Bound Morphemes - Rules, Rationale, and Examples

Why do we mark some bound morphemes and not others?

The SALT reference databases use a very specific set of conventions for marking bound morphemes. Our protocols do not represent the only way to mark morphemes but if you want to compare your sample against our databases, it is important for you to use these same conventions.

The SALT rules for marking bound morphemes may seem obscure at first. But there is method to our madness. This blog explains the rationale behind SALT's conventions for marking bound morphemes. It goes beyond, "because it's been this way for a long time and here are the rules to memorize". Or, a little more clinically, "because these are the developmental morphemes and here are the rules to memorize". Our hope in writing this blog is that by understanding the "why" behind the conventions, the rules will make more sense and, hopefully, it will be easier to implement them.

To a large extent, SALT's convention for marking bound morphemes is patterned after the conventions used by Roger Brown (1973) in the calculation of MLUm (mean length of utterance in morphemes) back in the early days of language sample analysis.

Inflectional morphemes versus Derivational morphemes

Brown excluded derivational morphemes in the calculation of MLUm. To understand why, we first need to distinguish between the two types of bound morphemes – inflectional and derivational. *Many of the explanations and examples in this section are taken from the following websites:*
https://semanticsmorphology.weebly.com/inflectional-and-derivational-morphemes.html
http://www.mathcs.duq.edu/~packer/Courses/Psy598/Ling-Morphology.pdf

- **Inflectional morphemes** are used to show some aspects of the grammatical function of a word. They are always suffixes and always result in the same part of speech. We use inflectional morphemes to indicate if a word is singular or plural, whether it is a comparative or possessive form, and to mark tense. Inflectional morphemes never change the grammatical category (part of speech) of a word. For example, *shoe* and *shoes* are both nouns, *tall* and *taller* are both adjectives, and *look* and *looked* are both verbs. The inflectional morphemes simply produce different versions of the words.

There are eight inflectional morphemes. They are shown in the following table:

Inflectional Morphemes		Added to	Examples
-s, -es	plural	nouns	I have two black cat**s**.
-'s, -s'	possessive	nouns	My dog**'s** bark is very loud.
-er	comparative	adjectives	I have long**er** hair than you do.
-est	superlative	adjectives	He has the bigg**est** pumpkin.
-s	3rd person singular	verbs	She run**s** fast.
-ed	past tense	verbs	He play**ed** basketball.
-en	past participle	verbs	She has tak**en** the lead.
-ing	progressive tense	verbs	He is play**ing** basketball.

When children use inflectional morphemes, they are (generally) demonstrating their knowledge of the base word *as well as* their ability to encode the plural, possessive, or tense of that root word.

- **Derivational morphemes**, in contrast, are used to create new words or to make words of a different grammatical class (part of speech) from the root form. For example, by adding the derivational morpheme -er the verb *read* becomes the noun *reader*. The addition of -ize changes the adjective *normal* to the verb *normalize*. Similarly, we can derive the adjectives *helpful* and *helpless* by adding -ful and -less to the noun *help*. However, some derivational morphemes do not change the grammatical category of a word. For example, we can derive the nouns *neighborhood* and *kingdom* by adding the derivational suffixes -hood and -dom to the nouns *neighbor* and *king*. And derivational prefixes such as un- and re- generally do not change the category of the word to which they are attached. Thus, both *happy* and *unhappy* are adjectives, and both *fill* and *refill* are verbs.

Derivational morphemes may be either suffixes or prefixes and usually, but not always, result in a different grammatical category. The following table lists some of the common derivational morphemes:

Common Derivational Morphemes (Suffixes)	Added to	Results in	Examples
-ize	nouns adjectives	verbs verbs	rubber**ize** normal**ize**
-ful	nouns	adjectives	play**ful**, help**ful,** beauti**ful**
-ly	nouns adjectives	adjectives adverbs	man**ly**, friend**ly** proud**ly**
-sion	verbs	nouns	discus**sion**
-hood, -dom	nouns	<same>	neighbor**hood**, king**dom**
Derivational suffixes which overlap with inflectional suffixes (*though they serve a different purpose*)			
-er	verbs nouns/verbs	nouns nouns	read**er** grad**er**
-ed	verbs	adjectives	am tir**ed**, was bor**ed**
-en	verbs	adjectives	this spot is tak**en**
-ing	nouns/verbs nouns/verbs	nouns adjectives	bik**ing** is fun interest**ing** story
Common Derivational Morphemes (Prefixes)	**Added to**	**Results in**	**Examples**
un-, a- dis-, re- anti-	adjectives verbs nouns	<same>	**un**happy, **a**typical **dis**like, **re**fill, **re**evaluate, **re**view **anti**-aircraft

According to Brown, young children generally do not learn a base word and then apply a derivational morpheme to encode extra information. Instead, they usually learn these as fully-formed, independent words with their own specific meaning. Although derivational morphemes can logically be split into a root word and a prefix or suffix, these smaller parts are not meaningful to the child speaker and so they should not be considered separate morphemes in this case.

Guo, et al. (2018) gives evidence for this, including:

- There is ample psycholinguistic evidence that base words and derived words (e.g., *beauty*, *beautiful*) are stored as separate lexical entries and should be given equal weight.
- Children may learn a derived word (e.g., *beautiful, interesting*) before the base word (e.g., *beauty, interest*). It seems unlikely that children would add the derivational morphemes to these base words to form the derived words. <u>Side note</u>: to test this, we looked at samples from 355 typically-developing children under the age of 7 taken from the SALT Play and Conversation databases. The derived word *beautiful* was used five times while its base form *beauty* was only used once. And *interesting* was used twice and there were no instances of its base form *interest*.

They consider that derivation is a word-formation process, not a grammatical encoding process. Therefore, derivation reflects a speaker's lexical skills, not grammatical skills.

So what are the rules behind the SALT conventions?

RULE 1: Do not mark derivational morphemes. Do mark (most) inflectional morphemes.

Why?

In short, we want to mark bound morphemes when they reflect the child speaker's understanding that the prefix/suffix has a meaning separate from the root word. When using derivational morphemes - learned as fully-formed, independent words - a child speaker is only utilizing a single meaning. In contrast, when using an inflectional morpheme, the child is utilizing two meanings: the root word and the encoded plural/possessive/tense meaning.

By not marking derivational morphemes, we do not give the speaker credit for bound morphemes which change the meaning of the word (e.g., happy → unhappy) or change its grammatical category (e.g., friend → friendly).

However, when the child speaker is likely to have understood the separate meanings of the bound morphemes, we do want to mark them. So we mark most inflectional morphemes. Most, but not all...

RULE 1a: Do not mark the comparative (inflectional) morphemes -er and -est.

Why not?

Although -er and -est are inflectional morphemes, Brown did not count them because they are not obligatory. According to Guo, et al (2018), this means that it is a stylistic choice whether to use comparative and superlative form rather than the uninflected adjective. For instance, when given a choice of several balls of varying sizes, a child may select the largest one and say, "*I have the big one*" unless prompted to make a comparison.

RULE 1b: Do not mark irregular forms.

Why not?

Irregular forms are counted as single morphemes because children may learn them as separate forms, rather than inflections of their base forms.

The following table lists examples of irregular words:

Category	Examples of irregular words

plural	man → men, foot → feet, cactus → cacti, deer → deer
all possessive pronouns	I → mine, he → his, she → hers, we → ours, you → yours, it → its, they → theirs
3rd person singular	have → has, is → was
past tense	begin → began, break → broke, go → went, get → got
past participle (*regular form: present tense + EN as separate syllable*)	begin → begun, break → broken, go → gone, get → gotten, choose → chosen, see → seen, be → been
negation	will → won't

Some words are irregular because the sound of the base form changes. These words follow the standard spelling for inflected or contracted words but change its sound. Some examples follow:

Category	Examples of changed sound
plural	leaf → leaves, wolf → wolves
3rd person singular	do → does, say → says
past participle	drive → driven, write → written
negation	do → don't

RULE 1c: Do not mark plurals for words which do not have a singular form.

Why not?

Children would not have learned the singular form in order to then apply the rule for plurals. Following are some examples:

Examples of Plurals Without a Singular Form			
belongings	glasses (*spectacles*)	pants	shorts
binoculars	goggles	panties	suds
breeches	jitters	remains	tights
clothes	knickers	riches	trousers
drawers	pajamas	shenanigans	tweezers

RULE 2: Do not mark concatenatives.

Why not?

Brown counted concatenatives as single morphemes because, like irregular forms, children may have stored them as holistic chunks. Following is a list of concatenatives:

Concatenatives (*meaning*)			
betcha (*bet you*)	liketa (*like to*)	outta (*out of*)	useta (*used to*)
coulda (*could have*)	lookit (*look at it*)	shoulda (*should have*)	wanna (*want to*)
gonna (*going to*)	musta (*must have*)	sposta (*supposed to*)	whatcha (*what are you*)
gotta (*got to*)	oughta (*ought to*)	trynta (*trying to*)	woulda (*would have*)
hafta (*have to*)			

RULE 3: Mark contracted words.

Why?

Contractions combine two words into one (e.g., *we are* à *we're*). The speaker is given credit for the same number of morphemes whether using two words or the one contracted word.

Contractions		Examples
-'t -n't	negation	I can**/'t** leave yet. He does**/n't** know better
-'s	is has does us	It**/'s** time to go. He**/h's** been sick. What**/d's** he do for a living? Let**/'us** go.
-'re	are	You**/'re** late.
-'m	am	I**/'m** ready to take the test.
-'ll	will	I**/'ll** wait over here.
-'d	would had did	He**/'d** do it. You**/h'd** better leave now. Why**/d'd** the boy look over there?
-'ve	have	We**/'ve** a lot to do.

Summary

These rules can be summarized as:

- Only mark the following inflectional morphemes and contractions.

Inflectional Morphemes			Contractions	
/s	plural		/'t, /n't	negation
/z	possessive		/'s, /'re, /'m	is, are, am
/3s	3rd person singular		/'ll, /'d	will, would
/ed	past tense		/'ve, /h's, /h'd	have, has, had
/en	pat participle		/d's, /d'd	does, did
/ing	progressive tense		/'us	us

- Do not mark irregular forms, concatenatives, or plurals which do not have a singular form.

Formatting Notes

- Use a slash (/) for bound morphemes which follow the free morpheme (suffixes) and use a backslash (\) for bound morphemes which precede the free morpheme (prefixes). There should be no spaces between the free morpheme and the bound morpheme(s).

- When the spelling of a free morpheme such as CRY changes with the addition of the bound morpheme, use the root spelling of the free morpheme (*as if the bound morpheme is not there*). Then, simply add the slash

plus the bound morpheme (i.e. CRY/ED). If this is not done, the stem CRI will be treated as a different word from CRY and thereby inflate Type-token ratio (TTR) as well as No. of Different Words.

If you would like to see some examples of the formatting for bound morphemes, see this PDF:
https://saltsoftware.com/media/wysiwyg/tranaids/TranConvSummary.pdf

Also, try our online course #1304: Transcription - Conventions Part 1:
https://saltsoftware.com/training/self-paced-online-training/course-1304-transcription-conventions-part-1

A Final Note

While we feel that Roger Brown's research published in 1973 has stood the test of time, we understand that it is not the only way to understand the use of morphemes or to calculate MLUm. If you have a language sample from which you want to compare the transcript with samples selected from the SALT reference databases, then these conventions are the most appropriate. However, these conventions may not be appropriate for all speakers or in all cases. Future blog posts will highlight some of these alternate scenarios and how they can be accommodated using custom coding schemes in SALT.

References

Brown, R. (1973). *A first language: The early stages.* Cambridge. MA: Harvard University Press.

Guo, L., Eisenberg S., Bernstein Ratner, N., & MacWhinney, B. (2018). Is Putting SUGAR (Sampling Utterances of Grammatical Analysis Revised) Into Language Sample Analysis a Good Thing? A Response to Pavelko and Owens (2017). Language, Speech, and Hearing Services in Schools, doi:10.1044/2018_LSHSS-17-0084.

See Also:
Spelling Conventions
Omitted Bound Morphemes /*