A Comprehensive Definition of Morphological Awareness
Implications for Assessment

Kenn Apel

Purpose: Although there is an increasing body of evidence for the important role morphological awareness plays in written language development, there is little consensus on a fully specified definition of this linguistic awareness ability. Without agreement on a definition, several problems arise, at least one of which impacts researchers’ and practitioners’ ability to fully and consistently assess students’ morphological awareness abilities. Method: In the first portion of this article, I discuss insufficiencies with current definitions of morphological awareness and propose a more comprehensive definition. Following this, I relate the implications of this new definition for assessment: the inability of current norm-referenced tests and experimenter-designed tasks to meet the definition and considerations from the research to keep in mind about stimuli on morphological awareness tasks. Conclusion: In the final segment of the article, I provide implications and suggestions for practitioners who wish to assess morphological awareness in a comprehensive manner, using the new definition as a guide to measure students’ morphological awareness abilities.

Key words: assessment, morphological awareness, reading, spelling, written language

For decades, researchers and practitioners have focused predominantly on phonemic awareness when assessing the potential impact of linguistic awareness on students’ reading and spelling abilities (e.g., Ehri et al., 2001; Griffith & Olson, 1992). A uniform and mutually agreed upon definition of phonemic awareness is that it is a conscious awareness of the sounds of language and the ability to talk about and manipulate those sounds. This definition is accepted by researchers and practitioners alike, and several norm-referenced phonemic awareness measures that align with the definition are available for use in research studies and in clinical and school settings (e.g., Wagner & Torgesen, 1987; Wagner, Torgesen, & Rashotte, 1999; Yopp, 1992).

More recently, morphological awareness has begun to receive attention as another linguistic awareness skill that impacts written language abilities. Multiple investigations have demonstrated the powerful influence it has on word-level reading, reading comprehension, and spelling development (e.g., Apel, Wilson-Fowler, Brimo, & Perrin, 2012; McCutchen, Green, & Abbott, 2008; Nagy, Berninger, Abbott, Vaughan, & Vermeulen, 2003; Roman, Kirby, Parrila, Wade-Woolley, & Deacon, 2009; Walker & Hauerwas, 2006; Wolter, Wood, & D’zatko, 2009). Furthermore, recent reviews of morphological awareness interventions have demonstrated that instruction in morphological awareness can lead to improvement in students’ written language abilities (Bowers, Kirby, & Deacon, 2010; Goodwin & Ahn, 2013). Collectively, these findings suggest that morphological awareness is an important linguistic awareness ability that
deserves as much attention for the role it plays in reading and spelling development as does phonemic awareness (e.g., Berninger, Abbott, Nagy, & Carlisle, 2010).

Given the importance of morphological awareness for written language development, it would seem that a consensus definition of morphological awareness must exist; however, this is not the case. Without agreement on a definition, several problems arise, some of which impact the assessment of morphological awareness, as well as the scientific reporting of researchers' findings of this skill. In the first portion of this article, I discuss insufficiencies with current definitions of morphological awareness and propose a more comprehensive definition. Then, in the second portion of this article, I relate the implications of this new definition for assessment. Specifically, in the second section, I discuss the inability of current norm-referenced tests and experimenter-developed tasks to assess the construct represented by the proposed definition. I also offer considerations on the basis of the research to keep in mind about stimuli on morphological awareness tasks. I conclude the article with implications and suggestions for practitioners who wish to assess morphological awareness in a comprehensive manner.

DEFINING MORPHOLOGICAL AWARENESS

Morphemes are the smallest units of meaning in our language. Thus, the term "morphological awareness" implies an awareness of these small units of meaning. Given that morphemes occur in spoken and written language, morphological awareness necessarily involves an awareness of both spoken and written morphemes, including an understanding of what written affixes (i.e., prefixes and suffixes) look like orthographically and the rules that govern how affixes attach to base words and roots. Unfortunately, current definitions used by researchers and authors come up short in defining morphological awareness at this level of detail (see Table 1 for examples). Although many definitions involve some variation of the notion of the conscious awareness of, or an ability to manipulate, morphemes, they differ in whether they specify modality (i.e., some specify spoken only), vary in emphasis on individuals' ability to reflect on morphemes, and, as a whole, do not address all aspects of morphological awareness.

What is missing from all current definitions is the full level of specificity that might guide researchers and practitioners in evaluating students' morphological awareness abilities comprehensively. Indeed, without an inclusive definition of a skill such as morphological awareness, one cannot comprehensively assess that skill. Furthermore, because of the lack of specificity in these definitions, incomplete and, in some cases, incorrect data have been used to draw conclusions about students' morphological awareness abilities.

For example, most researchers who have assessed students' morphological awareness abilities have administered tasks in the spoken mode. When researchers have used tasks that involved written language, they frequently have read the items to the students and asked the students to respond orally. This is apparently based on the rationale that any written responses would be affected by the students' (potential lack of) orthographic knowledge, confounding the assessment of students' morphological awareness. This is an interesting perspective, given that, as mentioned previously, part of morphological awareness necessarily involves an understanding of written morphemes, what they look like orthographically, how they are spelled, and how they attach to base words and roots. When this aspect of morphological awareness is not assessed, then a complete picture of students' morphological awareness abilities is lacking.

There also has been some confusion between the concepts of morphological awareness and morphological production, sometimes referred to as morphological knowledge. Morphological awareness is a conscious reflection on morphemes. Morphological production involves the unconscious
Table 1. Sample definitions of morphological awareness

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Definition of Morphological Awareness</th>
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<tbody>
<tr>
<td>Berninger et al. (2010)</td>
<td>“...judgments about semantic or semantic-syntactic relationships that depend upon the form of the word or its parts” (p. 142).</td>
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<td>Carlisle (2000)</td>
<td>“...the ability to parse words and analyze constituent morphemes for the purpose of constructing meaning” (p. 170).</td>
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<tr>
<td>Deacon, Kirby, and Casselman-Bell (2009)</td>
<td>“...the awareness of and ability to manipulate the minimal units of meaning...” (p. 301).</td>
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<td>Deacon, Benere, and Pasquarella (2013)</td>
<td>“...the awareness of and the ability to manipulate morphemes in the oral language...” (p. 1113).</td>
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<td>Guo, Roehrig, and Williams (2011)</td>
<td>“...explicit knowledge of the way in which words are built up by combining smaller meaningful units, such as prefixes, roots, and suffixes...” (p. 160).</td>
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<td>Kirby et al. (2012)</td>
<td>“...conscious awareness of the morphemic structure of words and (their) ability to reflect on and manipulate that structure...” (p. 389).</td>
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<td>Tong, Deacon, Kirby, Cain, and Parrila (2011)</td>
<td>“...conscious awareness of the morphemic structure of words and (individuals’) ability to reflect on and manipulate that structure...” (p. 523).</td>
</tr>
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</table>

use of morphemes, typically during spontaneous spoken language. When individuals converse, they produce morphemes but typically do not think actively about the morphemes they are producing. Mature writers also may write without thinking actively about the specific morphemes they are writing, particularly when engaged in less formal writing situations, such as notes, e-mails, and the like.

In the past, however, researchers have not always kept these two notions distinct. For example, two investigations by Tyler, Lewis, Haskell, and Tolbert (2002, 2003) were incorporated into separate recent syntheses of morphological awareness interventions—a systematic review (Bowers et al., 2010) and a meta-analysis (Goodwin & Ahn, 2013); however, the two studies conducted by Tyler et al. (2002, 2003) were focused on interventions to increase the production of spoken morphemes in preschoolers with speech and language impairments and not on morphological awareness (i.e., with the goal to increase the children’s ability to consciously consider or think about morphemes). An inconsistent definition, then, led to introduction of data into both systematic syntheses that was inconsistent with the purposes of the reviews. Including them thus had the potential to alter the outcomes of the reviews and related conclusions. An agreed upon comprehensive definition of morphological awareness may reduce such problems in the future.

Assessment of morphological awareness also hinges on a complete and unified definition. The definitions used by others have been incomplete. I recommend that a more comprehensive definition of morphological awareness is needed that acknowledges morphology in both spoken and written modalities. Such an all-encompassing definition would allow researchers and practitioners the
specificity to address all aspects of morpho-
logical awareness when they assess students’
morphological awareness. I propose that such
a definition should take the following form:

Morphological awareness includes: (a) awareness
of spoken and written forms of morphemes; (b)
the meaning of affixes and the alterations in mean-
ing and grammatical class they bring to base
words/roots (e.g., \textit{ed} causes a verb to refer to the
past as in \textit{walked}; \textit{er} can change a verb to a noun,
as in \textit{teach} to \textit{teacher}); (c) the manner in which
written affixes connect to base words/roots, in-
cluding changes to those base words/roots (e.g.,
some suffixes require a consonant to be doubled
or dropped when attached to a base word/root
in written form, such as in \textit{bop} to \textit{bopping} and
\textit{bope} to \textit{boped}; and (d) the relation between base
words/roots and their inflected or derived forms
(e.g., knowing that a variety of words are related
because they share the same base word/root, such
as \textit{act}, \textit{action}, \textit{react}, and \textit{activity}).

Applying this definition to current mea-
sures can reveal whether they provide ade-
quate coverage of the key components of this
definition, either solely or in combination, to
constitute a comprehensive assessment of stu-
dents’ morphological awareness. In the fol-
lowing section, I provide a review of several
current norm-referenced assessments that po-
tentially assess morphological awareness, in
which I examine their consistency with the
proposed definition. I follow this with a sim-
ilar review of experimenter-developed tasks
that have been used in the research literature
to examine students’ morphological aware-
ness skills.

**CURRENT TASKS USED TO ASSESS
MORPHOLOGICAL AWARENESS**

Morphological awareness has received less
attention than phonemic awareness, both in
the research literature and in everyday as-
essment and intervention practice. Thus, it
is not surprising that there are fewer exam-
pies of norm-referenced measures that assess
students’ morphological awareness than there
are experimenter-developed tasks.

**Norm-referenced morphological
awareness measures**

No norm-referenced measures dedicated
solely to assessing morphological awareness
have been published. One norm-referenced
test, the \textit{Process Assessment of the Learner—
Second Edition (PALS-2; Berninger, 2007)},
contains a few subtests that are identified as
morphological awareness tasks (e.g., students
view printed words and identify those contain-
ing affixes, students determine whether
two presented words share the same root).
The \textit{PALS-2} thus far has not been used widely
in the field of speech–language pathology and
may not be familiar to language specialists.
Additionally, there are a few norm-referenced
measures, or subtests of norm-referenced
measures, that assess some aspect of mor-
phological awareness (see Table 2 for exam-
pies), at least indirectly. These tasks, however,
are not identified as measures of morpholog-
ical awareness and never have been used in
any research study as a measure of morpho-
logical awareness. Furthermore, they tend to
assess awareness of inflectional morphology
more than derivational morphology, which is
a limitation because inflectional morpholog-
ical awareness is less predictive of reading
in students beyond the early primary grades
(e.g., Kuo & Anderson, 2006). In addition, the
range of affixes is highly constrained in num-
ber and types.

The norm-referenced measures reviewed in
Table 2, therefore, assess only a limited por-
tion of the construct encompassed by the
proposed definition. Among other limitations,
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Table 2. Examples of norm-referenced measures that assess aspects of morphological awareness

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mode</th>
<th>Description</th>
<th>Aspect of Proposed Morphological Awareness Definition Assessed</th>
</tr>
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<tbody>
<tr>
<td>Test for Examining Expressive Morphology (Shipley, Stone, &amp; Sue, 1983)</td>
<td>Spoken</td>
<td>Assesses awareness of five inflections (present progressive—<em>ing</em>, plurals, possessives, third person singular, past tense) and two derivational forms (the comparative —<em>er</em> and the superlative—<em>est</em>). Students complete a sentence with an affixed word (e.g., here is one <em>boat</em>, here are two ____ {boats}).</td>
<td>Awareness of the relation of base words to their inflected and derived forms</td>
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<tr>
<td>Test of Language Development—Primary: 4 (Hammill &amp; Newcomer, 2008a) Subtest: Morphological Completion</td>
<td>Spoken</td>
<td>Assesses awareness of 13 inflections (seven plurals, four possessives, and two past tense) and five derivational forms (three agentive and two comparative). Students complete a sentence with an affixed word (e.g., “Carla has a dress, Denise has a <em>dress</em>. They have two ____ {dresses}).</td>
<td>Awareness of the relation of base words to their inflected and derived forms</td>
</tr>
<tr>
<td>Test of Language Development—Intermediate: 4 (Hammill &amp; Newcomer, 2008b) Subtest: Morphological Comprehension</td>
<td>Spoken</td>
<td>Some of the target items tap into inflectional and derivational knowledge, whereas others rely more on syntactic awareness. Students read a sentence and must judge whether the sentence sounds grammatically correct (e.g., “Those boys is happy”).</td>
<td>Awareness of the meaning of affixes and the alterations in meaning they bring to base words</td>
</tr>
<tr>
<td>Illinois Test of Psycholinguistic Abilities: 3 (Hammill, Mather, &amp; Roberts, 2001)</td>
<td>Spoken</td>
<td>Assesses awareness of 13 inflections (six plurals and seven past tense) and 13 derivational forms (four superlatives, three comparative, and six others).</td>
<td>Awareness of the relation of base words to their inflected and derived forms</td>
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</table>

(Continues)
Table 2. Examples of norm-referenced measures that assess aspects of morphological awareness (Continued)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mode</th>
<th>Description</th>
<th>Aspect of Proposed Morphological Awareness Definition Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtest: Morphological Closure</td>
<td>Students asked to fill in a final missing part (e.g., &quot;big, bigger, _____[biggest]&quot;).</td>
<td>Awareness of the relation of base words to their inflected and derived forms</td>
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<tr>
<td>Clinical Evaluation of Language Fundamentals: 4 (Semel, Wig, &amp; Secord, 2006)</td>
<td>Spoken</td>
<td>Assesses awareness of 12 inflections (two plurals, two third person singular, three possessives, four present progressive—ing, and one past tense) and four derivational forms (one superlative, two comparative, and one other).</td>
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<tr>
<td>Subtest: Word Structure</td>
<td>Students complete a sentence with an affixed word (e.g., &quot;This man sings. He is called a ______[singer]&quot;).</td>
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</table>

cover all of the components of the proposed definition. Partially in response to these limitations, researchers have constructed tasks that fill some of the gaps in assessing the key components of the proposed, comprehensive definition.

**Experimenter-designed morphological awareness tasks**

Different researchers have used different experimenter-designed morphological awareness tasks, and often just one or two tasks, to assess students’ morphological awareness skills. Because the focus in the literature has been on the more general definition of morphological awareness, it is not surprising that experimenter-designed tasks have not covered the range of abilities identified in the proposed comprehensive definition. I would argue, then, that researchers should discuss their findings in a manner that acknowledges that students’ morphological awareness skills have been measured in an incomplete manner.

The tasks that researchers have administered have taken various forms, including production tasks, judgment tasks, blending/segmenting tasks, and analogy tasks, each with several subvarieties. In addition, in one investigation, my colleagues and I included a measure of children’s awareness of written affixes (Apel, Diehm, & Apel, 2013). I provide a brief overview of each of these categories of tasks below.

**Productive morphological awareness tasks**

Some researchers have used **productive morphological awareness tasks** to assess students’ morphological awareness skills; these tasks have varied in their requirements. The *cloze* procedure has been a typical means for assessing students’ productive morphological awareness abilities (e.g., Apel et al., 2013; Apel & Lawrence, 2011; Casalis & Cole, 2009; McCutchen et al., 2008; Wolter et al., 2009). For example, a common task involves providing a word, such as a base
word (e.g., *help*), and then requiring the student to use an inflected or derived form of the word to complete a sentence (e.g., *The Girl Scout was a great ____ [helper]*). The target response has varied by researchers. Sometimes, the student changes a multimorphemic word into a base word (e.g., *farmer*: *Bill works on a ____ [farm]*). Other times, the student changes a base word into an inflected or derived word (as in the aforementioned example with *helper*). When the response involves a change into a derived word, the response may be a transparent form (e.g., *tall–taller*) or one that involves either a phonological (*magic–magician*) and/or an orthographic shift (e.g., *silly–silliness*). Other cloze tasks have been similar to norm-referenced tasks discussed earlier (e.g., *Here is one ____ [dress]*; e.g., Berninger et al., 2010).

Fluency tasks offer a different approach. These require students to name as many inflected or derived forms of a base word as possible (e.g., *act* could yield *action, acting, react*, etc.). Some researcher-developed production tasks have included definition tasks (e.g., Apel et al., 2013; Casalis, Cole, & Sopo, 2004; Jeon, 2011; Tsesmeli & Seymour, 2006). To elicit productions of definitions, for example, Casalis et al. required their 8- to 12-year-old students to finish sentences with a derived form that completed a definition (e.g., “a person who paints is a ____ [painter]”). Finally, some experimenter-designed production tasks require students to read (e.g., Carlisle, 2000) or spell multimorphemic words (e.g., Apel et al., 2012; Kirk & Gillon, 2009).

**Morphological awareness judgment tasks**

Some investigators have constructed judgment tasks to measure morphological awareness. Judgment tasks often require students to make decisions about the semantic relationship between two words (e.g., “*Does ban come from banana*?”; Berninger et al., 2010; Kuo & Anderson, 2006; Mahony, Singson, & Mann, 2000; Nagy, Berninger, & Abbott, 2006). Students simply respond *yes* or *no*. Others have involved a judgment about the semantic and/or syntactic accuracy of a word, often within a multiple choice paradigm (e.g., “When Ali Baba’s wife saw the gold coins, she was ____ [speechified, specialized, speechmaker, speechless]”; Berninger et al., 2010; Nagy et al., 2003; Nagy et al., 2006; Nippold & Sun, 2008). These types of judgment tasks have varied additionally in their presentation mode (some were spoken-only, some were spoken but also provided in print) as well as stimulus type (i.e., inflectional and/or derivational items). Derivational items varied in whether they were transparent or involved a phonological and/or orthographic shift. Finally, as can be seen in the aforementioned example of *speechified*, on some tasks, pseudowords were used with real affixes.

**Morphological awareness tasks involving blending or segmenting**

A few researchers have used blending or segmenting tasks to assess students’ morphological awareness skills (e.g., Casalis et al., 2004; Lyster, 2002). For example, Casalis et al. required their 8- to 12-year-old students to blend and segment base words and their affixes to either create or decompose, respectively, a multimorphemic word. An example was blending the French base word *nettoie* and the suffix *age* to produce *nettoyage*. In another segmenting task, they required their students to pronounce the base portions of multimorphemic words produced by the experimenters (e.g., producing the base *jour* from the French word *journée*).

**Morphological awareness tasks based on word analogy**

Word analogy tasks also have been used to assess students’ morphological awareness skills (e.g., Bryant, Nunes, & Bindman, 1997; Deacon & Kirby, 2004; Kirby et al., 2012; Roman, Kirby, Parrila, Wade-Woolley, & Deacon, 2009; Tsesmeli & Seymour, 2006). These tasks, which commonly are presented via spoken language, follow the typical format for an analogy: A is to B as C is to D. For morphological awareness tasks, students...
are asked to complete the fourth component of the analogy after hearing either three words (e.g., mess: messy, fun: ____ ) or three sentences (e.g., Peter plays at school; Peter played at school; Peter works at home: __________). The studies using word analogies have varied in whether the response required an inflected or derived word (e.g., Kirby et al., 2012; Roman et al., 2009); all investigations using sentence analogies have required only inflected words (e.g., Bryant et al., 1997).

A task involving identification of written affixes

Finally, my colleagues and I conducted an investigation of children’s identification of written affixes (Apel et al., 2013). In our study, we provided first- and second-grade children from low SES homes, with a paper containing a list of pseudowords with real affixes (e.g., rinning). The children were given 3 min to circle all affixes (i.e., “add-ons”) they saw. The task allowed us to examine the students’ recognition of written prefixes and suffixes.

Morphological awareness assessment challenges

Overall, quite a range of tasks have been used by researchers to assess students’ morphological awareness abilities. As mentioned previously, with few exceptions (e.g., Apel et al., 2013), most researchers have used only one, or perhaps two, of these tasks to assess students’ morphological awareness skills. Even when some researchers have used multiple measures, albeit an incomplete set of tasks, to represent morphological awareness, they then combined responses from those tasks into one composite measure (e.g., Clin, Wade-Woolley, & Heggie, 2009; Tong et al., 2011). This can make it difficult to understand patterns of strengths and weaknesses. Thus, for both researchers and practitioners, it is unknown whether the variety of morphological awareness tasks used across investigations measure the same underlying construct and can be used interchangeably or whether they may be measuring different aspects of morphological awareness that constitute a multifactorial construct. Some indirect evidence suggests that the latter is true; that is, that the different tasks used actually may be measuring different aspects of morphological awareness.

For example, two research teams examined whether the morphological awareness tasks they used in their study related to one another and found only moderate correlations (r values ranged from .46 to .58; Deacon et al., 2013; Ramírez, Chen, & Pasquarella, 2013). In addition, in the study by Apel et al., we found that certain morphological awareness tasks predicted early elementary grade students’ reading abilities better than other morphological awareness tasks, and that some tasks discriminated between grades better than others. These findings suggest that not all morphological awareness tasks measure the same aspects of morphological awareness, and that some tasks may relate to students’ written language skills differently.

At the very least, no one type of task (i.e., judgment task, production task, blending/segmentation task, analogy task, affix identification task) adequately assesses all of the components of the proposed morphological awareness definition. Before discussing implications for researchers and practitioners, I first discuss other factors that impact students’ performances on these types of measures.

When researchers have examined students’ morphological awareness abilities, they have found that several specific item features affect task performance, including morpheme type and transparency between base words and their inflected or derived forms. For example, in general, children in the primary elementary grades demonstrate greater awareness of inflectional forms than derivational forms; it is around third grade that children typically demonstrate greater awareness of derivational morphology (e.g., Kuo & Anderson, 2006). Not surprisingly, then, inflectional morphological awareness is mostly associated with literacy abilities in younger elementary
school students rather than upper-grade elementary school students (e.g., Carlisle & Nomanbhoy, 1993). Task items that represent transparent relations between base words and their derived forms are typically easier to complete than items that represent a shift phonologically and/or orthographically (e.g., Apel & Thomas-Tate, 2009; Carlisle, 2000). However, both of these item feature issues, morpheme type and transparency, may be confounded by morpheme and word frequency issues.

Word frequency issues can function on multiple levels. There are far fewer inflectional affixes than derivational affixes, and those inflectional affixes are more frequent in occurrence and shorter in letter length, which may lead to ease in performance on tasks. Non-transparent forms also may be confounded by word frequency; many multimorphemic words that involve shifts are lower in word frequency counts than transparent forms. Across previous investigations, researchers have not always accounted for these item-specific features on a complete, consistent basis.

Another factor to consider is students’ prior vocabulary knowledge. Some researchers have discussed whether morphological awareness is actually another measure of vocabulary, supported by findings on the strong relation between vocabulary and morphological awareness (e.g., Kuo & Anderson, 2006). However, in studies that have examined the associations of morphological awareness and vocabulary simultaneously, with reading as an outcome (e.g., Apel et al., 2012; Nagy et al., 2003), morphological awareness has uniquely predicted reading beyond vocabulary knowledge. Thus, there appear to be distinct aspects of morphological awareness that separate it from general vocabulary abilities. Finally, with additional studies, such as the investigation conducted by Mitchell and Brady (2014), more information about specific affixes and when they are acquired will provide needed developmental information for assessment and hierarchy of stimuli.

CLINICAL IMPLICATIONS AND SUGGESTIONS

Additional research is required to inform assessment practices. Investigators will need to determine whether different morphological awareness tasks measure the same or different aspects of morphological awareness. By determining whether multiple measures are needed to capture the full range of components contained in the recommended definition, researchers and practitioners will be better prepared to assess students’ morphological awareness abilities. In the meantime, the important role of morphological awareness in the development of students’ written language abilities necessitates that practitioners consider how they can best assess their students’ morphological awareness abilities now.

Although practitioners await the needed research, they have several options available to them. My first suggestion is to use the proposed definition as a guide for assessment. Using this definition will guide practitioners in their use of different tasks that tap into the different components of the definition (see Table 3 for suggestions). For example, to assess students’ awareness of spoken morphemes, a segmenting or blending task can be used on which students are asked to either break up multimorphemic words into their component morphemes or, conversely, blend morphemes into multimorphemic words (e.g., see Casalis et al., 2004). An affix identification task, such as the timed task that required students to circle affixes within written pseudowords (i.e., Apel et al., 2013), can be used to assess awareness of written morphemes.

Awareness of the meaning of affixes and the alterations in meaning they bring to base words can be assessed by using spoken and written production and judgment tasks (e.g., see Apel et al., 2013; Berninger et al., 2010). On these tasks, students may be asked to complete cloze tasks with appropriate morphologically related words or to make decisions about the semantic relation between two
Table 3. Examples of morphological awareness tasks aligned with proposed definition

<table>
<thead>
<tr>
<th>Aspect of Proposed Morphological Awareness Definition Assessed</th>
<th>Mode</th>
<th>Potential Assessment Tasks</th>
<th>Sample Item</th>
</tr>
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<tbody>
<tr>
<td>Awareness of the morphemes in words and what they “sound like”</td>
<td>Spoken</td>
<td>Segmenting task</td>
<td>“Tap out how many ‘parts’ you hear in recyclable” (see Casalis et al., 2004).</td>
</tr>
<tr>
<td>Awareness of the morphemes in words and what they “look like”</td>
<td>Written</td>
<td>Affix identification task</td>
<td>“Circle all the ‘add-ons’ you see in this list of words” (e.g., rinning; see Apel et al., 2013).</td>
</tr>
<tr>
<td>Awareness of the meaning of affixes and the alterations in meaning they bring to base words</td>
<td>Spoken</td>
<td>Definition task</td>
<td>“A person who makes art is an . . . artist”; see Casalis et al., 2004).</td>
</tr>
<tr>
<td>Awareness of the meaning of affixes and the alterations in grammatical class they bring to base words</td>
<td>Written</td>
<td>Suffix choice task</td>
<td>“Matthew was not known for being overly [friendly, friendship, friendliness, friends] to others” (see Nagy et al., 2003).</td>
</tr>
<tr>
<td>Awareness of spelling of written affixes</td>
<td>Written</td>
<td>Spelling multimorphemic words</td>
<td>“Spell dresses. Spell plainest . . .” (see Apel et al., 2013).</td>
</tr>
<tr>
<td>Awareness of how the addition of morphemes can affect base word spellings</td>
<td>Written</td>
<td>Derivational spelling task</td>
<td>“Which ending goes with luck to make lucky: —y, ie, —ey” (see Sangster and Deacon, 2011).</td>
</tr>
<tr>
<td>Awareness of the relation of base words to their inflected and derived forms</td>
<td>Spoken</td>
<td>Spoken relatives task</td>
<td>“Farm. My uncle is a ____ farmer. (See Apel et al., 2013).</td>
</tr>
<tr>
<td>Awareness of the relation of base words to their inflected and derived forms</td>
<td>Written</td>
<td>Written relatives task</td>
<td>“Shine. The boy’s bike was very ____ shiny. (See Apel et al., 2013).</td>
</tr>
</tbody>
</table>

words. Students’ awareness of the spelling of written affixes and the consequences (rule affects base word changes) when attached to base words or roots can be assessed using multimorphemic spelling tasks (e.g., see Apel et al., 2013). Finally, awareness of the relationship of base words to their inflected and derived forms also may be assessed using spoken and written cloze tasks (e.g., teach. Mrs. Smith is my favorite ____[teacher]). By using the whole range of tasks representing the comprehensive definition proposed, practitioners will have a clearer idea of students’ possible strengths and weaknesses in morphological awareness, which then will lead to specific targeted intervention goals.

As practitioners are using researcher-designed tasks, they should keep in mind the potential factors that may influence students’ performance on those tasks. As mentioned, derivational items likely will be more challenging than inflectional items. Furthermore, derivational items that involve a shift away from the base word, either a phonological shift or an orthographic shift, may be more challenging than one in which the base word is transparent within the derived word. Practitioners can be aware of these effects, noting
their impact on students’ performance and using that information to inform intervention (i.e., if a phonological or orthographic shift response was more challenging for a student, then intervention would start with stimuli that involved only transparent forms). Furthermore, as Mitchell and Brady (2014) point out, students appear to be aware of prefixes earlier than suffixes. Should this developmental sequence be found in assessment, practitioners would use this information to guide intervention practices as well.

Finally, practitioners should be aware of norm-referenced measures they are using that may be assessing aspects of their students’ morphological awareness abilities although the tasks are not labeled as such. Although an assessment test may state that it measures one skill, practitioners should be conscious of what the task truly measures. Furthermore, if the practitioner’s work setting requires standard scores for students to receive direct services, these assessment tasks can be used to assess morphological awareness even if the name assigned to the measure suggests something different. As long as the practitioner follows the procedures outlined by the publisher, the scores obtained still may be compared with the normative database and standard scores obtained. The results then may be interpreted qualitatively with respect to what they indicate about a student’s morphological awareness. As with the suggestions for the experimenter-designed tasks, practitioners will need to determine whether the items on the norm-referenced task are impacted by morpheme type (i.e., inflected or derived forms) and transparency of the base word or root (i.e., transparent or shift form).

Morphological awareness is an important linguistic awareness skill that impacts the development of written language: reading and spelling. With a comprehensive definition, researchers and practitioners will be prepared to assess students’ morphological awareness skills more completely. This may enable them to form a more complete and inclusive picture of students’ morphological awareness abilities and, if needed, develop a prescriptive, optimal plan for intervention.

REFERENCES


