

# Morphemes Matter:

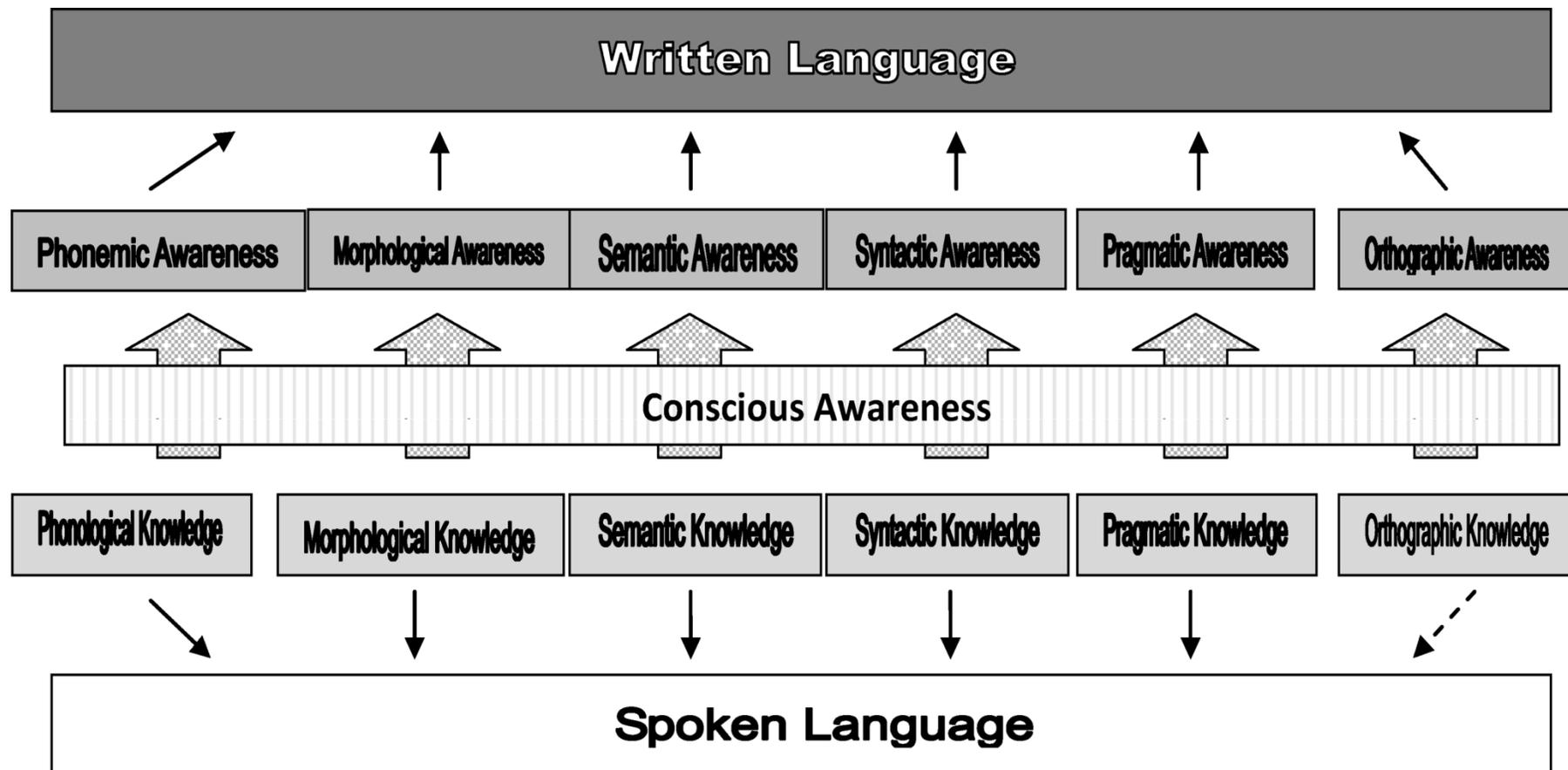
## Morphological Awareness Instruction/Intervention

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# Affixes

- **Inflectional morphemes** provide information about time or quantity without changing the meaning or class of the word.

Time > “walked, walking, walks”

Quantity > “cats” “boxes”

- **Derivational morphemes**, which can be *prefixes* or *suffixes*, change the meaning and/or the word class

Word class > “teach, teacher”

Meaning > “fair, unfair”

Word class and meaning > “exploration”

# Affixes-Inflectional or derivational?

- walk > walked, walking, walks
- fair > unfair
- teach > teacherer
- cats, boxes
- bigger, biggest

# What Happens to Base Words When They Are “Affixed?”

- Result is that the base word is \_\_\_\_\_ in the affixed word
  - transparent
  - phonologically opaque
  - orthographically opaque
  - phonologically and orthographically opaque

Transparent? Phonologically opaque? Orthographically opaque? Both?

- admit > admission
- silly > silliness
- magic > magician
- friend > friendly

# Fast Facts about Morphological Awareness Development

- Inflectional morphological awareness **may begin to develop as early as preschool years**; it continues to develop throughout the elementary-age years (Berko, 1958, Carlisle, 1995)
- **Derivational morphological awareness is more difficult compared to inflectional morphological awareness for young elementary-age students** (Carlisle & Nomanbhoy, 1993; Deacon, 2008), though **elementary-age students DO demonstrate derivational morphological awareness** (e.g., Apel & Thomas-Tate, 2009; Desrochers et al., 2018; Levesque et al., 2017; Spencer et al., 2015).
- Although **steep growth in MA occurs in the early elementary-age years, growth continues beyond the elementary-age grades** (Berko, 1959; Carlisle, 1995; Berninger et al., 2010)
- Students are **more successful at completing morphological awareness tasks that contain transparent derivations** compared to those that are phonologically and/or orthographically opaque (Apel, Henbest, & Petscher, in preparation; Goodwin et al., 2013)

# Effect Size

- Goes beyond considering statistical significance (i.e., the probability that differences or effects were not chance events) to practical significance (i.e., the magnitude of treatment effect)
- Quantifies the effectiveness of an intervention
- Moves beyond “does this work?” to “how well does it work?”
- Important tool for judging effectiveness
- Measured in standard deviation units

Effect Size	% of control group < mean of treatment group
0	50%
.2	58%
.4	66%
.6	73%
.8	79%
1.0	84%
1.5	93%
2.0	98%
2.5	99%

# Cohen's Guidelines for d

- 0.2 – small
  - Difference between the heights of 15- and 16-year-old girls in the US
- 0.5 – medium
  - Difference between the heights of 14- and 18-year-old girls in the US
- 0.8 – large
  - Difference between the heights of 13- and 18-year-old girls in the US
- Anything  $> 1$  is very large

## Research Article

# Morphological Awareness Intervention With Kindergartners and First- and Second-Grade Students From Low Socioeconomic Status Homes: A Feasibility Study

Kenn Apel,<sup>a</sup> Danielle Brimo,<sup>a</sup> Emily Diehm,<sup>a</sup> and Lynda Apel<sup>a</sup>

**Purpose:** The effect of a morphological awareness intervention on the morphological awareness and literacy skills of students from low socioeconomic status homes was investigated.

**Method:** A 9-week intervention designed to increase awareness of affixes and the relations between base words and their inflected and derived forms was conducted with students in kindergarten ( $n = 19$ ), 1st grade ( $n = 21$ ), and 2nd grade ( $n = 21$ ). Groups of 4–5 students were provided with instruction 4 times a week for 25 min a day.

**Results:** Results showed medium to very large clinically significant gains in morphological awareness and literacy abilities ( $ds = 0.29$ – $2.96$ ) across all participants.

**Conclusion:** The results of this feasibility study suggest that morphological awareness instruction that requires students to analyze, recognize, orally produce, and determine the spelling patterns of multimorphemic words leads to therapeutic effects within a population of young students who are at risk for future reading difficulties. Initial clinical implications, limitations of the study, and research suggestions are discussed.

**Key Words:** morphological awareness, intervention, reading, spelling, low SES

Apel, K., Brimo, D., Diehm, E., & Apel, L. (2013). Morphological awareness intervention with kindergarteners and first and second grade students from low SES homes: A feasibility study. *Language, Speech, and Hearing Services in Schools, 44*, 161-173. DOI: 10.1044/0161-1461(2012/12-0042)

**Table 3.** Means, standard deviations, and effect sizes for the pre- and postintervention measures.

Task	Grade	Pretest		Posttest		Effect size <sup>a</sup>	Modified effect size <sup>b</sup>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Rehit	K	18.32	8.67	37.47	8.85	2.19	2.26
	1	38.05	6.76	50.90	8.12	1.72	1.40
	2	42.81	8.95	51.95	7.53	1.11	1.03
Relatives	K	5.84	4.32	11.21	5.32	1.11	1.11
	1	13.38	3.92	17.90	2.79	1.33	0.97
	2	14.00	6.38	18.24	5.06	0.74	0.66
Affix identification	1	5.86	6.60	36.33	13.25	2.91	2.30
	2	14.33	13.90	45.67	5.55	2.96	2.15
Spelling	1	7.76	4.23	18.00	4.53	2.34	2.08
	2	16.29	6.09	22.10	3.82	1.14	1.34
CTOPP	K	3.21	1.96	5.16	3.04	0.76	0.74
	1	6.52	4.09	8.86	3.58	0.61	0.65
	2	9.43	3.70	10.57	3.79	0.30 <sup>NS</sup>	0.12
TOWRE: Word Identification	K	2.16	4.93	8.68	9.72	0.85	0.77
	1	26.43	16.61	35.52	14.79	0.58	0.55
	2	47.33	11.53	52.43	8.61	0.50	0.41
TOWRE: Decoding	K	.21	.92	2.63	3.42	0.97	0.81
	1	11.14	9.63	13.95	9.64	0.29 <sup>NS</sup>	0.29
	2	18.14	7.46	21.90	9.62	0.44 <sup>NS</sup>	0.21
TOSREC	1	9.24	10.53	16.10	13.22	0.57	0.52
	2	15.67	8.66	23.00	8.24	0.87	0.71
CELF-4	K	19.79	4.97	19.21	5.93	0.11 <sup>NS</sup>	NA
	1	32.57	6.25	34.71	6.98	0.32 <sup>NS</sup>	NA
	2	34.38	7.00	35.52	6.42	0.17 <sup>NS</sup>	NA

# Morphological Awareness Intervention With Kindergarteners and First and Second Grade Students From Low SES Homes: A Small Efficacy Study

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## Abstract

We investigated the efficacy of a morphological awareness intervention on the morphological awareness and reading skills of students from low-socioeconomic-status homes; we also examined whether the intervention was similarly effective for intervention students who differed in their initial morphological awareness abilities. The 8-week intervention was designed to increase awareness of affixes and the relations between base words and their inflected and derived forms for kindergarteners ( $n = 27$ ) and first- ( $n = 22$ ) and second-grade ( $n = 26$ ) students. Students randomly assigned to the small group intervention were provided instruction four times a week, 25 min a day, whereas students assigned to the control group received “business as usual.” Kindergarten and first- and second-grade students receiving the intervention showed statistically significant gains in morphological awareness with large effect sizes on most measures. Students in all three grades who received the intervention demonstrated nonsignificant gains in literacy abilities with null to small effect sizes. Further, students with low morphological awareness abilities at the onset of the study demonstrated similar gains from the intervention as their peers with typical morphological awareness abilities. Our results suggest that explicit morphological instruction may produce gains of practical importance to young elementary students at risk for future literacy difficulties.

**Table 3.** Means, Standard Deviations, and Adjusted Means for Pretest-Posttest Measures With Effect Sizes.

Task	Grade	Control			Intervention			Effect Size: <i>d</i>
		Pretest	Posttest	Adjusted Posttest	Pretest	Posttest	Adjusted Posttest	
Rehit	K	27.39 (9.32)	30.93 (8.67)	31.95	30.57 (9.11)	44.22 (9.36)	43.20***	1.26
	1	40.33 (5.89)	42.90 (9.20)	42.94	40.41 (7.14)	48.86 (8.26)	48.83**	0.67
	2	47.86 (5.09)	50.43 (5.82)	50.21	47.12 (7.14)	55.04 (5.96)	55.28***	0.86
Relatives	K	8.11 (4.86)	8.26 (4.53)	8.40	8.07 (4.25)	12.15 (4.24)	12.01***	0.82
	1	11.71 (3.41)	14.05 (4.46)	13.98	11.55 (2.81)	15.50 (3.20)	15.57	0.41
	2	14.57 (2.90)	16.39 (3.35)	16.41	14.62 (2.86)	19.54 (2.37)	19.53***	1.07
Spelling Multimorphemic Words	1	7.67 (2.61)	6.95 (2.33)	6.85	6.95 (2.77)	8.82 (2.68)	8.92**	0.82
	2	6.41 (2.78)	6.18 (3.12)	5.86	5.12 (2.61)	5.28 (3.27)	5.75	-0.03
Affix Identification	1	4.95 (3.98)	9.67 (9.05)	9.60	4.77 (3.27)	33.64 (9.86)	33.70***	2.54
	2	21.67 (14.78)	25.71 (12.74)	26.82	24.08 (15.63)	42.76 (6.74)	42.28**	1.52
TOWRE: Sight Word Efficiency	K	8.75 (9.71)	14.00 (9.38)	15.52	12.11 (10.83)	17.00 (12.70)	15.48	0.0
	1	34.86 (14.51)	42.38 (14.14)	42.46	35.05 (13.69)	44.00 (11.76)	43.92	0.11
	2	52.89 (13.73)	56.18 (12.12)	56.38	53.42 (8.42)	57.92 (9.27)	57.70	0.12
TOWRE: Phonemic Decoding Efficiency	K	3.29 (4.05)	5.54 (5.44)	5.95	4.46 (4.57)	6.44 (4.48)	5.91	0.0
	1	14.14 (6.95)	18.81 (8.36)	19.09	14.95 (8.02)	16.64 (6.51)	16.37	-0.39
	2	20.64 (11.15)	22.75 (12.56)	23.2	21.85 (10.04)	26.81 (9.42)	26.32	0.28
<i>Test of Silent Reading Efficiency and Comprehension</i>	1	16.00 (10.69)	21.24 (10.90)	20.29	14.41 (8.85)	22.05 (9.32)	22.95	0.26
	2	21.15 (7.08)	25.43 (8.51)	26.13	22.96 (10.28)	28.20 (9.90)	27.46	0.14

# The Effects of Morphological Instruction on Literacy Skills: A Systematic Review of the Literature

**Peter N. Bowers and John R. Kirby**  
*Queen's University*

**S. Hélène Deacon**  
*Dalhousie University*

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

*The authors reviewed all peer-reviewed studies with participants from pre-school to Grade 8 for this meta-analysis of morphological interventions. They identified 22 applicable studies. Instructional effects (Cohen's d) were averaged by linguistic outcome categories (morphological sublexical, non-morphological sublexical, lexical, and supralexical) and comparison group (experimental group vs. control or experimental group vs. alternative training). The authors investigated the effects of morphological instruction (a) on reading, spelling, vocabulary, and morphological skills, (b) for less able readers versus undifferentiated samples, (c) for younger versus older students, and (d) in combination with instruction of other literacy skills or in isolation. Results indicate that (a) morphological instruction benefits learners, (b) it brings particular benefits for less able readers, (c) it is no less effective for younger students, and (d) it is more effective when combined with other aspects of literacy instruction. Implications of these findings are discussed in light of current educational practice and theory.*

# A meta-analysis of morphological interventions: effects on literacy achievement of children with literacy difficulties

Amanda P. Goodwin • Soyeon Ahn

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**Abstract** This study synthesizes 79 standardized mean-change differences between control and treatment groups from 17 independent studies, investigating the effect of morphological interventions on literacy outcomes for students with literacy difficulties. Average total sample size ranged from 15 to 261 from a wide range of grade levels. Overall, morphological instruction showed a significant improvement on literacy achievement ( $\bar{d}=0.33$ ). Specifically, its effect was significant on several literacy outcomes such as phonological awareness ( $\bar{d}=0.49$ ), morphological awareness ( $\bar{d}=0.40$ ), vocabulary ( $\bar{d}=0.40$ ), reading comprehension ( $\bar{d}=0.24$ ), and spelling ( $\bar{d}=0.20$ ). Morphological instruction was particularly effective for children with reading, learning, or speech and language disabilities, English language learners, and struggling readers, suggesting the possibility that morphological instruction can remediate phonological processing challenges. Other moderators were also explored to explain differences in morphological intervention effects. These findings suggest students with literacy difficulties would benefit from morphological instruction.

Goodwin, A. P., & Ahn, S. (2010). A meta-analysis of morphological interventions: Effects on literacy achievement of children with literacy difficulties. *Annals of dyslexia*, 60(2), 183-208.

Goodwin, A. P., & 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), 257-285.

## Abstract

The purpose of this study is to examine the effects of morphological instruction on language and literacy outcomes by synthesizing 92 standardized mean differences ( $d$ ) from 30 independent studies. Findings show a moderate overall effect of morphological instruction ( $[dbar] = 0.32$ ), suggesting that children receiving morphological instruction performed significantly better on measures of literacy achievement than comparison groups. Moderator analyses showed that intervention effect varied depending on the literacy outcome. There were significant and moderate intervention effects on morphological knowledge ( $[dbar] = 0.44$ ), phonological awareness ( $[dbar] = 0.48$ ), vocabulary ( $[dbar] = 0.34$ ), decoding ( $[dbar] = 0.59$ ), and spelling ( $[dbar] = 0.30$ ) but not on reading comprehension or fluency. Results also suggested differences in effectiveness related to age and research design but not unit of intervention, scope, length, and learner type. Effect sizes decrease by school level (e.g., greater for younger students than middle school and upper elementary students). Also, there were larger effects for quasi-experimental than experimental studies and for researcher-designed measures than for standardized measures. Implications for educational settings and research agendas are discussed.

Lee, J. W., Wolters, A., & Grace Kim, Y. S. (2022). The Relations of Morphological Awareness with Language and Literacy Skills Vary Depending on Orthographic Depth and Nature of Morphological Awareness. *Review of Educational Research*, 00346543221123816.

- We examined the relation of morphological awareness with language and literacy skills, namely phonological awareness, orthographic awareness, vocabulary, word reading, spelling, text reading fluency, and reading comprehension. We also examined potential moderators of the relations (grade level, orthographic depth of language, receptive vs. productive morphological awareness, inflectional vs. derivational vs. compound morphological awareness, and L1/L2 status). After systematic search, a total of 232 articles (965 unique samples,  $N = 49,936$  participants, and 2,765 effect sizes in 17 languages) met inclusion criteria. Morphological awareness was, on average, moderately related to phonological awareness ( $r = .41$ ), orthographic awareness ( $r = .39$ ), vocabulary ( $r = .50$ ), word reading ( $r = .49$ ), spelling ( $r = .48$ ), text reading fluency ( $r = .53$ ), and reading comprehension ( $r = .54$ ). Importantly, morphological awareness had a stronger relation with word reading in orthographically deep languages (.52) than in orthographically shallow languages (.38). The relation with vocabulary was stronger for upper elementary grades than for primary grades. The magnitude of the relation also varied by the nature of morphological awareness: productive morphological awareness had a stronger relation with phonological awareness and vocabulary than receptive morphological awareness; derivational morphological awareness had a stronger relation with vocabulary and word reading compared to inflectional morphological awareness; and compound morphological awareness had a weaker relation with phonological awareness but a stronger relation with vocabulary compared to inflectional morphological awareness. These results underscore the importance of morphological awareness in language and literacy skills, and reveal a nuanced and precise picture of their relations.

# So What Can We Conclude About Morphological Awareness Intervention/Instruction From This Research Evidence?

(e.g., Apel, Brimo, Diehm, & Apel, 2013; Apel & Diehm, 2014; Bowers, Kirby, & Deacon, 2010; Goodwin & Ahn, 2010, 2013; Kirk & Gillon, 2009)

- 1) improves morphological awareness skills
- 2) improves phonological awareness skills
- 3) improves vocabulary
- 4) improves spelling skills
- 5) improves word-level reading skills
- 6) may improve reading comprehension (inconsistent findings across meta-analyses and individual studies (e.g., Badawi, 2019; Goodwin, 2016; Lee et al., 2022))
- 7) may be even more effective when integrated with other types of literacy instruction (i.e., multi-linguistic instruction)
- 8) may be particularly impactful for children with learning disabilities and/or speech and language disorders
- 9) may be particularly impactful for younger children, although notable effects have been reported for older-age children (e.g., Kirk & Gillon, 2009)

# Strategies and Activities for Supporting Morphological Awareness

Guided by a Comprehensive Definition of  
Morphological Awareness

# Apel (2014)'s Four Component Definition of Morphological Awareness

Awareness of:

- 1) what morphemes sound like (spoken language) and look like (written language) (e.g., plural 's' sounds like /s/, /z/, /əs/, /əz/ and looks like 's', 'es')
- 2) the meaning of affixes and the alterations in meaning (e.g., unlike) and sometimes grammatical class they bring to base words (e.g., exploration) (spoken and written)
- 3) the spelling of written morphemes including how the addition of morphemes can affect base word spellings (e.g., pat > patted; admit > admission)
- 4) the relation of base words to their inflected and derived forms (e.g., "Does mother come from moth?") ("Does pleasure come from please?") (spoken and written)

# Key Elements of (Any) Intervention

- The goal is for students to **ACTIVELY THINK** about morphemes
- Model! Model! Model your think aloud!
- Use ‘I do, we do, you do’ approach (Keeseey, Konrad, & Joseph, 2015)
- Assessment should drive treatment; however, morphological awareness instruction is necessary and appropriate for the general education curriculum (Gabig & Zaretsky, 2013)
- For MA: keep transparency in mind when beginning any new activity

# Word Sorts

- Target morphological rule/pattern
- Adult provides index cards with contrasting rules/patterns (or pattern and forms that sound similar)
- Student sorts into piles, with scaffolding as needed
- Student is encouraged to verbalize the rule/pattern
- Key word is established if appropriate
- New rule/pattern is practiced in controlled writing tasks
- Word searches occur in written text

- Packed
- Backed
- Hiked
- Pact
- Fact
- Duct
- Trucked
- Collect
- Object
- Correct
- Subject
- Baked

# Word Relatives

- Adult discusses with student that family members can:
  - Look and sound alike
  - Look alike but not sound alike
  - Sound alike but not look alike
  - Not sound or look alike but still be related
- Adult explains that for many “word relatives” the same situations occur
- Adult and student brainstorm the relatives of a specific word and discuss how the “main relative” helps spell the others.
- Adult can include foils and have student discuss why this strategy should not be apply

# Word Building

- Given cards with prefixes, suffixes, or base words, students combine to make or recognize words (re+cycle, teach+er) or non-words (dis+friend+able)

Prefix	Base	Suffix
re	cycle	-tion
im	friend	-ly
dis	teach	-er
in	make	-able
	busy	-ness
	hard	-ship

# Say It Another Way

- Students verbally produce inflected or derived words based on a definition given by the interventionist
  - “How can I say...more than one stick....another way?”
    - “Sticks!”

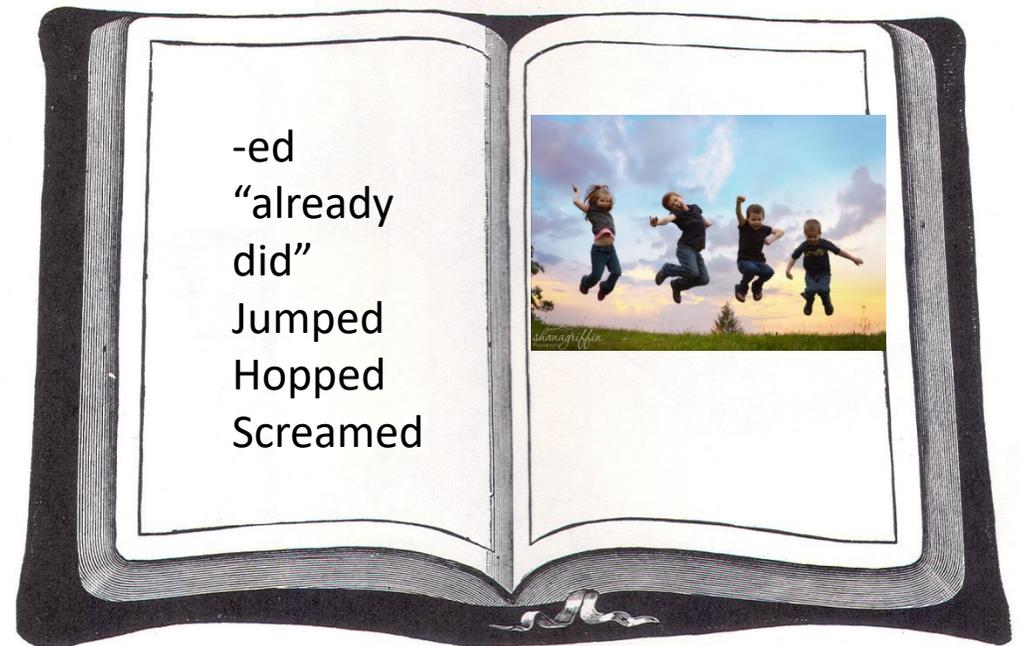


# Listen For It

- Students listen to a story and put a thumb up for every instance of a word containing the target affix and then explain what it means
  - And so the leaf stopped 👍 sighing 👍 , but went on nestling 👍 and singing 👍 Every time the tree shook itself and stirred 👍 up all its leaves 👍 , the branches 👍 shook themselves 👍 , and the little twig shook itself, and the little leaf danced 👍 up and down merrily 👍 , as if nothing could ever pull it off. And so it grew all summer long, till October.

# Affix Book

- Students define the affix and write sample words and/or paste in pictures of words that contained the target affix



# Circle It/Morpheme Finding

- Students circled a target affix in lists of words created by interventionist that contain or do not contain the affix
  - Student explains meaning and spelling of affix

Can also do this within a text, as students become more familiar with the idea.

- Packed
- Backed
- Hiked
- Pact
- Fact
- Duct
- Trucked
- Collect

# Word Generating (Type A)

- Given affix, students generate as many words as they can think of that contain that affix
  - Start with common affixes
    - Common prefixes:
      - re-, in-, dis-, im-
    - Common suffixes:
      - -tion, -y, -ly, -ant, -less, -er, -ment, -ful, -ness, -able, -ous, -ish, -ist,
      - -ive, -ic, -ary, -ern, -ship, -ent, -ing, -or, -al, -en, -ity, -ward

(Baumann et al., 2002; Baumann et al., 2003)

# Word Generating (Type B)

- “What’s the Opposite?”
- *We have learned that the /dis/ prefix means not to but it can also mean... **the opposite of**. For example **the opposite of...believe is ...disbelieve**.*
- *Let’s practice this by playing a game called ‘What Is the Opposite?’*
- *I will say a word and you will change that word to mean the **opposite of**.*

# Word Generating (Type B)

- *First I will do it.*
  - *What is the **opposite of...order**?*
  - *The opposite of.....order is.....**disorder**.*
  - *I added the prefix /dis/ to order to change its meaning to the opposite of.*
  - *The next one says...the opposite of disrepair is....repair. That is correct so I don't need to do anything to it.*

# Word Generating (Type B)

- *Now it's **your turn**:*
  - Group signal....*what is the opposite of....**continue**?*
  - *Yes, ....**discontinue***
  - Group signal *what is the opposite of....**disrespect**.*
  - *Yes, ....**respect***
  - Group signal ... *what is the opposite of....**approve**.*
  - *Yes, ....**disapprove***
  - Continue as above with: ***disagree, comfort, quiet***

# Word Generating (Type B)

- Now let's do a couple of silly words.
  - Group signal ...*what is the opposite of....**hate**?*
  - *Yes, **dishate**. I don't.... **dishate** icecream.*
  - *That sounds silly.*
  - Group signal ... *what is the opposite of.....**nice**?*
  - *Call on a student.*
  - *Yes, ....**disnice**. She was very .....**disnice** to him.*
  - *That sounds silly too.*

- Henbest, V. S., Apel, K., & Mitchell, A. (2019). Speech-language pathologist–guided morphological awareness instruction in the general education classroom. *Perspectives of the ASHA Special Interest Groups*, 4(5), 771-780.

## Research Article

# Speech-Language Pathologist–Guided Morphological Awareness Instruction in the General Education Classroom

Victoria S. Henbest,<sup>a</sup> Kenn Apel,<sup>b</sup> and Alexis Mitchell<sup>b</sup>

**Purpose:** Research has shown that instruction in morphological awareness improves students' understanding and use of affixes. However, morphological awareness instruction, typically, is not provided in the general education classroom, and there are few documented collaborations between teachers and speech-language pathologists (SLPs), the latter of whom have a unique expertise in language. Thus, the purpose of this article was to determine the feasibility of an SLP-guided morphological awareness instructional program in a general education classroom.

**Method:** After completing a webinar training in morphological awareness, 2 general education teachers implemented morphological awareness lessons in their classrooms over an 8-week period. The teachers and collaborating SLP met weekly to discuss the lessons. Following implementation of the lessons, the teachers completed a questionnaire surveying their opinions on the collaboration. They, along with their

students, also completed pre- and postmeasures of their morphological awareness.

**Results:** Results indicated that the teachers' morphological awareness, as assessed by the morphological awareness measure, did not improve as a result of implementing the lessons; however, the teachers reported that they valued the collaboration and the importance of morphological awareness instruction. Most importantly, the students' morphological awareness skills increased significantly following receipt of the morphological awareness lessons. The effects of these gains were moderate to large.

**Conclusions:** Findings suggest that teachers with limited morphological awareness can successfully implement scripted morphological awareness lessons that result in meaningful gains in their students' morphological awareness. Limitations and suggestions for future research on the collaboration between SLPs and teachers are discussed.

# Some Specifics of the Method

- Two 2<sup>nd</sup> grade teachers – private school; 30 students
- 16-17 years teaching experience; no knowledge of MA
- Prior to study:
  - Teachers took pre-test (MA tasks), online MA tutorial (2 hours), met with SLP to arrange scheduling for lessons and weekly check-in, and fidelity checks
  - Students took pre-test
- Study: 26 lessons (~3 lessons/week, 8 weeks)

# Some Specifics of the Method

- After study:
  - Teachers take post-test
    - Teachers: A = pre = 28/38 post = 27
    - Teacher B: pre = 13/38 post = 15
    - Teachers and students take post-test;
  - Students take post-test
  - Fidelity determined to be ~ 92%

Henbest, V. S., Apel, K., & Mitchell, A. (2019). Speech-language pathologist–guided morphological awareness instruction in the general education classroom. *Perspectives of the ASHA Special Interest Groups*, 4(5), 771-780.

**Table 2.** Mean scores (standard deviations in parentheses), differences, and effect sizes for students' performance on morphological awareness measures at pre- and posttest.

Measure	Pretest	Posttest	Difference	Effect size
Affix identification task (AIT)	10.93/38 (7.03)	17.53/38 (6.39)	+ 6.6	$d = 0.98$
Affix meaning task (AMT)	12.97/24 (5.63)	15.80/24 (6.30)	+ 2.83	$d = 0.47$
Spelling multimorphemic words (SMW)	6.0/18 (4.43)	8.30/18 (4.82)	+ 2.30	$d = 0.50$
Derivational spelling task (DST)	13.77/24 (4.06)	16.40/24 (3.82)	+ 2.63	$d = 0.67$

*Note.* Total possible number of points for each task is provided below the /.

# Morphological Awareness Instruction/Intervention

- Depending on assessment, it may be that you are helping student explicitly consider:
  - the morphemes in words and what they “sound like” (spoken)
  - the morphemes in words and what they “look like” (written)
  - the meaning of affixes and the alterations in meaning (and sometimes) grammatical class they bring to base words (spoken and written)
  - the spelling of written affixes (written)
  - how the addition of morphemes can affect base word spellings (written), and/or
  - the relation of base words to their inflected and derived forms (spoken and written)
- You may be the only one doing this; let others know its importance
- ...for example, it may be the only way to understand important information

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