interpretation is that the children produced a large number of responses (with uninflected verbs) that showed the correct word order for Welsh (VSO) – a word order that would be quite alien to English. Those responses with the other word order, SVO, could be attributed to the children's attempts to express past tense using the alternative structure with the inappropriate omission of the sentence-initial auxiliary verb.

If bare-stem errors occur in several different languages, why aren't omissions of inflections seen in Spanish-speaking children with DLD? As is well known, a verb in Spanish can be readily identified as marking person, number, and tense, or as being an infinitive, based on an overt inflection (e.g., *bailo, bailas, bailamos* '[I] dance, [you] dance, [we] dance'). Children do not hear bare stem verbs. Rather than inflections being added to the stem, the verb is shaped by modifying the end of the verb to fit the form that conveys the proper grammatical information.

This observation helps to explain why bare stems are not produced in Spanish, but how do we account for the fact that in the speech of Spanish-speaking children with DLD, infinitives are rarely produced in contexts that require verbs inflected for tense/agreement? That is, if some bare-stem infinitives are incorrectly produced in English because children believe they are permissible in those contexts, then perhaps Spanish-speaking children might produce their overtly marked infinitives in similar inappropriate contexts. However, certain cross-linguistic differences between Spanish and English might lead us to expect fewer inappropriate infinitive productions by Spanish-speaking children with DLD. In particular, Spanish, unlike English, does not employ a fronted auxiliary *do* in questions. For example, in Spanish, the question *Does the horse run fast?* would have the structure of *Runs the horse fast?* There would be no opportunity for a Spanish-speaking child hearing such a question to associate the subject with an infinitive verb form.

The observation that Spanish-speaking children with DLD rarely produce infinitives in place of tense and agreement inflections does not mean that their productions are error-free. Although these children show greater use of correct tense/agreement forms than their English-speaking counterparts, errors can be seen. The most frequent error is the use of the present third person singular inflection in place of other inflections (Grinstead et al., 2013). However, this is not the only substitute seen. As noted by Bedore and Leonard (2001), errors frequently represent "near-miss" errors – where the errant substitute differs from the correct form by a single feature (e.g., correct person and tense but incorrect number; correct number and tense but incorrect person; correct person and number but incorrect tense).

Children with DLD acquiring other inflectionally rich languages are also more accurate in their use of tense/agreement inflections than English-speaking children with DLD. Italian is one such language (e.g., Leonard, Bortolini, Caselli, McGregor, & Sabbadini, 1992), perhaps not surprisingly given its Romance-language connection to Spanish. Across these languages, near-miss errors appear to be most common. However, unique details about a language can lead to errors not seen in other languages. For example, where an English-speaking child might say *She dress the baby* instead of *She dressed the baby,* a Hungarian-speaking child might say instead the equivalent of *She was dressing the baby*. In Hebrew, instead of saying *He dresses the baby,* a child might say the equivalent of either *He wears* or *He gets dressed*. The reasons for such errors go beyond the scope of this paper (see Leonard, 2014 for a review), but the findings themselves highlight the fact that *omissions* of tense/agreement inflections are very much associated with languages with an abundance of bare-stem verbs. In languages with few or no bare stems, other types of errors predominate.

Clinical implications for English

For a language such as English, one approach that might facilitate children's acquisition of inflections would be an input that emphasizes overt tense/agreement morphemes. Hadley and Walsh (2014) developed a procedure referred to as "toy talk" that warrants further investigation to determine whether it serves this purpose. In this procedure, when interacting with their young children, parents are encouraged to comment about the actions of toys that are the focus of play (e.g., *That horse runs really fast; That puzzle piece fits right there*), and to try to limit reference to their own actions or those of the children (e.g., *I want the ball*

now; *You like that doggy*). This type of input increases the proportion of adult utterances that naturally contain overt tense/agreement morphemes and decreases in a natural manner the proportion of "zero-marked" morphemes (such as *want* and *like* in the above examples). The next step would be to determine if this modified input leads to an increase in the children's own use of overt tense/agreement morphemes.

However, as noted earlier, some bare stems are infinitives and not "zero-marked" tense/agreement morphemes (compare *run* in *I see the man run around the block every day* and *I run around the block every day*). If some of the inappropriate bare stem productions of children derive from infinitives in the input, additional activities might be necessary. For example, it might be helpful to alert children to how verbs appearing earlier in a sentence affect verbs that appear later in the sentence. Notice how *run* differs depending on whether the earlier appearing verb is a perception verb (as in *I see the man run around the block every day*) or a cognitive verb (as in *I think the man runs around the block every day*). Fey, Leonard, Bredin-Oja, and Deevy (2017) found success with a procedure that encouraged children to pay special attention to the first verb in a sentence. This procedure led to improvement in the production of tense/agreement morphemes such as auxiliary *is*, though more research is needed to determine how the procedure can be adjusted to target other morphemes.

Factor 2: case confusion

This factor applies to questions (b) and (d). One of the most conspicuous errors seen in English-speaking children with DLD is the use of the wrong pronoun case in subject position. Examples of utterances such as *Her eating* and *Him do that* are not difficult to find in the literature. One prominent explanation for this type of error hinges on the assumption that object (accusative) case is the "default" case in English. In many other languages, the default case is subject (nominative) case. For example, a response in English to the question, "Who wants ice cream?" could be "Me" but in Italian it would be the equivalent of "I." Possibly adding to the strength of object case serving as a default is the fact that pronouns such as *her* and *him* are used as direct objects, indirect objects, and objects of prepositions, whereas *she* and *he* are restricted to subjects. German, for example, has a wider variety of pronouns for these different cases, and errors such as those seen in English are quite rare.

Reference to default pronoun forms has been used to explain an important co-occurrence in the speech of children with DLD in English. When an (apparent) object case pronoun is used improperly in subject position (as in *Him do that*), the verb frequently lacks tense/agreement. In some linguistic frameworks, the presence of subject-verb agreement on the verb licenses nominative case (e.g., Radford, 1990). That is, in the derivation of a sentence, nominative case can be used only when the verb possesses agreement features. This is true for verbs with overt marking of agreement (e.g., *sees, hears, throws*, *is, are, was*) but also verbs with "zero-marked" agreement (e.g., *see* in *I see the cat; hear* in *They hear music*). In these linguistic frameworks, when a sentence is generated that lacks agreement entirely, nominative case is not licensed, and the default form is used in subject position. This interpretation receives support from findings that when an object pronoun is used in subject position, the verb usually lacks agreement (e.g., *Her run really fast; Him eat too much*)

(Wexler, Schütze, & Rice, 1998), although exceptions can be found, as in *Her likes apples* (e.g., Pine, Rowland, Lieven, & Theakston, 2005).

The blurring of the surface distinction between certain subject and object pronouns in English might represent another factor. As noted by Pelham (2011), English uses certain pronoun forms for both subject and object roles (*you*, *it*). Compare, for example, *You like dogs* and *Dogs like you*. The existence of such forms in the input might invite the incorrect interpretation that other pronoun forms can be used for both subject and object (see Wisman Weil & Leonard, 2017 for a recent example). In German, there is very little subject-object pronoun ambiguity, and object-for-subject pronoun errors are much less frequent than in English. On the other hand, case-ambiguous articles are quite frequent in German, and children often make errors in selecting the appropriate case for articles (Pelham, 2011).

An alternative account of the tendency for object pronoun errors to occur with verbs lacking agreement is a rather straightforward one: children sometimes hear such pronoun-verb sequences in the input. These sequences appear in larger structures in child-directed speech such *Watch* ***her run*** *really fast* and *Help* ***me do*** *the dishes*, among others. This is precisely the same point that was made earlier regarding one possible source of children's productions of bare-stem verbs in contexts that require tense/agreement morphemes. In this instance, if children do not fully grasp the constraints that verbs appearing early in the sentence (e.g., *watch, help*) can place on the form of the verb that follows (*run*, *do* in these examples), they might treat the latter as unconstrained and appropriate to extract and use in stand-alone utterances in their own speech – hence *Her run really fast* and *Me do the dishes*. It is difficult to find larger structures of this type in other languages and, perhaps as a result, pronoun production errors such *Me do the dishes* are equally scarce in these languages.

Although object-for-subject case substitutions are associated with English in particular, an inspection of the DLD literature on other languages reveals other types of case difficulties. For example, in Finnish, children with DLD often use the nominative case (the most frequently occurring case in the language) in place of the genitive, partitive, and accusative cases (Leonard, Kunnari, Savinainen-Makkonen, Tolonen, Mäkinen, Luotonen, & Leinonen, 2014). Case difficulties can also be seen in Japanese (Murao, Ito, Fukuda, & Fukuda, 2017), though, as will be seen later, other factors in this language can conspire with case weaknesses to compound the problem.

Greek offers an especially clear look at children's grasp of case in the way it distinguishes between subject and object relative clauses. As noted by Stavrakaki, Tasioudi, and Guasti (2015), the distinction between the Greek equivalent of "The monkey that is washing the bear" (a subject relative) and "The monkey that the bear is washing" (an object relative) is marked exclusively by case marking on the sentence-final noun, as seen in (the English translation): *The monkey*-ACCUSATIVE *that is washing the bear*-ACCUSATIVE (subject relative, i.e., the bear is being washed) versus *The monkey*-ACCUSATIVE *that is washing the bear*-NOMINATIVE (object relative, i.e., the monkey is being washed). Stavrakaki et al. found that Greek-speaking children with DLD were not as capable as younger typically developing children in using case cues to interpret the difference between these relative clause types. In addition, because Greek does not distinguish between nominative and

accusative case in words with neuter gender, this example may represent another case in which the inconsistent mapping between grammatical case and surface form that we saw in English may lead children with DLD learning other languages to believe that these two grammatical cases can be equivalent in certain contexts.

Clinical implications for English

Assisting English-speaking children in the use of subject/nominative case pronouns should probably go beyond providing examples and giving children practice in using the correct pronoun forms in subject position. Successful intervention might involve up to three ingredients. First, it would be helpful to provide contrasts in which pronoun pairs such as *she-her, he-him,* and *I-me* are presented in their respective canonical positions (e.g., *She chases him, He chases her*). However, to the extent possible, it needs to be made clear that the forms *you* and *it* are exceptions because they do not change (*You like it, It likes you*).

Second, it is possible that children will need to become more proficient in the use of verb morphemes that display overt agreement before they can become consistent in using the proper subject pronoun form. Recall the correlation between object pronouns in subject position and the lack of tense/agreement morphemes on the verb. If the linguistic accounts are correct, the connection with agreement renders the subject pronoun a productive element in the children's grammar. In the absence of agreement, any seemingly correct use of a subject pronoun might be part of a frequently heard expression and thus learned by rote and not generalizable.

Third, there is a possibility that errors like *Her ride the bike* and *Them running* might persist until children learn that such sequences cannot serve as independent utterances. Accordingly, children may need assistance in comprehending larger structures such as *Let's help her ride the bike* and *We see them running*. For example, contrasts such as *We see them running* versus *We know they are running* can help children learn that the earlier appearing verb in such structures dictates the form of the verb and pronoun that follows.

Factor 3: the power of prosody

According to the Prosodic Licensing Hypothesis (Demuth, in press), prosody operates across a range of levels of language, including the phrase level where it can affect the production of function words, and the syllable level where it can affect the production of grammatical inflections. The latter overlaps with segmental phonology, but can be distinguished because it concerns the syllable context. For example, a child might be able to pronounce the segment /d/ in past tense *-ed* when the stem involves an open syllable, that is, has no coda (e.g., *played*). However, the child might have much more difficulty adding this inflection to a stem when it creates a complex coda (e.g., *waved*).

This broad-ranging factor of prosody applies to questions (a), (c), (d), (e), and (g). For prosodic effects at the phrase level, a key consideration is the syllable-sequence bias reflected in a language. In English and other Germanic languages, many words have a strong syllable – weak syllable sequence (e.g., *baby, kitten, finger, pencil*); words with the opposite sequence (e.g., *giraffe, above*) are much less frequent. Apparently as a result of this

distribution in the language, young children speaking these languages are much more capable of producing weak syllables that follow, rather than precede strong syllables. This tendency applies as well when the weak syllables are grammatical morphemes. The contrast shown in (c) represents a good example. English-speaking children with DLD are prone to omit articles, saying, for example, *train* in a context requiring *the train,* whereas Swedish-speaking children with DLD will show no omission (Hansson, Nettelbladt, & Leonard, 2003). The likely reason: in Swedish, definite forms, though syllabic as in English, are attached to the *end* of the noun (the equivalent of *train-the*). This enables a strong syllable – weak syllable sequence as opposed to the less English-friendly weak syllable – strong syllable sequence seen in the English *the train*. Bolstering this interpretation is the finding that Swedish-speaking children with DLD, like their English-speaking counterparts, frequently omit the indefinite form, which, as in English, is a monosyllable that precedes rather than follows the noun (the equivalent of *a train*).

The picture is actually more complicated than this, because facilitative strong syllable – weak syllable sequences are not limited to syllabic suffixes that attach to the corresponding noun or verb as in the Swedish (*train-the*) example. In certain contexts, weak syllables such as English *the* can "prosodify" with a preceding syllable of an unrelated word (Demuth, in press). This phenomena was illustrated in a series of systematic studies by Gerken (1996). Gerken found that young children were more likely to include the article *the* in a sentence such as *Tom pushed the pig* than in a sentence such as *Tom pushes the pig*. Similarly, the article was more likely to be produced in *He kicks the pig* than in *He catches the pig*. From these examples, it is clear that the specific verb used or the specific tense required was not the determining factor. Rather, Gerken argued, in sequences such as *pushed the* and *kicks the*, the article can form a strong syllable – weak syllable sequence with the preceding strong syllable (*pushed, kicks*). Importantly, this is not possible if the syllable preceding the article is a weak syllable, as in *pushes the* and *catches the*. McGregor and Leonard (1994) used similar sentences with a group of English-speaking children with DLD and found the same pattern, along with a greater tendency to omit articles in general.

Of course, children eventually acquire the ability to use articles in all sentence contexts, even sentence-initial contexts where there is no possibility to align the article with a preceding strong syllable. The prosodic structure of a language seems to play a role in how quickly this occurs in development. French is prosodically different from both English and Swedish in that it has a dominant weak syllable – strong syllable pattern. This dominance gives children greater experience in prosodifying articles with the following (rather than preceding) syllable. These children show especially early use of articles when the following noun is monosyllabic (and thus a strong syllable) (Demuth & Tremblay, 2008). It is this greater familiarity with this syllable sequence pattern that is probably responsible for the finding that French-speaking children with DLD are less likely to omit monosyllabic articles than are children with DLD who are acquiring English (Le Normand, Leonard, & McGregor, 1993).

There is one additional cross-linguistic difference regarding articles that has a prosodic basis. Children gradually succeed in producing articles with nouns of increasing length (nouns consisting of one, two, and three syllables). This occurs earlier in languages whose

words have more syllables. For example, articles are used with two- and three-syllable nouns earlier in Spanish than in English – a finding that corresponds to the fact that there are more multisyllabic words in Spanish (Demuth, in press).

Articles are the most frequently studied weak-syllable morphemes posing problems for English-speaking children with DLD (e.g., Polite, Leonard, & Roberts, 2011). However, there are others. These include nonthematic *of*, as in *basket (of) flowers*, and infinitival *to* as in *Mickey's trying (to) tickle me* (Leonard, 1995; Owen & Leonard, 2006; Schuele & Tolbert, 2001).

Although prosody plays an important role in these instances, it is not acting alone. Bortolini and Leonard (1996) found that, for both English- and Italian-speaking children with DLD, children who often omitted weak-syllable morphemes in weak syllable – strong syllable contexts were also rather poor in using word-initial weak syllables in monomorphemic words such as *tomorrow* and *banana.* Of the two, the difficulty producing weak-syllable grammatical morphemes was the most serious. It appears that prosodic challenges can be substantial, but when the weak syllable is an independent grammatical morpheme, the problem is compounded.

There are also weak-syllable morphemes that prove less problematic for English-speaking children with DLD, and, in these cases, prosody is likely to be a facilitative rather than obstructive factor. For example, reports of weaknesses in the use of progressive *–ing* are difficult to find. As a word-final weak syllable, this inflection frequently joins a preceding strong syllable (e.g., *playing, eating, jumping*) and therefore allows children to produce the inflection in a strong syllable – weak syllable sequence. There are exceptions to this kind of advantage; inflections such as those in *peaches* and *washes* are syllabic but are allomorphs that are much less frequent in the language than their consonantal counterparts (as in *pears* and *cleans*). Children with DLD, like their typically developing peers, are slow to acquire these low-frequency allomorphs (Tomas, Demuth, & Petocz, 2017).

Prosody also applies at the level of stem + consonantal inflection combinations, both at the single-word level and at the sentence level. At the single-word level, for both noun plural *–s* and past tense *–ed*, children with DLD are more likely to produce the inflection when the stem ends in a vowel (e.g., *trees, played*) than when it ends in a consonant (e.g., *cats, passed*) (Marshall & van der Lely, 2007; Owen Van Horne & Green Fager, 2015; Polite, 2011). Given findings from typically developing children (Song, Sundra, & Demuth, 2009), the same is likely to be true for third person singular *–s* inflections. Of course, when a consonantal inflection combines with the final consonant of a word stem, a cluster is formed. However, all clusters are not alike. Children with DLD appear more likely to succeed in producing past tense *–ed* when the stem ends in a liquid (e.g., *pulled*) than when it ends in a stop or continuant (e.g., *closed*) (Oetting & Horohov, 1997; Owen Van Horne & Green Fager, 2015). A similar pattern is attested in Dutch, where children with DLD are more likely to produce third person singular (*-t*) inflections when the verb stems end with sonorants than when they end with fricatives or plosives (Blom, Vasić, & de Jong, 2014).

A finding reported by Marshall and van der Lely (2006) illustrates one way in which prosody and grammatical inflections may interact. These investigators found that children with DLD were more likely to produce the past tense *–ed* inflection if it formed part of a cluster that also occurs in monomorphemic words (e.g., *packed, crossed*, whose clusters appear in *act, cost*) than if it made up part of a cluster that appears only when an inflection is used (e.g., *rushed, hugged*). Leonard, Davis, and Deevy (2007) divided verbs into those whose final segment + *ed* sequence had high phonotactic probability (occurring in many words in English) or low phonotactic probability (occurring in fewer words in English). Children with DLD were more likely to produce past tense in the former than the latter.

Ott and Höhle (2013) found phonotactic frequency effects in the use of the third person singular inflection in German. In this case, the effects were found by comparing accuracy when the inflection was combined with a stem ending in a high-frequency short vowel plus consonant sequence versus a stem ending in a low-frequency long vowel plus consonant sequence. The German-speaking children with DLD were more accurate in using the third person singular inflection in the former than in the latter context. The typically developing children in the comparison groups showed no such difference.

Earlier, we noted that the low frequency of occurrence of an allomorph (as in *peaches* and *washes*) can sometimes offset the prosodic advantages that the allomorph may offer. However, it appears that even lower-frequency allomorphs might be more likely to be produced if they often appear in contexts with high phonotactic probability. In a study of Dutch, Rispens and De Bree (2014) examined children's use of the two past tense allomorphs in the language and found that both children with DLD and younger typically developing children were more accurate on the allomorph with the lower type frequency. This unexpected finding was partially explained by the observation that the phonotactic probability of the stem-final consonant + inflection sequence was actually higher for the allomorph with the lower type frequency.

At the sentence level, the inflections noun plural *–s*, third person singular *–s*, and past tense *–ed* are less likely to be omitted by both English-speaking children with DLD and their typically developing peers when they appear at the end of the sentence than when they appear sentence-medially (Dalal & Loeb, 2005; Mealings, Cox, & Demuth, 2013; Polite, 2011; Theodore, Demuth, & Shattuck-Hufnagel, 2011). In sentence-final position, there are fewer co-articulatory factors that could complicate production of the inflection. In addition, for inflections involving *–s*, there is sibilant lengthening in sentence-final position, which might provide additional time to include the final segment in the production (Demuth & Tomas, 2016; Hsieh, Leonard, & Swanson, 1999).

Sentence-position effects are seen in other languages as well. In fact, Turkish provides an interesting contrast with English in that noun inflections are more difficult than verb inflections for Turkish-speaking children with language impairments (Acarlar & Johnston, 2011). One likely reason is that the dominant word order in Turkish is Subject-Object-Verb, which usually places the verb and its associated word-final inflections in sentence-final position. Noun inflections, in contrast, typically appear sentence-internally.

Clinical implications for English

When helping a child with particular grammatical morphemes, an exclusive focus on the morpheme's grammatical function might be insufficient if part of the challenge is the child's ability to produce the morpheme in a difficult prosodic position. A prerequisite might be the child's success with an identical prosodic sequence but in a monomorphemic context (e.g., the weak-strong syllable sequence in a word such as *giraffe*). When attention switches to weak syllables with morpheme status, a suitable starting place might be short phrases in which the morpheme immediately follows a stressed syllable. Examples in addition to those given earlier could be: *cleans the* rather than *kisses the*; *kissed the* rather than *patted the*; *cup of* rather than *bucket of*; and *bus is* rather than *princess is*.

As is true for weak-syllable free-standing morphemes, the prosodic characteristics of grammatical inflections must also be considered in assessment and treatment. Consonantal inflections seem to be less burdensome if they are used with nouns and verbs whose stems end in vowels. Examples include *bees*, *sees*, and *played* for noun plural *–s*, third person singular *–s*, and past tense *–ed*, respectively. These would appear to be the contexts to use when first introducing the inflections. When used in sentences, ideally the inflected words can appear in sentence-final position. For noun plural *–s*, this is straightforward, as nouns frequently appear in this position. For verbs, this is not as simple, as intransitive verbs (that are the most natural to appear in sentence-final position) may have to be restricted to habitual activities, as in *Every day she runs* and *In the winter, he skis*. An alternative would be to use sentences with the structure seen in *I know what she sees* or *This is what he likes*. Although this structure places the inflected verb in sentence-final position, it has a non-canonical word order, which might present a different kind of problem for children with DLD – a problem we will turn to later.

Factor 4: hidden aspect

This factor applies to questions (a) and (e). One of the best-disguised weaknesses in English-speaking children with DLD is their use (or failure to use) aspect. There are two types of aspect, and weaknesses have been documented for each. One type is grammatical aspect, with a key distinction between perfective and imperfective aspect. Perfective aspect implies completion of the described event, whereas there is no such assumption in the case of imperfective aspect. The only true grammatical aspect in English is imperfective aspect, as marked by the progressive *–ing* inflection. Note that in an utterance such as *The woman was writing a novel*, there is no assumption that the woman actually completed the novel.

The second type of aspect is lexical aspect, though usually the entire predicate and not just the verb is involved. There are several categories of lexical aspect (e.g., Shirai & Andersen, 1995), but a key distinction is between telic and atelic predicates. Telic predicates imply an endpoint or completion of the event (e.g., *She ate a sandwich*), whereas atelic predicates do not (e.g., *She ran fast*). Some individual verbs are telic in their most typical contexts (e.g., *open*) and others are usually atelic (e.g, *swim*). However, the same verb can be either telic or atelic depending on details of the predicate. Compare, for example, *The woman wrote the novel* (telic) and *The woman wrote novels* (atelic). Lexical aspect does not possess distinct

morphological marking in English. For example, *She pushed the boy* (telic) and *She played in the yard* (atelic) both employ *–ed* and yet they differ in lexical aspect.

Before examining the relevant evidence for aspect in English-speaking children with DLD, we should review some of the findings for languages that make greater explicit use of aspect. Cantonese is one such language. This language makes distinctions in grammatical aspect but not tense. Aspect is marked by free-standing syllabic morphemes that follow the verb. In contrast to monosyllabic function words in many languages, the aspectual morphemes in Cantonese are more prosodically salient, as they carry full tones, like other words in the language. Fletcher, Leonard, Stokes, and Wong (2005) studied the use of perfective and imperfective (progressive) morphemes by Cantonese-speaking children with DLD and found that these children were less likely to use each of these markers than both age-matched and younger typically developing children.

Hungarian also makes use of grammatical aspect, but, in this language, it can co-occur with, and is marked separately from tense. For example, when a verb is marked for past tense, a separate perfective prefix on the verb indicates that the action has been completed. When the past tense verb has no perfective prefix, the interpretation is imperfective – that the action took place in the past but with no commitment about completion (much as in *The man was eating an apple* in English). Leonard, Lukács, and Kas (2012) found that Hungarian-speaking children with DLD were less accurate than both same-age and younger typically developing peers in using both perfective and imperfective aspect. Errors were not limited to cases where the children omitted the perfective prefix, giving an incorrect imperfective interpretation. Sometimes the opposite occurred, where the children added a perfective prefix even though there was no indication that the action had been completed.

In Greek, grammatical aspect (perfective, imperfective) also co-occurs with tense. For example, within verbs marked for past tense, perfective aspect can be marked through a regular rule by adding the aspect marker *–s* to stem-final position, or through an irregular pattern involving changes internal to the verb stem. In a sentence-completion task designed to elicit past tense responses expressing perfective aspect, Varlokosta and Nerantzini (2015) observed that fewer than half of the responses of Greek-speaking children with DLD marked perfective aspect. The children's errors included productions of imperfective forms in past tense, as well as present tense forms. The investigators attributed the children's inappropriate choice of the imperfective in part to their task, and in part to the fact that the imperfective in Greek is formed in a more straightforward, and hence, discernable manner. In other words, rather than having a problem with the notion of perfective aspect, the children with DLD may have struggled with how to clearly express it.

At first blush, we might assume that grammatical aspect in English-speaking children with DLD is not adversely affected. Earlier, we identified *–ing* (the only grammatical aspect marker in the language) as relatively intact. We attributed children's success with this inflection to its prosodic status, as a weak syllable that often attaches to a preceding strong syllable (and, as a bonus, frequently occurs in sentence-final position). However, this morpheme, although readily produced by children with DLD, is nearly always observed in a present tense context. More importantly, it is unclear in many of these instances whether the

progressive, that is, continuous nature of the action is the detail that a child intends to emphasize. For example, in English, we often describe simple actions in a picture with utterances such as *A boy is throwing a ball.* In many other languages, if the continuous nature of the action is not paramount, a simple present tense form is used, such as *A boy throws a ball*. Put differently, it is clear that English-speaking children with DLD often produce the inflection *–ing* without difficulty, but it is less clear that this inflection is marking imperfective (progressive) aspect. Insight into this issue came from a study by Leonard et al. (2007) that examined the use of *–ing* when describing events in the past. These investigators noted that children with DLD were less likely than younger peers to use *–ing* in past progressive contexts. Using a comprehension task, Stuart and van der Lely (2015) reported that adolescents with DLD were less accurate than nine-year-old typically developing children in responding to items employing the past progressive. Their performance was more similar to that of typically developing children seven years of age.

The influence of lexical aspect on *–ed* production was also examined in the Leonard et al. (2007) study. Children were asked to describe past events that required either telic or atelic predicates. The children with DLD were less proficient than younger peers in producing *–ed* and showed no difference according to the type of event described. The younger peers were more accurate overall and also more likely to produce this inflection when describing telic events than atelic events. Leonard et al. speculated that part of the difficulty with past tense *–ed* could be a failure on the part of children with DLD to use completion information in telic predicates as a starting point in learning past tense. Without a good starting point, these children's development of *–ed* use could be significantly protracted.

Owen Van Horne and Green Fager (2015) examined the past tense *–ed* use of a slightly older group of children with DLD. Because this was an archival study, target verbs were not initially selected with telicity in mind; instead, each verb was scored based on a continuum of highly telic to highly atelic. The results revealed greater use of *–ed* with verbs closer to the telic end of the continuum than with verbs closer to the atelic end. This suggested to the investigators that telicity does become a relevant factor at some point in the development of past tense by children with DLD.

Clinical implications for English

Both the *–ing* finding for grammatical aspect and the *–ed* finding for lexical aspect point to the possibility that an initial inspection of children's use of these morphemes may give an incomplete picture. Although *–ing* is readily produced by children with DLD, it is possible that they will not extend use of this inflection to contexts where a description of an ongoing event in the past is required. If imperfect (progressive) aspect is the goal, providing children with practice in past contexts might be needed. For example, the events in the past could vary between those in which the action was completed (e.g., *She painted the fence*) and those in which it was not (e.g., *She was painting the fence*).

The available evidence for *–ed* use by children with DLD presents a paradox. In the adult grammar, this inflection marks tense, though in many instances it also implies an end point to the action. Typically developing children may use completion as a means of focusing on past events. Gradually, their interpretation of *–ed* might become broader to include past

events in which an end point is less clear (e.g., *We played*). The available evidence from young typically developing children in the Leonard et al. (2007) study seems consistent with this possibility. These children showed greater overall use of *–ed* than older children with DLD, yet they still showed remnants of a completion bias. When children with DLD become somewhat older, they, too, seem to show some sensitivity to telicity (Owen Van Horne & Green Fager (2015).

Translating this information to the clinic would seem to involve two steps. First, therapists might initially provide many instances of using *–ed* to describe actions whose end points are rather clear. In so doing, it should be remembered that the same verb can be telic (e.g., *We watched the cartoon*) or atelic (e.g., *We watched cartoons*) depending on the larger predicate. This may be the most efficient way to help children identify prototypical past events that are appropriate to describe with *–ed*. Then, once children become more consistent in using *–ed* to describe actions with clear endpoints, it will be important to continue assisting them until it also becomes clear that they can extend the *–ed* inflection to past events with fuzzy endpoints (e.g., *played, walked*).

Factor 5: the safety of canonical word order

This factor applies to questions (d) and (f). English is well known as a Subject-Verb-Object or SVO language with relatively few exceptions to this word order pattern. Provided this basic order is not violated, English offers considerable flexibility in the location of other constituents. For example, the sentences *We play cards on Friday nights* and *On Friday nights we play cards* are both acceptable. The literature on children with DLD acquiring English shows very few instances of word order errors in the production of simple declarative sentences. We suspect that the dominance of one type of word order (SVO) in English is responsible for this observation. In fact, inspection of the sentence structures that do prove problematic for these children reveals that most require *deviations* from canonical English word order. We shall consider these exceptions below, after a review of word order problems in children with DLD acquiring other types of languages – languages in which alternative word orders are somewhat more frequent than in English.

In Dutch, German, Swedish, and related Germanic languages, the canonical word order is SVO. For example, the equivalent in these languages of *We play cards on Friday nights* would essentially resemble the word order seen in English. However, these languages also possess a “verb-second” rule. Specifically, if a sentence begins with a constituent other than the subject for pragmatic reasons, the verb carrying tense/agreement must appear second, with the subject shifted to the post-verb position. Thus, in these languages, the equivalent of *On Friday nights we play cards* would have the word order *On Friday nights play we cards*. The rule is quite straightforward. However, because this order varies from the dominant SVO order, children with DLD speaking these languages often produce ungrammatical sentences when they attempt to produce sentences of this type. For example, in their study of Swedish-speaking children with DLD, Hansson, Nettelbladt, and Leonard (2000) found that these children maintained SVO order even when an element preceded the subject; in that case, the correct production would have the verb in second position, followed by the subject.

Another example of the potential role played by canonical word order is seen in the contrast between the use of direct object pronouns in English and Italian – the contrast shown in question (d). In English, these pronouns occupy the same sentence position as their noun counterparts, as in *We see the woman* and *We see her*. Within the literature on DLD in English, it is difficult indeed to find evidence of children failing to adhere to the basic SVO order in simple declarative sentences of this type.

SVO is the most common word order in Italian as well, though there is more flexibility due to its rich inflectional morphology. Usually direct object nouns follow the verb, as in English. In contrast, in many conversational contexts, the Italian equivalent of a direct object pronoun is a clitic pronoun that precedes rather follows the verb. Therefore, the Italian counterparts in our example would correspond to *We see the woman* and *We her see*. The omission of direct objects in contexts requiring direct object clitics is a mainstay in the DLD literature for Italian (Cipriani et al., 1991; Bortolini et al., 2006; Dispaldro, Leonard, & Deevy, 2013). This fact is somewhat surprising because direct objects are obligatory arguments in these sentences, with clear semantic substance. There could be other factors that make clitic pronouns challenging. In particular, these pronouns are weak syllables that often appear in weak syllable – strong syllable sequences. However, the deviation from the canonical SVO word order is likely to be one of the obstacles.

Object relative clauses cause special difficulties for children with DLD in SVO languages such as Hebrew (Friedmann & Novogrodsky, 2004; Novogrodsky & Friedmann, 2006) and Danish (Jensen De López, Sundahl Olsen, & Chondrogianni, 2014). In these languages, subject relative clauses have a structure much like that in English, as in *(This is) the girl that chases the boy*, that retain the relative position of subject and object, whereas object relative clauses, as in English, place the patient/recipient of the action as the subject of the clause, as in *(This is) the boy that the girl chases*. Given the nature of the children's difficulty, word order appears to contribute to the problem. For example, in the Jensen De López et al. study on Danish, relative clause tasks were administered to a group of children with DLD as well as same-age and younger typically developing compatriots. In comprehension, the children with DLD were less accurate than the comparison groups on object relative clauses in particular. In production, all children had some difficulty with object relative clauses but the typically developing children made use of a strategy of producing alternative structures that maintained the appropriate word order with the patient/recipient in subject position, as in the Danish equivalent of *The boy that is chased by the girl*. The children with DLD made less use of such strategies and instead were more likely to produce an SVO sentence that reflected the wrong noun in subject position.

However, when a frequently occurring object relative clause construction is involved, any challenge due to non-canonical word order can be neutralized. Frizelle and Fletcher (2014) asked children with DLD and both same-age and younger typically developing peers to repeat sentences reflecting a variety of subject and object relative clause types. Overall, the children with DLD scored at lower levels than both groups of peers and were more accurate on subject relative clauses than on object relative clauses. Yet for one type of object relative clause, all three groups were as accurate as they were on the subject relative clause types. This was a construction in which an inanimate noun is relativized, with a person pronoun as

the subject of the relative clause, as in *There is the picture that you drew on the wall last week*. This commonly occurring construction appears to be "discourse sanctioned" (Frizelle & Fletcher, 2014, p. 258), which reduces the processing demands that are often involved when object relatives are stripped of animacy and probable event cues, as frequently occurs in experimental tasks.

Earlier, we noted that in some Germanic languages, when, for pragmatic reasons, children with DLD use a constituent other than the subject in sentence-initial position, they nevertheless incorrectly maintain the SVO order in the remainder of the sentence. In these same languages, there are structures that require deviations from SVO order independent of pragmatic choices. In such instances, SVO order is often inappropriately extended to these structures. However, in other instances, children do the opposite – they use the alternative order even when SVO is required. An example of the latter is documented for German. Some German-speaking children with DLD produce a verb correctly inflected for tense/agreement in sentence-final position rather than in second position (e.g., Clahsen, 1991; Lindner, 2002). It may be no coincidence that, in subordinate clauses, sentence-final position is the correct position for verbs marked for tense/agreement, as in the German equivalent of *I know that Kirsten likes ice cream*, which is *I know that Kirsten ice cream likes*.

Another kind of word order error in Germanic languages seems to interact with children's lack of command of tense/agreement morphology. We have already noted that, among the tense/agreement verb errors seen in Dutch-speaking children with DLD, there are inappropriate productions of infinitives (Blom et al., 2013; de Jong, 1999). These are noteworthy because when this error occurs, the infinitive tends to appear in sentence-final position – the location of infinitives in the adult grammar – as in the Dutch equivalent of *Emerson will broccoli eat*. Thus, when this error is made, instead of *Emerson eats broccoli*, the production is *Emerson broccoli eat*. This is interesting because, despite the error, the child seems to "know" that if an infinitive is produced, it belongs at the end of the sentence. There are different explanations for this error, but if one assumes, as we did earlier, that children with DLD fail to understand the structural connection between a fronted auxiliary and the remainder of the sentence, then one can see how *Emerson broccoli eat* can emerge from input such as *Will Emerson broccoli eat?* In other words, even inappropriate sentence-final infinitives might reflect adherence to one of the main word order patterns of the language. German has the same characteristic of sentence-final infinitives, and errors such as *Emerson broccoli eat* are well documented for this language as well (e.g., Clahsen, 1991).

Finally, it is possible that a reliance on canonical word order can contribute to difficulties in other areas of grammar. Murao et al. (2017) found that, in Japanese, children with DLD could successfully provide the appropriate nominative, accusative, and dative case markers when the event was described in the canonical (nominative first) word order of the language. However, when the sentence required a non-canonical word order (e.g., direct object appearing before the subject), the children with DLD, unlike their typically developing peers, often suppled case markers that reflected the canonical order (e.g., nominative followed by accusative) even though this resulted in constituents receiving incorrect case (e.g., the nominative case marker attached to the direct object).

Clinical implications for English

Given the word order problems seen in children with DLD acquiring a variety of different languages, it seem important for therapists to attend closely to English-speaking children's use of structures that require a deviation from canonical SVO order. The list of well documented syntactic problems seen in the DLD literature on English includes several structures that involve variations from the usual SVO pattern. The most obvious example is the passive voice construction, as in *The dog was chased by the cat* (e.g., Bishop, 1979; Leonard, Wong, Deevy, Stokes, & Fletcher, 2006). However, clear deficits are also seen when these children attempt to use "wh-object questions" (van der Lely & Battell, 2003). In these questions, such as *Who was Nona kissing*?, the wh-word in initial position is actually referring to the direct object (with the literal meaning, "Nona is kissing who?"), thereby deviating from SVO order. Object relative clauses represent another example, and these, too, pose problems for English-speaking children with DLD (Riches, 2017; Riches, Loucas, Baird, Charman, & SImonoff, 2010). Note, however, that object relatives supported by discourse (Frizelle & Fletcher, 2014) can neutralize adverse effects of non-canonical word order. Weaknesses are also seen with the proper placement of auxiliaries when the order must differ from declarative order. Leonard (1995) found that children with DLD were more likely than younger typically developing children to produce a wh-question with the auxiliary in declarative position rather than in fronted position (e.g., *What the boy is doing?*).

Given the dominance of SVO word order, structures serving as therapy targets that deviate from this word order should be taught in a manner that makes the word order difference very clear to the child. Judging from the difficulty that children with DLD have in languages that involve more frequent deviations from canonical word order, it seems likely that part of the problem experienced by English-speaking children with such things as passives, wh-object questions, object relative clauses, and auxiliary fronting is related to word order. Note also that when auxiliary forms appear in fronted position (differing from their position in declarative order), there is also the potential problem described earlier – children might detect the subject-nonfinite verb sequence within the question (e.g., *Is the dog licking the man***?**) and treat it as an extractable proposition that can be produced as is. When separated from the nonfinite verb, the auxiliary might be regarded simply as a pragmatic marker for a question, with no clear structural relationship to the rest of the sentence.

The differences a language can make

We believe that the five factors that we have identified are overarching in nature. They will be ever-present but will vary in their impact as a function of the characteristics of the language being acquired. As a result, we cannot always take a problem with a grammatical detail at face value; there may be factors that render the detail more, or less difficult for a child with DLD.

The clinical implications suggested here are not dramatic, but they go beyond working on a grammatical target as if it were defined solely by the grammatical features specific to that language. Along with a focus on a target's unique details, we need to ask such questions as: Does the grammatical target present a prosodic as well as a grammatical challenge? Could

the target be difficult because it involves a deviation from usual word order? Does the child understand the difference between the grammatical contexts in which the target is, and is not allowed? Does the child's range of use of the grammatical target truly reflect the purported category (e.g., progressive aspect, past tense) that is intended to be taught? It can be seen, then, that even with a focus strictly on grammatical goals for a particular language, treatment can proceed with an eye toward underlying factors that can operate in any language.

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What this paper adds

What is already known on the subject

Therapists working with children with developmental language disorder (DLD) are well-versed in the grammatical details of the target language that often require attention. However, they may be less likely to view these grammatical details from a broader perspective, namely, whether and how these grammatical details involve overarching factors that can influence children's grammatical success.

What this paper adds to existing knowledge

Using English as the example language, five overarching factors are presented, along with how they operate in other languages and how they can interact in English in a manner that renders grammatical details more or less difficult for children with DLD.

What are the potential or actual clinical implications of this work?

For each of the five factors, we discuss how treatment might be shaped to improve clinical outcomes.

Table 1.

Summary of overarching factors and their clinical implications for English

Factor	Implication for English
Status of bare stems	Emphasize overt tense/agreement morphology in the input when possible (e.g., *She climbs* rather than *You climb*)
	Teach how verbs later in a sentence are affected by material that appears earlier in the sentence (e.g., *She likes yogurt* but *Does she like yogurt?*)
Grammatical case	Directly contrast nominative and accusative pronouns (e.g., *She sees him* vs *He sees her*)
	Understand that the development of nominative case may be correlated with growth in using verb tense/agreement morphology (e.g., *Her running* is more likely to be produced than *Her is running;* and *She's running* is more likely to be produced than *Her running* although all of these productions are possible).
	Teach that accusative case pronouns preceding verbs can only occur when particular verbs (e.g., *help, watch, see*) appear earlier in the sentence (e.g., *Help me do the dishes; Let's watch her ride the horse; I saw them fix the car*).
Prosody	Teach morphemes in phonological contexts that a child can produce in monomorphemic words (e.g., *a ball*, *the doggie* if the child can already reliably produce *giraffe* and *banana*).
	Weak monosyllabic morphemes might be more accurately produced if they immediately follow a stressed syllable (e.g., *cleans the…* rather than *kisses the…; cup of…* rather than *bucket of…; bus is…* vs. *princess is…*
	Expect more accurate use of inflections when the word stem ends in an open syllable (e.g., *throws* rather than *kicks*; *played* rather than *pushed*) and when the inflected word appears in sentence-final position (e.g., *Every day she runs* rather than *She runs really far*).
Tense/aspect interactions	Consider initially teaching past tense in a telic context (e.g., *She opened the door*) and subsequently monitoring to ensure that the child can expend past tense to atelic contexts (e.g., *She listened to music*).
	If the inflection *–ing* is intended to reflect progressive aspect, ensure that the child can extend *–ing* to contexts that cannot be interpreted as marking present tense (e.g., *The baby was crying* as well as *The baby is crying*).
Canonical word order	Difficulties with a particular structure that deviates from canonical word order (e.g., wh-object questions) might signal a problem with other structures that deviate from the usual word order (e.g., passives). The difference between the two word orders might be made clear to the child using contrasts (e.g., *Who was hugging the boy?* vs *Who was the boy hugging?*).
	Structures deviating from canonical word order might be more easily understood and produced initially when there are discourse, animacy, and probable event cues supporting the correct interpretation (e.g., *What is the girl painting?* before *Who is the girl kissing?*; *Here is the hat that I found in the playground* before *Here is the boy that the girl chased in the playground*).