

## Introduction

Recent reading trends show that only about 30% of adolescent students are at or above proficiency in their reading levels (NAEP Reading: Reading Results, 2022). Adolescent literacy is often less explored in current studies, leaving a gap in understanding of adolescent ability to efficiently process the types of words that they are expected to read at their grade level. This study looks at the impact of student reading skills in determining the difficulty of a word based on its complexity. Complex words can be divided into two subcategories: monomorphemic and polymorphemic. “Bound-only” complex words are polymorphemic words that contain a meaningful stem at the core of their meaning that cannot itself stand alone as a word (Dozier, 2025). The leading question of our research investigates if the status of a word as a bound-only complex word is a significant predictor of whether or not that word will be read correctly when controlling for frequency, transparency, and context diversity. We expect a word's status as a bound-only word to predict that a student is less likely to read that word correctly. Understanding adolescent literacy characteristics could lead to advances in curriculum development and better development of preventative plans for students at risk for low reading achievement.

## Methods

- We are conducting research on a sample of 75 assenting students aged 11-14 at a middle school in the southeastern United States.
- Students are being administered seven tests measuring various skills related to reading, such as overall word reading skills, rapid automatized naming, and vocabulary.
- Measuring variability on side of child and on side of word.
- Word selection created from database evaluation and T-testing to find no significant differences in factors like frequency and transparency between words. The only difference in words is whether or not they are bound-only.
- Data from all tests will be analyzed using the lme4 package in the statistical software, R (Bates, et al., 2015)
- With this package, variance will be calculated based on an unconditional model in which polymorphemic word reading is treated as the outcome of a model containing both child and word features
- We will measure how much individual differences amongst both adolescents and words contribute to the likelihood of an individual correctly reading a particular complex word.
- Analysis will take place using a Hierarchical Linear Model as visualized in the figure below.

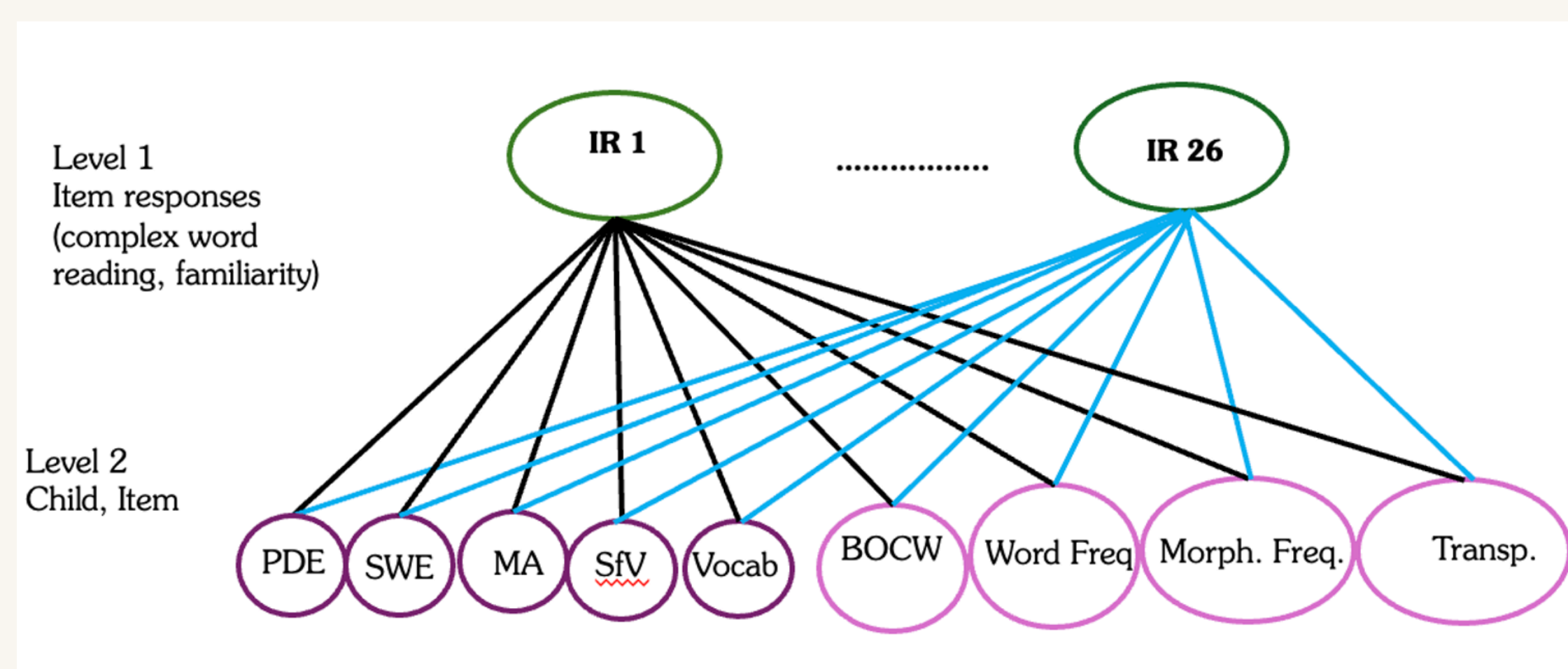
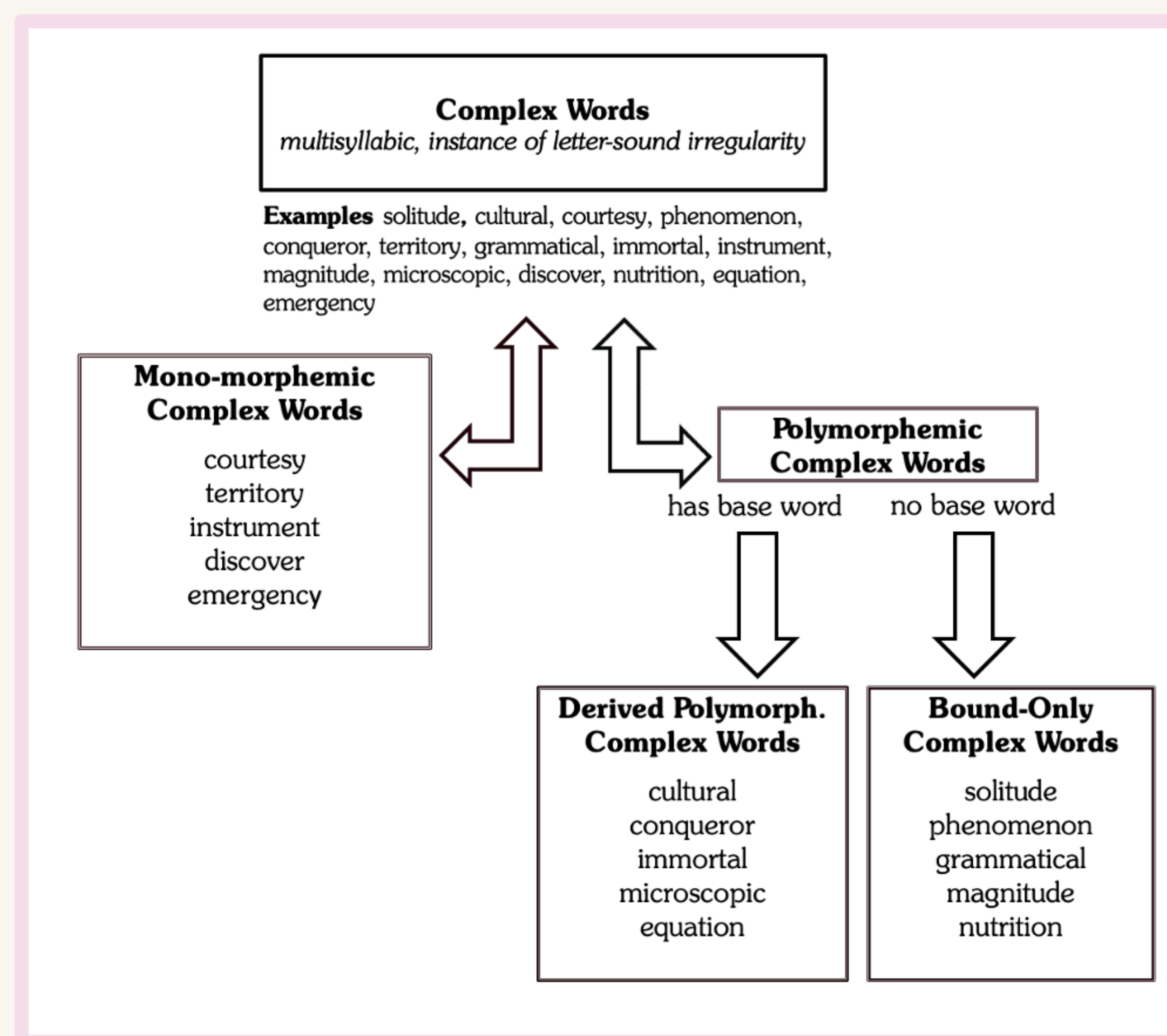


Figure 1. Visualization of model between child characteristics and word features. (Dozier et al., 2025)



Bound-Only Complex Words (Dozier, 2025)

Word	SFI	Transparency	Stem	Stem Freq.	BOCW
academic	9.78	1.76	academ	4.526	1
velocity	8.874	2.2	veloc	3.914	1
infernal	8.04	2.385	infern	3.764	1
quantify	6.742	3.043	quant	4.324	1
statistic	7.447	2	stat	4.880	1
fundamental	9.388	2.285	fundament	4.318	1
quantitative	7.501	2.654	quant	4.324	1
chromatic	6.821	2.93	chrome	4.168	1
binocular	5.624	3.069	ocul	3.168	1
vertebrate	5.908	3.852	vertebr	3.087	1
diplomacy	8.135	3.214	diploma	4.032	1
ambiguous	7.839	3.407	ambigu	3.694	1
fungal	7.365	1.679	fung	3.582	1
anonymous	11.008	3.923	nym	4.861	1
nutrition	8.482	2.69	nutri	4.061	1
cultural	9.864	2	culture	4.904	0
election	9.03	2.346	elect	3.865	0
residency	8.168	2.385	reside	4.571	0
consequential	6.075	3.957	consequence	4.189	0
enduring	7.217	2.231	endure	5.259	0
membership	9.858	2.292	member	5.214	0
innovative	8.902	2.111	innovate	4.126	0
abdominal	6.745	2.571	abdomen	3.33	0
magnetism	5.869	3.069	magnet	4.317	0
conqueror	5.9	3.833	fertilize	3.828	0
superiority	8.009	3.077	superior	4.365	0
scavenger	7.885	3.091	scavenge	3.680	0
sanity	7.988	1.75	sane	4.234	0
sufficient	9.6	3.5	suffice	3.568	0
agriculture	8.606	2.19	culture	4.905	0

Table 1. Bound-Only Complex Words Selection (Dozier, 2025)

## Results

- This study is still ongoing; however, we are mid-way through our data collection.
- We have conducted brief data analysis on 17 students' responses using a coding language, “R”.

	Polysyllabic Word Reading	MA Composite	VOC	RAN	SFV	SWE	PDE
Polysyllabic Word Reading		0.33***	0.18***	-0.2***	0.63***	0.47***	0.39***
MA Composite	0.33***		0.09	0.39***	0.34***	-0.06	-0.02
VOC	0.18***	0.09		-0.05	0.31***	0.39***	0.33***
RAN	-0.2***	0.39***	-0.05		0.05	-0.5***	-0.27***
SFV	0.63***	0.34***	0.31***	0.05		0.32***	0.47***
SWE	0.47***	-0.06	0.39***	-0.5***	0.32***		0.6***
PDE	0.39***	-0.02	0.33***	-0.27***	0.47***	0.6***	

Table 2 (Dozier, 2026)

- \*\*\* Indicate a p-value of > .001
- Table demonstrates correlations between the evaluated measures.

## Discussion

- This study focuses on the morphemic makeup of words, with three driving questions:
  - 1) Does bound-only status predict reading accuracy for polymorphemic complex words?
    - We hypothesized that bound-only complex words will have a negative influence on polymorphemic complex word reading.
  - 2) Is there an interaction with word-level familiarity in the relationship with child-level skills and bound only status?
    - We hypothesized that familiarity has a significant interaction with polymorphemic words regardless of bound-only status.
  - 3) Is there a difference in frequency effect at the morpheme level between bound-only complex words compared to other polymorphemic complex words?
    - Our hypothesis was that frequency at the morpheme level will have a positive association for both base words and root words.

As this study is still ongoing, it is too early in data collection to claim if any hypotheses have been supported. However, we have observed our MA Composite test has the highest correlation to polysyllabic word reading response. Measures with lower correlations such as PDE may be influenced by a larger sample size as our data collection continues. Future studies could further close the gap in research of adolescent literacy by continuing a focus on polymorphemic complex words and child-level skills. These results would contribute to a growing body of knowledge surrounding development of teaching strategies and the relationship between adolescent children and complex word literacy.

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