

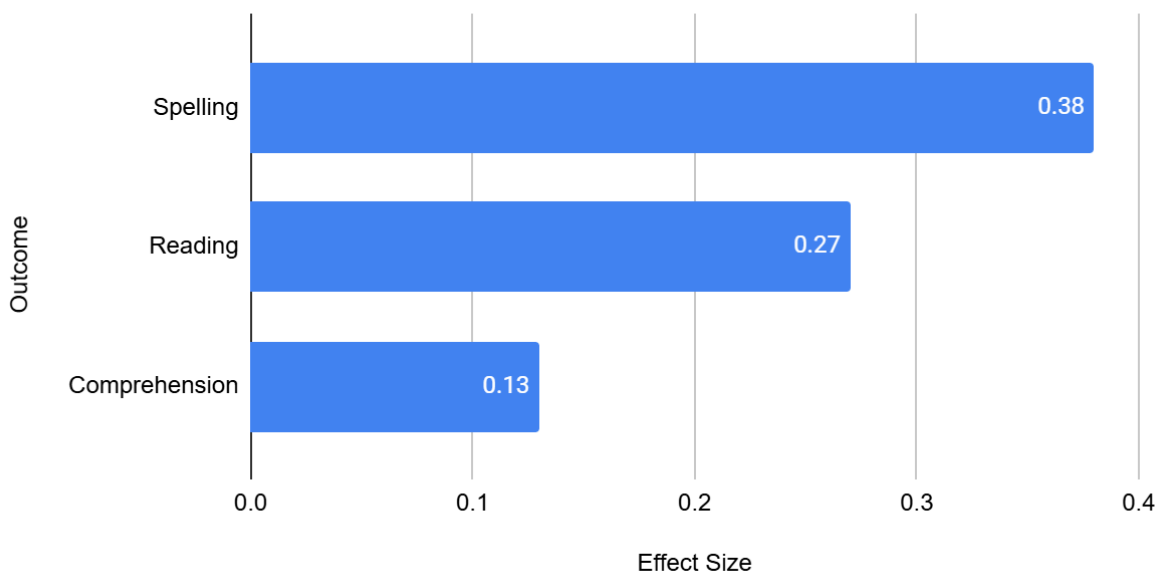
Morphology Research Update

A new meta-analysis by Danielle Colenbrander et al. was recently published on morphology, examining 28 experimental and quasi-experimental studies. This study is particularly significant as the first meta-analysis to investigate the transfer effects of morphological interventions. “Previous meta-analyses did not look separately at outcome measures containing trained words (words containing trained morphemes that children saw during instruction), and outcome measures containing words that were not trained. However, this approach does not determine whether students can apply their knowledge to unfamiliar words.” (D. Colenbrander, personal communication, 2025) By addressing this gap, Colenbrander et al.'s meta-analysis provides crucial insights into the generalized efficacy of morphological instruction. The overall results of the meta-analysis can be seen in the below graphic.

General Findings

The Overall Impact of Morphology On Literacy Assessments

Colenbrander, 2025

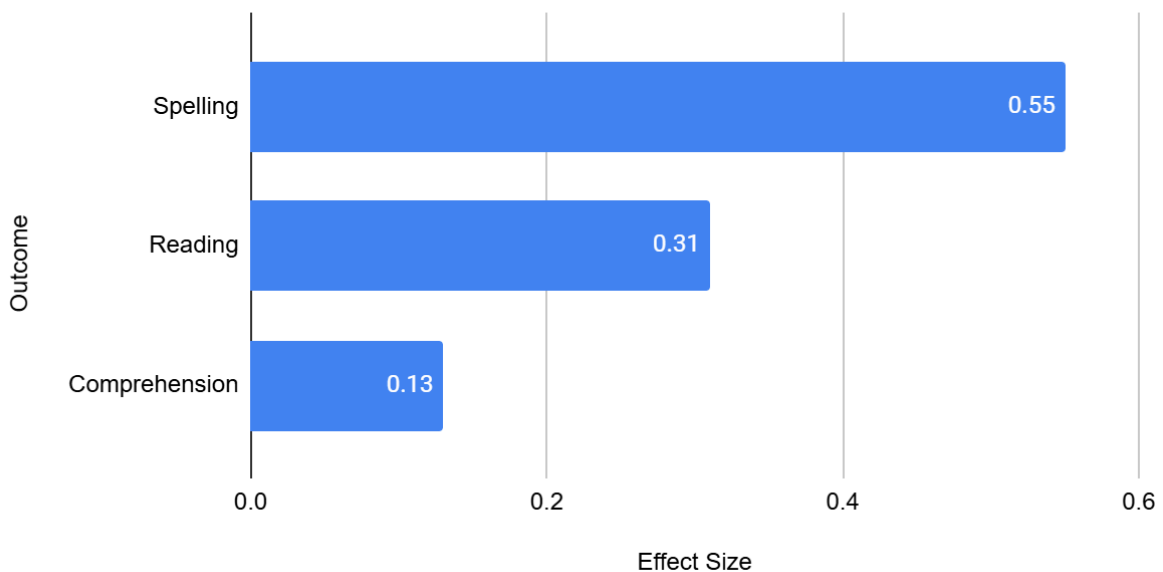


The above effect sizes suggest that morphology overall showed a moderate to small impact on spelling, a small impact on reading, and a negligible impact on comprehension. However, these results combine both the transfer effect and non transfer effects of morphology. If we look at only the transfer effect, the results are a bit different, as can be seen below.

Does the Impact of Morphology Instruction Transfer?

The Transfer Effect of Morphology Instruction

Colenbrander, 2025



The transfer effect results suggest that morphology instruction provides a strong to moderate impact on spelling outcomes, a small impact on reading outcomes, and a negligible impact on comprehension outcomes. The comprehension and spelling results are consistent with virtually all other meta-analyses of the topic. However, the reading results are novel, and suggest that morphology may be less effective at teaching reading when compared to other approaches, such as phonics, which does seem to show a transfer effect. For example, I recently released a pre-print meta-analysis with several colleagues that found a transfer effect of phonics of .43. To me, this would suggest that morphology instruction benefits reading outcomes, but less than phonics, which brings me to my first main point: Morphology instruction is to spelling, as phonics is to reading. Together they are the two most effective pedagogies for improving encoding and decoding outcomes and therefore, they both need to be taught.

Morphology and Reading

I reached out to Dr. Danielle Colenbrander to discuss her findings and this blog and I felt she had some particularly interesting points to make in regard to the debate of phonics vs morphology for reading instruction. “In the case of the morphology meta-analysis, since almost all the students in the meta-analysis had already had some kind of reading instruction before receiving their morphology instruction (though it wasn’t always possible to tell what kind of reading instruction they had received) – I think the reading result shows that morphology instruction doesn’t give as much of an extra boost over and above whatever else they were receiving, compared to the extra boost they received for spelling. [...] Having said that, I do agree that our data shows that morphology instruction is probably more important for spelling than for reading. I would agree that given the data, it seems that one of the most impactful ways to teach morphology might be to teach a limited number of the most frequent and useful morphemes in spelling instruction. However, I do think that there is a place for

morphology in reading instruction, alongside a phonics scope and sequence, because of the reciprocal relationships between reading and spelling. It might be lighter-touch in reading instruction, but I do still think it should be there” (D. Colenbrander, personal communication, 2025).

Morphology and Comprehension

There is a lot of focus on teaching morphology for meaning, in the hopes of improving reading comprehension. However, as seemingly every meta-analysis of the topic appears to show no meaningful benefit on comprehension outcomes, I think it is time the literacy community admit morphology does not significantly improve comprehension. Indeed, low effect sizes for morphology instruction on comprehension outcomes were also found by every other meta-analysis or secondary meta-analysis that I am aware of, including: Reed (2008), Goodwin (2013), Silverman (2020), Burns (2023) & Hansford (2024).

In my opinion, the fact that morphology instruction does not provide significant benefits to comprehension has serious instructional implications. Indeed, if teaching the meaning of morphemes does not significantly improve comprehension, I would argue it should take up as little instructional time as possible. Instead, I would argue that the instructional time should be spent teaching morphology, as spelling patterns. In other words, morphology instruction should go wide (focusing on as many spelling patterns as possible) but shallow (avoiding complex morphological definitions).

I think such a take may be a difficult pill for many to swallow, as most morphology programs for sale and most morphology experts seem to advocate for the opposite approach. Indeed, I appear to be on the opposite side of the debate, of most morphology experts. This is especially awkward for me, as I am assuredly not an expert on morphology myself. However, this is my earnest interpretation of the data and it is directly against my own interests, as the Pedagogy Non Grata reading program includes meaning based morphology instruction.

All of this is not to say that morphology instruction should be completely devoid of meaning. But rather meaning should not be the primary focus. I think sometimes, there are practical reasons to include meaning in morphology instruction. For example the suffixes, <ed>, <ing>, and <es> all possess simple meanings that are essential to understand the tense of a sentence. Similarly the prefixes <pre>, <post>, and <dis> have very consistent meanings that can help students to understand words. However, other morphemes can often have very complex and shifting meanings. For example the prefix <re> can mean to do again, to go backwards, to resist, or to intensify. Or <ion>, which can mean the action, state, or result of something. Expecting students to memorize not only the meaning of hundreds of morphemes, but the multiple possible shifting meanings, seems like it would have an unrealistically high cognitive load. Dr. Colenbrander, shared with me her perspectives on whether or not the meaning of morphemes should be taught and she wrote, “I think that it is quite important to talk about the meaning of morphemes and how they relate to the meaning of a whole word. I don’t think you need to do it very deeply (as you suggest), but I think that it does need to be there because a) it’s another source of information to help students remember the structure

and b) there could be a small flow-on effect to vocabulary knowledge (though our meta-analysis did not look at vocabulary outcomes, so that's an open question)" (D. Colenbrander, personal communication, 2025).

Morphology and Spelling

Of course the clear winner here is spelling. There are now three meta-analyses which show strong research outcomes for teaching spelling via morphology, including: Colenbrander (2025), Galuschka (2020), and Reed (2008). However, the Colenbrander (2025) meta-analysis is particularly important in this regard, as it establishes that the impact of learning to spell individual morphemes, translates to new untaught morphemes. That said, Dr. Colenbrander had a note of caution on this finding. "I am wary of approaches to teaching morphology that are very focused just on the word parts and not on the whole words – after all, we ultimately don't care whether or not students can spell isolated morphemes, we care that they can spell (and read and know the meaning of) the words. [...] it's a point I often make because I sometimes see people doing things like (for example) flashcards with isolated suffixes on them, and if you do a lot of that, then I think you lose the opportunity for students to do some orthographic learning of whole words" (D. Colenbrander, personal communication, 2025).

Practical Recommendations

The body of scientific research on morphology suggests that this pedagogy is incredibly useful for teaching spelling, as suggested by Colenbrander (2025), Galuschka (2020), and Reed (2008). However, I would argue that morphology instruction should primarily focus on the spelling patterns associated with morphemes and not the meaning. Similarly, I would also argue that morphology instruction should primarily focus on suffixes. Suffixes are especially important to cover, as there is far more repetition with suffixes than with bases and roots and there is therefore a greater likelihood that those skills will produce a transfer effect. Suffixes are also far more likely to alter the spelling of a word, when compared to prefixes.

If you're struggling on how to teach morphology, here are some free resources, that teach morphology within the context of real words, and focus on spelling instruction:

1. [Identifying morphemes game](#)
2. [Adding suffixes to bases game](#)
3. [Adding suffixes to roots game](#)
4. [The reading by science program](#)

*Note, the first three resources are aimed at older students (grade 5 and up).

Written by Nathaniel Hansford

Last edited on 2025-02-08

References:

Bowers, J. S. (2020). Reconsidering the evidence that systematic phonics is more effective

than alternative methods of reading instruction. *Educational Psychology Review*, 32, 681–705. <https://doi.org/10.1007/s10648-019-09515-y>

Bowers, P., Kirby, J., & Deacon, H. (2010). The effects of morphological instruction on literacy skills: A systematic review of the literature. *Review of Educational Research*, 80, 144–179. <https://doi.org/10.3102/0034654309359353>

Burns, M., Duke, N., & Cartwright, K. (2023). Evaluating components of the active view of reading as intervention targets: Implications for social justice. *School Psychology*, 38, 30–41. <https://doi.org/10.1037/spq0000519>

Galuschka, K., Görgen, R., Kalmar geb. Richter, J., Haberstroh, S., Schmalz, X., & Schulte-Körne, G. (2020). Effectiveness of spelling interventions for learners with dyslexia: A meta-analysis and systematic review. *Educational Psychologist*, 55, 1–20. <https://doi.org/10.1080/00461520.2019.1659794>

Goodwin, A., & Ahn, S. (2013). A meta-analysis of morphological interventions in English: Effects on literacy outcomes for school-age children. *Scientific Studies of Reading*, 17(4), 292–310. <https://doi.org/10.1080/10888438.2012.689791>

Linnea, et al. (2001). Systematic phonics instruction helps students learn to read: Evidence from the National Reading Panel's meta-analysis. Ontario Institute for Studies in Education. Retrieved from https://www.dyslexie.lu/JDI_02_02_04.pdf

Reed, D. (2008). A synthesis of morphology interventions and effects on reading outcomes for students in grades K–12. *Learning Disabilities Research & Practice*, 23, 36–49. <https://doi.org/10.1111/j.1540-5826.2007.00261.x>

Silverman, R., Johnson, E., Keane, K., & Khanna, S. (2020). Beyond decoding: A meta-analysis of the effects of language comprehension interventions on K–5 students' language and literacy outcomes. *Reading Research Quarterly*, 55. <https://doi.org/10.1002/rrq.346>