

## 2024 STAR Research Review

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### Introduction

#### *Background Context*

STudent Achievement in Reading (STAR) is a 23-year initiative of the U.S. Department of Education’s Office of Career, Technical, and Adult Education. It is designed to help states develop the personnel and systems needed to implement, sustain, and expand evidence-based reading instruction (EBRI) in local programs and individual classes. STAR does so by providing professional development in EBRI to teachers of adult basic education (ABE) and English as a second language (ESL) students who are at an intermediate reading level (grade level equivalency [GLE] of 4.0–8.9 or National Reporting System [NRS] levels 3 and 4) in order to help those students improve their reading achievement.

The overarching goal of this research review is to update the STAR community on evidence-based reading research that may inform the STAR training or practitioners’ instructional approaches. This thematic synthesis reviews selected studies on comprehension development. One set of studies focused on foundational reading skills, such as decoding, vocabulary, and morphology, which are crucial for basic or functional reading comprehension. Another set of studies stressed the importance of developing higher-order comprehension skills necessary to becoming a proficient academic reader. This is achieved by having students engage in complex literacy tasks or by providing support while monitoring their engagement and well-being.

This research review provides an overview of recent research conducted in each of these areas, enriching STAR’s evidence-based reading practices and contributing to a richer framework in support of adult literacy development.

#### **Research Approach**

The researchers conducted a review of EBRI articles and other scholarly documents on adult literacy that were published between June 2023 and January 2024. The search utilized terms including “adult literacy” and/or “adult foundational education,” along with “reading” and/or “literacy” in the Academic Search Premier database from the Elton B. Stephens Co (EBSCO) Information Services website. Also, the authors searched Google Scholar to identify preprints, abstracts, and unpublished dissertations/theses. Finally, they contacted several experts

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affiliated with the U.S. Department of Education’s Collaborative Research for Educating Adults with Technology Enhancements (CREATE) Adult Skills Network, resulting in the discovery of additional papers and reports.

These combined efforts yielded 3,266 papers, of which 12 were identified as relevant to STAR training or practitioners’ instructional practices. Seven of these are focused on comprehension development and included here.

The authors found that several articles recently published have enriched a robust framework of adult reading literacy development. Collectively, they address how research is filling in gaps in a broad framework of adult reading literacy development.

## **Review of Recent Comprehension Development Research**

### ***Foundational Reading Skills***

Foundational reading skills are those language and literacy skills, knowledge, processes, or strategies that support comprehension but in isolation would not be considered comprehension. For example, phonological decoding is a reading skill that is used to pronounce unfamiliar printed words by matching spelling to sounds (the phonology aspect). Although it does not directly equate to the comprehension of a text, it is a necessary step in the reading process that leads to comprehension. The four pillars of STAR training—alphabeticity, fluency, vocabulary, and comprehension—can also be viewed as foundational in the sense that each of these foundational skills in isolation would not constitute reading comprehension.

### ***Alphabeticity***

Several articles recently published have contributed to our understanding of the intricate relationships between alphabeticity (traditionally discussed in terms of phonemic awareness and phonological decoding) and vocabulary. These studies also introduced morphology, which explores how word parts (morphemes, such as prefixes and suffixes) combine to produce new words and meanings.

Beginning with the process of decoding, specifically for adults in the early stages of learning English, Woods et al. (2023) examined the efficacy of a gamified app, *Codex: The Lost Words of Atlantis*, on the decoding skills of multilingual adult learners. The app, developed as part of the Barbara Bush XPrize competition, includes practice in foundational reading skills (phonics, word recognition, phonological decoding) in a gamified adventure format. This single-subject study monitored the progress of eight learners across 8 weeks of app use. They found positive effects on word reading measures and on comprehension scores on the Comprehensive Adult Student Assessment Systems (CASAS). This was a proof of concept of the viability of the app and its

potential for improving adult learner skills. The authors wrote that they hope to pursue this further with a more comprehensive study.

#### Alphabetics Resources

Woods, D. M., Gifford, D. B., Yovanoff, P., & Sandoval, A. (2023). The effects of an adult literacy app on word decoding. *Adult Literacy Education, 5*(3), 22–39.

<http://doi.org/10.35847/DWoods.DGifford.PYovanoff.ASandoval.5.3.22>

### Vocabulary

Next, the researchers examined articles that delve more deeply into vocabulary, specifically ones focused on vocabulary depth versus breadth. In simple terms, breadth refers to the number of words one knows, while depth encompasses many aspects. One aspect of depth is polysemy, which refers to words with multiple meanings. Gonzalez et al. (2023) studied vocabulary depth by examining how adults decode lexically ambiguous words. By “lexically ambiguous,” they meant words with at least two different meanings, either balanced, where both meanings are equally common, or biased, where one meaning is predominant. (For example, the word “ball” is biased because its association with “bat” is more common than with “dance.”) During reading, the surrounding context around the word helps clarify which meaning is relevant in that usage. If that context appears before the word is encountered in the text, it might be easier to reach the appropriate meaning than if the context follows the word. On the other hand, an individual might be familiar with a word’s more common meaning but not secondary, less common meanings. This aspect of the English language offers an opportunity to study how individuals determine meaning by manipulating the context before and after a target vocabulary term, determining which sense of the word is appropriate in that context, especially with words that have multiple balanced or biased meanings.

To study the way adult readers process these different vocabulary depth conditions, eye-tracking technology was employed to monitor the trajectory of eye movements and the time spent reading the word and its contexts. The findings revealed that adults with better knowledge of vocabulary depth were more sensitive to the complexity of ambiguous words and were more effective at using contextual cues. In practice, this suggests that vocabulary instruction should address the complexities of multiple word meanings and the effective use of context to determine the correct meaning. In other words, instruction should stress flexibility in learning the multiple meanings of words and promote frequent reading to expand both the breadth and depth of vocabulary.

Schmidt (2023) conducted a review of online resources focusing on Tier 2 vocabulary words. The concept of vocabulary tiers originates from the seminal work of Beck et al. (2002).<sup>1</sup> These researchers posited that there exists a set of vocabulary terms (Tier 1) that are highly frequent in texts, well-known by most language speakers, and versatile in their usage. Additionally, there is a second tier of words (Tier 2) that are general purpose but more frequently employed in academic or educational settings or by more mature language users. Schmidt provided a simple explanation of Tier 2 words as academic vocabulary words that cut across multiple content areas. Examples of Tier 2 words are “theory,” “analyze,” “verify,” and “argument.” Determining Tier 1 and Tier 2 words often varies depending on the audience and grade level. Finally, there are Tier 3 words that are either uncommon or have very specific meanings, often related to a specific topic or domain, such as “microorganism” or “neutron.” While Beck et al. never established specific criteria for categorizing words into tiers, the general concept has proven valuable for both research and in considering approaches to vocabulary instruction.

Schmidt provided a detailed description of resources for vocabulary tiers and how they align with the empirical research literature. He also provided some additional recommended instructional uses.

#### Vocabulary Resources

Gonzalez, A. S., Tremblay, K. A., & Binder, K. S. (2023). Context facilitates the decoding of lexically ambiguous words for adult literacy learners. *Reading and Writing: An Interdisciplinary Journal*, 36, 699–722.

<https://doi.org/10.1007/s11145-022-10315-0>

Schmidt, S. J. (2023). Review of tier 2 vocabulary websites. *Adult Literacy Education*, 5(3), 68–72.

<https://doi.org/10.35847/SSchmidt.5.3.68>

### Morphology

Finally, we move to another aspect of vocabulary or lexical processing: morphology. A morpheme represents the smallest unit of meaning in a word (such as a prefix or suffix). There are two primary classes of morphemes. The first type, inflectional morphemes, influences grammatical meaning, such as -s and -es for creating plural forms, -ed for creating past tense, and -ing for converting a verb into a gerund, among other things. The second type of morpheme, called derivational morphemes, encompasses prefixes, suffixes, and their bases. They allow for various meaningful and syntactic transformations of words. In recent years, research into morphology has been expanding and accelerating, linking it to multisyllabic decoding, word acquisition, writing, and other literacy-related processes.

<sup>1</sup> For more information, see Beck, I. L., McKeown, M. G., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction*. Guilford Press.

In the study reviewed for this research review, Kaldes and Tighe (2023) evaluated a specific morphology measure used in the research across various populations. The goal was to determine its validity for adults learning to read and to investigate its correlation with vocabulary and comprehension. The intricacy of the task in this measure concerns whether the addition of a morpheme substantially changes the pronunciation of the word. For example, adding *un-* to *happy* does not require a shift in the pronunciation, while changing *decide* into *decision* impacts the stress pattern and vowel sound. The researchers concluded that both items, with and without phonological changes, were appropriately used in the measure. Additionally, items with phonological changes were predictive of other vocabulary and comprehension measures. For practice, it is important to assist adult learners in recognizing and understanding the phonological shifts they may encounter when learning morphological word families. More broadly, teaching about morphology should be integrated as part of a comprehensive set of reading strategies.

#### Morphology Resources

Kaldes, G., & Tighe, E. L. (2023). Evaluating the structural and predictive validity of a derivational morphology task with struggling adult readers. *Reading and Writing: An Interdisciplinary Journal*. Advance online publication. <https://doi.org/10.1007/s11145-023-10462-y>

## Higher-Order Comprehension Skills Necessary to Becoming a Proficient Academic Reader

### *Scenario-Based Assessments*

Most reading comprehension tests are structured around single, distinct passages accompanied by discrete, independent questions. Studies show that this structure sometimes reflects real life, but not often. Adult literacy practices (and likely those of children too) often involve multiple texts written by authors with diverse perspectives across distinct genres that include web and internet sources. These various literacy sources include visuo-graphic or multimodal representations. They vary in credibility, necessitating readers to apply a diverse set of skills to integrate, corroborate, and resolve conflicting information. Furthermore, all the above processes must be conditioned on the reader's purpose for reading and prior knowledge. Recent advancements in testing, specifically scenario-based assessments (SBAs), attempt to incorporate these complex, modern literacy operations into an assessment (O'Reilly & Sabatini, 2013).<sup>2</sup>

<sup>2</sup> For more information related to SBAs and their inclusion in adult learning assessment, see O'Reilly, T., & Sabatini, J. (2013). Reading for understanding: How performance moderators and scenarios impact assessment design. *Educational Testing Service*, 2, i-47. <https://doi.org/10.1002/j.2333-8504.2013.tb02338.x>

One might think that struggling readers could never handle all this complexity, but this is not entirely accurate. All levels of readers can at least attempt to do so as long as the tasks are appropriately contextualized and scaffolded (Sabatini et al., 2020).<sup>3</sup> Adults are problem solvers, and armed with a purpose for reading, appropriate prior background knowledge, motivation, and some reading strategies, they can navigate complex literacy tasks to some degree.

In an article by Lampi et al. (2023), the researchers evaluated whether the connection of foundational skills (decoding, vocabulary, morphology, basic passage comprehension) and complex literacy skills (as measured by an SBA literacy task set that reflects many of the elements described at the opening of this section) are predictive of course performance and early college grade point average (GPA) of students enrolled in support classes. The authors hypothesized that more complex SBA tasks may be a better approximation of the kind of course demands facing community college students and others in postsecondary academic settings. The study did find that foundational literacy skills were predictive of complex SBA literacy task performance, as found in previous studies (e.g., Feller et al., 2020).<sup>4</sup> However, the researchers also discovered that foundational literacy skills were not predictive of course performance once complex literacy skills were included, which provides evidence that SBA performance is itself a better predictor of college-level academic performance and of early college success as measured by GPA over three semesters. The authors concluded that cognitively oriented reading tasks that emphasize the problem-solving nature of reading are crucial for college students enrolled in support classes. They inferred that embedding reading and strategy instruction directly into courses is beneficial whenever diagnostic measures identify skill gaps, whether the gaps are in foundational or higher order skills.

#### Scenario-Based Assessments Resources

Lampi, J. P., Armstrong, S. L., Talwar, A., & Magliano, J. P. (2023). Reading matters in supporting students: The role of complex literacy tasks in academic success. *Journal of College Student Retention: Research, Theory & Practice*. <https://doi.org/10.1177/15210251231214557>

<sup>3</sup> To learn more about contextualizing and scaffolding SBAs for all readers, see Sabatini, J., O'Reilly, T., Weeks, J., & Wang, Z. (2020). Engineering a twenty-first century reading comprehension assessment system utilizing scenario-based assessment techniques. *International Journal of Testing*, 20(1), 1–23. <https://doi.org/10.1080/15305058.2018.1551224>

<sup>4</sup> For an example of another previous study examining the predictive power of foundational literacy skills, see Feller, D. P., Magliano, J., Sabatini, J., O'Reilly, T., & Kopatich, R. D. (2020). Relations between component reading skills, inferences, and comprehension performance in community college readers. *Discourse Processes*, 57(5-6), 473–490. <https://doi.org/10.1080/0163853X.2020.1759175>

## Motivation and Awareness

Modern theories of reading are evolving beyond traditional concepts of knowledge, skills, and strategies to also recognize the importance of motivation, engagement, and task awareness, which includes purpose-driven reading combined with metacognitive awareness/control (e.g., Magliano et al., 2018).<sup>5</sup> In the area of strategies, there is a growing emphasis on nuanced exploration, such as examining the propensity to use specific strategies in particular text situations.

A study by Kaldes et al. (2024) delved into these complexities. The researchers examined whether reading strategies, task awareness, and motivation could predict performance in the same complex SBA literacy tasks as the previous study reviewed. They compared college students with and without reading difficulties. As noted previously, foundational reading skills, such as decoding and vocabulary, did predict SBA task performance. However, task awareness, motivation, and elaborative inferencing strategies all predicted literacy performance beyond foundational reading skills.

The researchers also examined how a reading strategy course impacted the relationship among these skills. They found that the predictive power of foundational skills decreased after completing a reading strategies course. In contrast, the propensity to use elaborative inference strategies increased in predictive significance. Elaborative inferences are a type of inferencing where one thinks about a text element as it relates to one's personal experience, knowledge, or ideas.

Another finding concerned the importance of these different factors in relation to whether students were enrolled in support courses. The authors found that motivation was a more important predictor of literacy performance for students enrolled in support classes than for those who were not. Further, the propensity to use elaborative inferencing was a more important predictor of literacy performance for students who were not enrolled in support classes than those who were.

### Motivation and Awareness Resources

Kaldes, G., Higgs, K., Lampi, J., Santuzzi, A., Tonks, S. M., O'Reilly, T., Sabatini, J. P., & Magliano, J. P. (2024). Testing the model of a proficient academic reader (PAR) in a postsecondary context. *Reading and Writing: An Interdisciplinary Journal*. <https://doi.org/10.1007/s11145-023-10500-9>

<sup>5</sup> For more information about reading theories including motivation and other nontraditional components of learning, see Magliano, J. P., McCrudden, M. T., Rouet, J.-F., & Sabatini, J. (2018). The modern reader: Should changes to how we read affect research and theory? In M. F. Schober, D. N. Rapp, & M. A. Britt (Eds.), *The Routledge handbook of discourse processes* (2nd ed., pp. 343–361). Routledge/Taylor & Francis Group. <https://doi.org/10.4324/9781315687384-18>