Examining the Initial Validity and Utility of Acadience Spelling

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Technical Brief No. 34

acadience® reading k–6

Suggested Citation:

Powell-Smith, K. A. & Warnock, A. N. (2022). *Examining the initial validity and utility of Acadience Spelling* (Technical Brief No. 34). Acadience Learning Inc. www.acadiencelearning.org

Examining the Initial Validity and Utility of Acadience Spelling

Spelling assessment may provide critical information helpful in screening for reading difficulties and for instructional planning. Difficulties with spelling have been linked to dyslexia (Lohvansuu et al., 2021; O'Brien et al, 2011). For example, adults with dyslexia reportedly have persistent problems with spelling (Bruck, 1993). Evidence for the predictive utility of spelling measures also exists (see Clemens et al., 2013). In particular, the assessment of spelling in the early stages of reading development (e.g., kindergarten) may provide information about student application of phonemic awareness and alphabetic principle skills to reading and reading-related tasks (Clemens et al., 2013).

General outcome measures of spelling have a history of strong technical adequacy and, in general, meet or exceed the reliability and validity criteria for screening decisions. Findings from several research studies conducted on general outcome measures of spelling suggest strong validity (see Deno et al., 1980; Marston, 1982), as well as high reliability (see Marston, 1982; Shinn, 1981; and Tindal et al., 1983).

Purpose and Research Questions

The purpose of this study was to evaluate the utility of a new measure of spelling, Acadience Spelling, for use in kindergarten and first grade. Along with descriptive statistics and distributions of Acadience Spelling scores, the concurrent and predictive validity of Acadience Spelling with Acadience Reading K–6 measures was examined. The utility of both Acadience Spelling scoring metrics, Correct Spelling Sequences (CSS) and Correctly Spelled Words (CSW), were analyzed. The research questions were:

1. What are the descriptive statistics and distributions of Acadience Spelling CSS and CSW scores at each grade and time of year?
2. What is the relationship between performance on Acadience Spelling and Acadience Reading measures?

Method

Participants

Data used for this research consisted of Acadience Spelling and Acadience Reading scores for students in grades K–2 collected and entered into Acadience Data Management (ADM; www.acadiencelearning.net) by school personnel during the 2018–2019, 2019–2020, 2020–2021, and 2021–2022 school years. End-of-year data from 2020–2021 were unavailable and only beginning-of-year and partial middle-of-year scores from 2021–2022 were available at the time of data export.

Students' data were selected for inclusion based on two criteria. All Acadience Spelling and available Acadience Reading scores for students who were assessed with Acadience Spelling were included (n = 360). Additionally, the Acadience Reading scores of students who did not have Acadience Spelling scores entered during the above timeframe but who attended a school that administered Acadience Spelling at one of the analyzed time points were included (n = 1,540).

Table 1

Available Demographic Information of Participating Schools by Locale

Locale	Number of Schools	Student: Teacher Ratio	FRL Eligible	Female	American Indian/ Alaska Native	Asian/ Native Hawaiian/ Pacific Islander	Hispanic/ Latino	Black	White	Multiracial
City: Large	1	18.60	–	53%	0%	1%	3%	1%	91%	3%
City: Mid-size	8	14.93	7%	47%	<1%	21%	6%	4%	64%	5%
City: Small	1	8.67	–	46%	0%	0%	0%	12%	88%	0%
Suburb: Large	15	14.35	29%	50%	<1%	4%	11%	5%	76%	4%
Town: Distant	2	14.57	18%	47%	<1%	10%	7%	9%	68%	6%
Rural: Fringe	6	14.17	21%	49%	1%	9%	4%	2%	79%	5%
Rural: Distant	2	9.17	48%	49%	0%	1%	10%	0%	85%	4%
All	35	14.13	21%	49%	<1%	10%	8%	4%	73%	4%

Note. Demographic data aggregated at the school level by the U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (NCES) in 2017–2018 (private schools) and 2019–2020 (public schools) (Broughman et al., 2019; Chen, 2021). NCES data were available for 35 of the 37 schools that participated in this research. Of those 35 schools, four were private and 31 were public. FRL Eligible represents students who were eligible for free/reduced-price lunch. This information is only reported by public schools and was available for all 31 public schools. Dashes indicate unavailable FRL information. FRL percentages were calculated from total student enrollment as reported by NCES across public and private schools.

These data were gathered from 37 schools in 10 districts in 10 states, representing all four census regions of the United States. Thirty-two schools were public and five were private. Demographic information aggregated at the school level from the Institute of Education Sciences' National Center for Education Statistics (NCES) was available for 35 of the schools (Broughman et al., 2019; Chen, 2021). This information is summarized by locale in Table 1.

Twenty-one percent of students were reported as qualifying for free or reduced-price lunch. The average student to teacher ratio was 14. Across all schools, approximately half the student population (49%) was reported as female. Less than 1% of students were reported as American Indian or Alaska Native; 10% as Asian, Native Hawaiian, or Pacific Islander; 8% as Hispanic or Latino; 4% as Black; 73% as White; and 4% as multiracial.

Measures

Acadience Spelling

Acadience Spelling is a new assessment of spelling skills developed by researchers at Acadience Learning. It has been available since the 2018–2019 school year as a free, optional assessment for any schools or districts that would like to use it. Acadience Spelling is designed based on the principles of General Outcome Measurement and provides a broad indication of a student's level of general spelling skills compared to other students and whether or not the student is progressing sufficiently in spelling.

Acadience Spelling is administered at the middle and end of kindergarten and the beginning, middle, and end of first grade. The words that appear on the forms are a random stratified sample selected from a broad pool of grade-specific words. Each form contains a unique set of words. There are 10 words on kindergarten forms and 12 words on first-grade forms. During administration, the assessor reads each word aloud individually and embedded in a sentence. Students have a limited amount of time to spell each word on a response sheet before the next word is given (12 seconds in kindergarten, 10 seconds in first grade). The assessor provides all words on the form within 2 minutes.

Two scores are calculated for Acadience Spelling. Similar to traditional spelling tests, one of the scores for the measure is the total number of Correctly Spelled Words (CSW). A word is scored as a CSW if the entire word is spelled correctly. Additionally, the number of Correct Spelling Sequences (CSS) is calculated to provide partial credit for words as students progress to becoming good spellers. A CSS is a pair of letters or spaces correctly sequenced within a word, including implied spaces at the beginning and end of the word.

Samples of Acadience Spelling administration forms are shown in Figure 1. Additional information is provided in the *Acadience Spelling Administration & Scoring Guide* (Powell-Smith et al., 2021), available for free download with the assessment materials at www.acadiencelearning.org.

Acadience Reading K–6

Acadience Reading assesses the essential early literacy and reading skills identified by the National Reading Panel (2000) and National Research Council (1998) that every child must master to become a proficient reader. The measures serve as indicators of these essential early literacy and reading skills: phonemic awareness, alphabetic principle and phonics, accurate and fluent reading of connected text,

and reading comprehension. The measures are used for universal screening and progress monitoring in kindergarten through sixth grade, with a focus on early identification and prevention of later reading difficulties.

The Acadience Reading measures collected from the middle of kindergarten through the end of second grade are First Sound Fluency (FSF), Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), Nonsense Word Fluency (NWF), Oral Reading Fluency (ORF), and the Reading Composite Score (RCS). Table 2 provides a summary of when FSF, LNF, PSF, NWF, and ORF were collected and which scores are components of the RCS for each grade and time of year. The RCS was calculated for every grade and time of year. The measures and the RCS are described below.

Figure 1

Samples of Acadience Spelling Assessor Materials

Acadience® Spelling
Word List and Scoring Key
Grade K Middle-of-Year
Form 1

Number	Time	Word and Sentence	Scoring	CSS [cumulative]
1	(start)	**Nap**. Time for a **nap**. **Nap.**	^n^a^p^	4 [4]
2	0:12	**Man**. The **man** had a beard. **Man.**	^m^a^n^	4 [8]
3	0:24	**Make**. I will **make** dinner. **Make.**	^m^a^k^e^	5 [13]
4	0:36	**Cup**. We put milk in a **cup**. **Cup.**	^c^u^p^	4 [17]
5	0:48	**Down**. She sat **down**. **Down.**	^d^o^w^n^	5 [22]
6	1:00	**Dog**. The **dog** barked. **Dog.**	^d^o^g^	4 [26]
7	1:12	**Met**. We **met** yesterday. **Met.**	^m^e^t^	4 [30]
8	1:24	**Tin**. He used a **tin** cup. **Tin.**	^t^i^n^	4 [34]
9	1:36	**Fit**. The shoe doesn't **fit**. **Fit.**	^f^i^t^	4 [38]
10	1:48	**Go**. Let's **go** outside. **Go.**	^g^o^	3 [41]
	2:00	***Stop. Put your pencils down.***		
			Total CSW Possible	10
			Total CSS Possible	41

Acadience® Spelling
Word List and Scoring Key
Grade 1 Beginning-of-Year
Form 1

Number	Time	Word and Sentence	Scoring	CSS [cumulative]
1	(start)	**Do**. We **do** our best. **Do.**	^d^o^	3 [3]
2	0:10	**Nests**. Birds build **nests**. **Nests.**	^n^e^s^t^s^	6 [9]
3	0:20	**Ate**. I **ate** lunch. **Ate.**	^a^t^e^	4 [13]
4	0:30	**Plus**. One **plus** one is two. **Plus.**	^p^l^u^s^	5 [18]
5	0:40	**Sled**. They **sled** on the snow. **Sled.**	^s^l^e^d^	5 [23]
6	0:50	**We**. **We** had fun at camp. **We.**	^w^e^	3 [26]
7	1:00	**Fly**. Birds **fly** in the sky. **Fly.**	^f^l^y^	4 [30]
8	1:10	**Shops**. My dad **shops** for food. **Shops.**	^s^h^o^p^s^	6 [36]
9	1:20	**Pass**. I can **pass** the test. **Pass.**	^p^a^s^s^	5 [41]
10	1:30	**Pond**. Fish are in the **pond**. **Pond.**	^p^o^n^d^	5 [46]
11	1:40	**Mask**. The clown wore a **mask**. **Mask.**	^m^a^s^k^	5 [51]
12	1:50	**Path**. Follow the **path** home. **Path.**	^p^a^t^h^	5 [56]
	2:00	***Stop. Put your pencils down.***		
			Total CSW Possible	12
			Total CSS Possible	56

Letter Naming Fluency (LNF). LNF measures students' accuracy and fluency with letter naming. During administration, the assessor presents a page of uppercase and lowercase letters arranged in random order and asks the student to name the letters. The item pool for LNF includes all letters in the English alphabet, both uppercase and lowercase. As the student reads the letters, the assessor marks letters that are read incorrectly, hesitated on for more than 3 seconds, or skipped. The total score is the number of correct letter names that the student says in 1 minute. If the student cannot name any letters in the first row correctly, the measure is discontinued.

Table 2
Administration Timeline of Acadience Reading K–6 Measures

	Kindergarten		First Grade			Second Grade		
	Mid	End	Beg	Mid	End	Beg	Mid	End
FSF	X[a]	–	–	–	–	–	–	–
LNF	X[a]	X[a]	X[a]	–	–	–	–	–
PSF	X[a]	X[a]	X[a]	–	–	–	–	–
NWF CLS	X[a]	X[a]	X[a]	X[a]	X	X	–	–
NWF WWR	X	X	X	X[a]	X[a]	X[a]	–	–
ORF Words Correct	–	–	–	X[a]	X[a]	X[a]	X[a]	X[a]
ORF Accuracy	–	–	–	X[a]	X[a]	X[a]	X[a]	X[a]
ORF Retell	–	–	–	X	X	X	X[a]	X[a]

Note. Mid = middle of year. End = end of year. Beg = beginning of year. FSF = First Sound Fluency. LNF = Letter Naming Fluency. PSF = Phoneme Segmentation Fluency. NWF CLS = Nonsense Word Fluency Correct Letter Sounds. NWF WWR = Nonsense Word Fluency Whole Words Read. ORF = Oral Reading Fluency. Dashes indicate the measure is not administered at the specified grade and time of year.
[a] Component of the RCS at the specified grade and time of year.

First Sounds Fluency (FSF). FSF is a brief, direct measure of phonemic awareness. It assesses students' fluency in identifying the initial sounds in words. Assessment begins with three practice items. The practice items provide increasing levels of support, including modeling and correction procedures. After the practice activity, the assessor says a series of words one at a time to the student and asks the student to say the first sound in the word. On the scoring page, the assessor circles the corresponding sound or group of sounds the student says. Students receive either 2 points for saying the initial phoneme of a word (e.g., saying the /s/ sound as the first sound in the word street) or 1 point for saying the initial consonant blend (e.g., /st/, /str/ in street), consonant plus vowel (e.g., /si/ in sit), or consonant blend plus vowel (e.g., /strea/ in street). A response is scored as correct as long as the student provides any of the correct responses listed for the word. Incorrect responses or no response within 3 seconds do not receive points. The total score is the sum of correct 1- and 2-point responses the student says in 1 minute. If the student receives 0 points in the first five words, the measure is discontinued.

Phoneme Segmentation Fluency (PSF). PSF is a brief, direct measure of phonemic awareness. The measure assesses the student's fluency in segmenting a spoken word into its component parts or sound segments. Assessment begins with a practice activity. The practice items provide increasing levels of support, including modeling and correction procedures. After the practice activity, the assessor presents a series of words one at a time and asks the student to say all the sounds in the word. The assessor underlines each correct sound segment of the word that the student says. A correct sound segment is any different, correct part of the word the student says. For example, if the assessor says the word fish and the student says /f/ /i/ /sh/, the student has completely and correctly segmented the

word into its component sounds and the score is 3 correct sound segments. If the student says /f/ /ish/, the score is 2 correct sound segments. Partial credit is given for partial segmentation. Incorrect sound segments, omitted sounds, or sounds hesitated on for more than 3 seconds do not receive points. The total score is the number of correct sound segments that the student says in 1 minute. If the student is unable to produce any correct segments in the first five words, the measure is discontinued.

Nonsense Word Fluency (NWF). NWF is a brief, direct measure of the alphabetic principle and basic phonics. It assesses knowledge of basic letter-sound correspondences and the ability to blend letter sounds into consonant-vowel-consonant (CVC) and vowel-consonant (VC) words. The test items used for NWF are phonetically regular make-believe (nonsense or pseudo) words. Following a modeling and practice activity, the student is presented with a sheet of randomly ordered CVC and VC nonsense words (e.g., dif, ik, nop). Standardized directions are used to ask the student to read the make-believe words the best they can, reading either the whole word or saying any sounds they know. For example, if the stimulus word is tof, the student could say /t/ /o/ /f/ or "tof." The assessor underlines each correct letter sound produced either in isolation or blended together. Whole words read without sounding out are underlined in their entirety. Two scores are reported for NWF. Correct Letter Sounds (CLS) is the number of letter sounds produced correctly in 1 minute. For example, if the student reads dif as /d/ /i/ /f/ the score for Correct Letter Sounds is 3. If the student reads dif as /di/ /f/ or "dif," the score is also 3. Whole Words Read (WWR) is the number of make-believe words read correctly as a whole word, one time and only one time, without first being sounded out. For example, if the student reads dif as "dif," the score is 3 points for CLS and 1 point for WWR, but if the student reads dif as "/d/ /i/ /f/ dif," the score is 3 points for CLS but 0 points for WWR. The final scores are the number of CLS and WWR provided by the student in 1 minute. If the student is unable to produce any correct letter sounds in the first row, the measure is discontinued.

Oral Reading Fluency (ORF). ORF is a measure of advanced phonics and word attack skills, accurate and fluent reading of connected text, and reading comprehension. The Acadience Reading ORF passages and procedures are based on the program of research and development of Curriculum-Based Measurement of reading by Stan Deno and colleagues at the University of Minnesota (e.g., Deno, 1989).

There are two parts to ORF: (a) orally reading the passage and (b) retelling the passage. For the oral reading part, students are given an unfamiliar, grade-level passage of text and asked to read for 1 minute. Errors such as substitutions, omissions, and hesitations for more than 3 seconds are marked while listening to the student read aloud. For benchmark assessment, students are asked to read three different grade-level passages for 1 minute each. The score is the median number of words read correctly and the median number of errors across the three passages.

The passage Retell part of ORF follows the oral reading of each passage. Retell is intended to provide a comprehension check for the ORF assessment and provides an indication that the student is reading for meaning. During Retell, the student is asked to tell as much as they can about the passage that was read. The assessor indicates the number of words in the Retell that are related to the passage by drawing through a box of numbers. Following a hesitation of 3 seconds, students are prompted

to tell as much as they can about the passage. If the student hesitates again for 5 seconds, or if the student is clearly responding for 5 seconds in a way that is not relevant to the passage, the task is discontinued. The assessor must make a judgment about the relevance of the Retell to the passage. After administering Retell, the assessor uses a Quality of Response Rubric to rate the quality of the student's response. The rating is based on how well the student retold the portion of the passage that the student read.

Reading Composite Score (RCS). The RCS is a combination of multiple Acadience Reading scores (i.e., the measures given at a specified grade level and time of year) and provides the best overall estimate of students' early literacy skills and/or reading proficiency. The formulas for calculating the RCS are available in the *Acadience Reading Benchmarks and Composite Score* document (Acadience Learning, 2021), available at www.acadiencelearning.org.

Analyses

Descriptive statistics were calculated for the Acadience Spelling CSS and CSW scores and Acadience Reading measures for each grade and time of year. To evaluate for potential restriction of range in reading skills of students assessed with Acadience Spelling, descriptive statistics of the RCS were calculated and compared for students assessed with Acadience Spelling and students attending the same schools at the same grade and time of year who were not assessed with Acadience Spelling.

To examine the relationship between performance on Acadience Spelling and Acadience Reading, correlations between scores from the two assessments were calculated. Concurrent and predictive validity was evaluated between the Acadience Spelling CSS and CSW scores and Acadience Reading scores (FSF, LNF, PSF, NWF, ORF, RCS). Correlations were based on participants with complete pairwise data.

Results

Descriptive Statistics

Descriptive statistics for Acadience Spelling CSS and CSW by grade and time of year are presented in Table 3. As would be anticipated, mean CSS scores were much higher than mean CSW scores at every grade and time of year. Overall, scores increased across grades and time points. Sample sizes for the end of kindergarten and end of first grade were very small (n = 10–17) because little data collection occurred at the end of the 2019–2020 school year due to the COVID-19 pandemic. Descriptive statistics for the RCS by grade, time of year, and status of assessment with Acadience Spelling are presented in Table 4. With the exception of the middle of kindergarten, students attending schools where Acadience Spelling was administered but who were not assessed with the measures had higher average RCS than students who were screened with Acadience Spelling. Overall, students in both groups (i.e., assessed with Spelling and not assessed with Spelling) were high performing. The majority of mean RCS were in the At or Above Benchmark and Above Benchmark ranges. The exceptions were first-grade and kindergarten students assessed with Spelling at the end of the year. However, sample sizes were small for these groups of students (n = 17 and n = 9, respectively). The descriptive statistics for individual Acadience Reading measures of students who were assessed with

Spelling are shown in Table 5. Most average scores were in the At or Above and Above Benchmark ranges. The exceptions were again in end-of-year kindergarten and first grade, where sample sizes were much smaller (n = 17 and n = 9, respectively) than other grades and times of year.

Distributions of Acadience Spelling CSS and CSW

The distributions of Acadience Spelling CSS by grade and time of year are reported in Figure 2. Due to small sample sizes, distributions are not reported for the end of kindergarten or first grade. The distribution of CSS at the middle of kindergarten displays some negative skew and is rather uniform. At the beginning of first grade, the distribution of CSS displays a slight negative skew and is bimodal, with the highest peak in scores around 35 and a smaller mode between 0 and 10. The distribution of CSS at the middle of first grade is unimodal and moderately negatively skewed. There do not appear to be strong floor effects for CSS at any of the evaluated time points.

The distributions for Acadience Reading CSW by grade and time of year are presented in Figure 3. As with Figure 2, distributions are not reported for the end of kindergarten or first grade due to inadequate sample size. The distribution of CSW at the middle of kindergarten is rather uniform, with the majority of students scoring fewer than 8 points. Twenty-two students (17%) received a score of 0 points. At the beginning of first grade, the distribution of CSW is unimodal and positively skewed. Twenty-three students (12%) received a score of 0 points. The distribution of CSW at the middle of first grade is unimodal and approximately symmetrical. Eight students (7%) received a score of 0 points. See the Appendix for a table of frequencies and percentages associated with each possible CSW score at the middle of kindergarten and beginning and middle of first grade.

Predictive and Concurrent Validity of Acadience Spelling

Results of the concurrent and predictive correlational analyses between Acadience Spelling and Acadience Reading are reported in Tables 6 and 7. Due to very small sample sizes (n = 1–17) and in some instances, no available data, concurrent validity was not calculated for the end of kindergarten or end of first grade and predictive validity was not calculated for (a) middle to end of kindergarten, (b) end of kindergarten to beginning or middle of first grade, (c) end of first grade to beginning of second grade, and (d) end of first grade to middle of second grade. When describing the validity coefficients, we used descriptors from Hopkins (2002).

Nearly all concurrent correlations between the Acadience Spelling CSS and CSW scores and Acadience Reading scores were statistically significant. In the middle of kindergarten, most coefficients were in the moderate-strong range and were higher for CSS compared to CSW. The correlations between CSS and CSW and NWF WWR were low, .23 and .20, respectively, indicating a weak relationship in the middle of kindergarten. Both of the Acadience Spelling scores were most strongly correlated with the RCS. At the beginning of first grade, most correlations were in the moderate to moderate-strong range. The weakest correlation, .14, was between CSW and PSF at the beginning of first grade and was not significant. The correlation between CSS and PSF, .34, was moderate in strength. Correlations between both Acadience Spelling scores and LNF were also in the

moderate range. The correlations between CSS and NWF CLS and NWF WWR were .43 and .39, respectively, indicating a moderate association between the measures. Correlations between CSW and NWF were in the moderate-strong to strong range, .71 and .63, indicating a stronger relationship. The correlations between the Acadience Spelling scores and the RCS, .55 and .65, were in the moderate-strong range. The relationship between the RCS and both NWF scores was greater with CSW than CSS. At the middle of first grade, correlations between Acadience Spelling and NWF, ORF, and the RCS ranged from .51 to .66, indicating moderate-strong relationships between the measures. Across all of the component Acadience Reading measures at the middle of first grade, correlations were higher for CSW than CSS, indicating a stronger relationship.

All predictive correlations between the Acadience Spelling and Acadience Reading measures were statistically significant. Overall, the highest correlations were between Acadience Spelling scores and the RCS. Correlations between Acadience Spelling scores at the middle of kindergarten and Acadience Reading scores at the beginning of first grade ranged from .42 to .63, indicating moderate to moderate-strong relationships. From beginning to middle of first grade, correlations ranged from .35 to .71. Correlations between CSS and Acadience Reading were moderate to moderate-strong, while correlations between CSW and Acadience Reading scores were moderate-strong to strong. From beginning to end of first grade, correlations ranged from .49 to .74, and were also overall greater in magnitude for CSW. A similar pattern was observed from middle to end of first grade, where the correlations between Acadience Spelling and Acadience Reading were generally stronger for CSW than CSS. Correlations ranged from .48 to .80, and were mostly in the moderate-strong to strong range. Correlations were lower between Acadience Spelling and NWF compared to ORF and the RCS. From the middle of first grade to beginning of second grade, correlations ranged from .55 to .69 and were somewhat higher for CSW than CSS.

Table 3

Descriptive Statistics of Acadience Spelling Correct Spelling Sequences and Correctly Spelled Words by Grade and Time of Year

	n	*M*	*SD*	Min	Max
Kindergarten Middle of Year					
CSS	130	19.32	10.66	0	37
CSW	130	3.60	2.50	0	8
Kindergarten End of Year					
CSS	17	24.12	11.34	0	36
CSW	17	5.71	3.04	0	9
Grade 1 Beginning of Year					
CSS	197	29.91	11.88	0	54
CSW	196	3.50	2.80	0	11
Grade 1 Middle of Year					
CSS	116	37.08	11.11	0	57
CSW	116	5.27	2.93	0	12
Grade 1 End of Year					
CSS	10	48.30	11.03	23	58
CSW	10	8.10	3.03	3	12

Note. CSS = Correct Spelling Sequences. CSW = Correctly Spelled Words.

Table 4

Descriptive Statistics of the Reading Composite Score by Grade, Time of Year, and Status of Assessment with Acadience Spelling

	Reading Composite Score				
	n	*M*	*SD*	Min	Max
Kindergarten Middle of Year					
Assessed with Spelling	130	154.28	54.53	0	259
Not assessed with Spelling	502	141.68	57.32	5	327
Kindergarten End of Year					
Assessed with Spelling	17	118.29	54.60	1	195
Not assessed with Spelling	76	139.63	50.16	15	276
Grade 1 Beginning of Year					
Assessed with Spelling	196	130.62	37.02	42	258
Not assessed with Spelling	1,107	131.67	47.37	1	278
Grade 1 Middle of Year					
Assessed with Spelling	112	150.98	93.87	1	418
Not assessed with Spelling	341	203.46	103.75	11	453
Grade 1 End of Year					
Assessed with Spelling	9	120.67	61.83	35	191
Not assessed with Spelling	56	178.68	91.82	3	400

Note. "Assessed with Spelling" corresponds to students assessed with Acadience Spelling. "Not assessed with Spelling" corresponds to students attending the same school but who were not assessed with Acadience Spelling at the specified grade and time of year.

Table 5

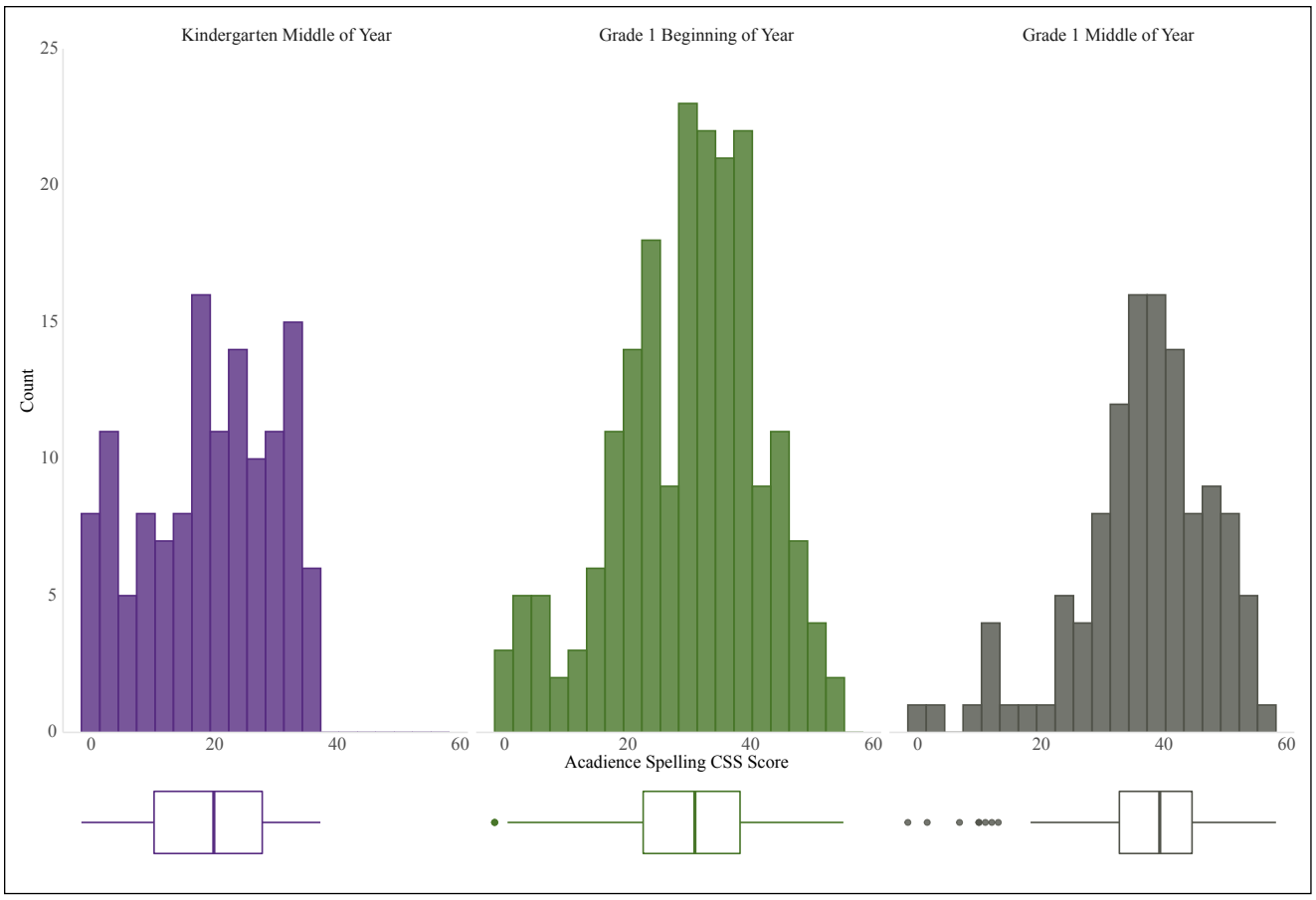
Descriptive Statistics of Acadience Reading K–6 Measures of Students Assessed with Acadience Spelling

	n	*M*	*SD*	Min	Max
Kindergarten Middle of Year					
FSF	130	39.99	14.98	0	60
LNF	130	40.79	16.68	0	83
PSF	130	45.49	18.47	0	75
NWF CLS	130	28.01	13.93	0	74
NWF WWR	129	2.46	4.09	0	26
Kindergarten End of Year					
LNF	17	44.88	22.53	1	80
PSF	17	47.53	22.67	0	73
NWF CLS	17	25.88	13.82	0	60
NWF WWR	16	5.00	5.76	0	19
Grade 1 Beginning of Year					
LNF	196	45.20	13.06	10	91
PSF	197	47.88	13.60	11	75
NWF CLS	197	37.58	23.49	1	143
NWF WWR	195	7.15	8.36	0	47
Grade 1 Middle of Year					
NWF CLS	115	50.43	29.38	1	141
NWF WWR	113	14.83	10.69	0	48
ORF Words Correct	115	32.34	31.61	0	136
ORF Accuracy	114	74.84	19.44	0	100
Grade 1 End of Year					
NWF CLS	9	40.22	13.25	23	61
NWF WWR	9	12.67	4.77	7	20
ORF Words Correct	9	40.00	22.84	14	66
ORF Accuracy	9	82.33	12.76	58	96

Note. FSF = First Sound Fluency. LNF = Letter Naming Fluency. PSF = Phoneme Segmentation Fluency. NWF CLS = Nonsense Word Fluency Correct Letter Sounds. NWF WWR = Nonsense Word Fluency Whole Words Read. ORF = Oral Reading Fluency.

Figure 2

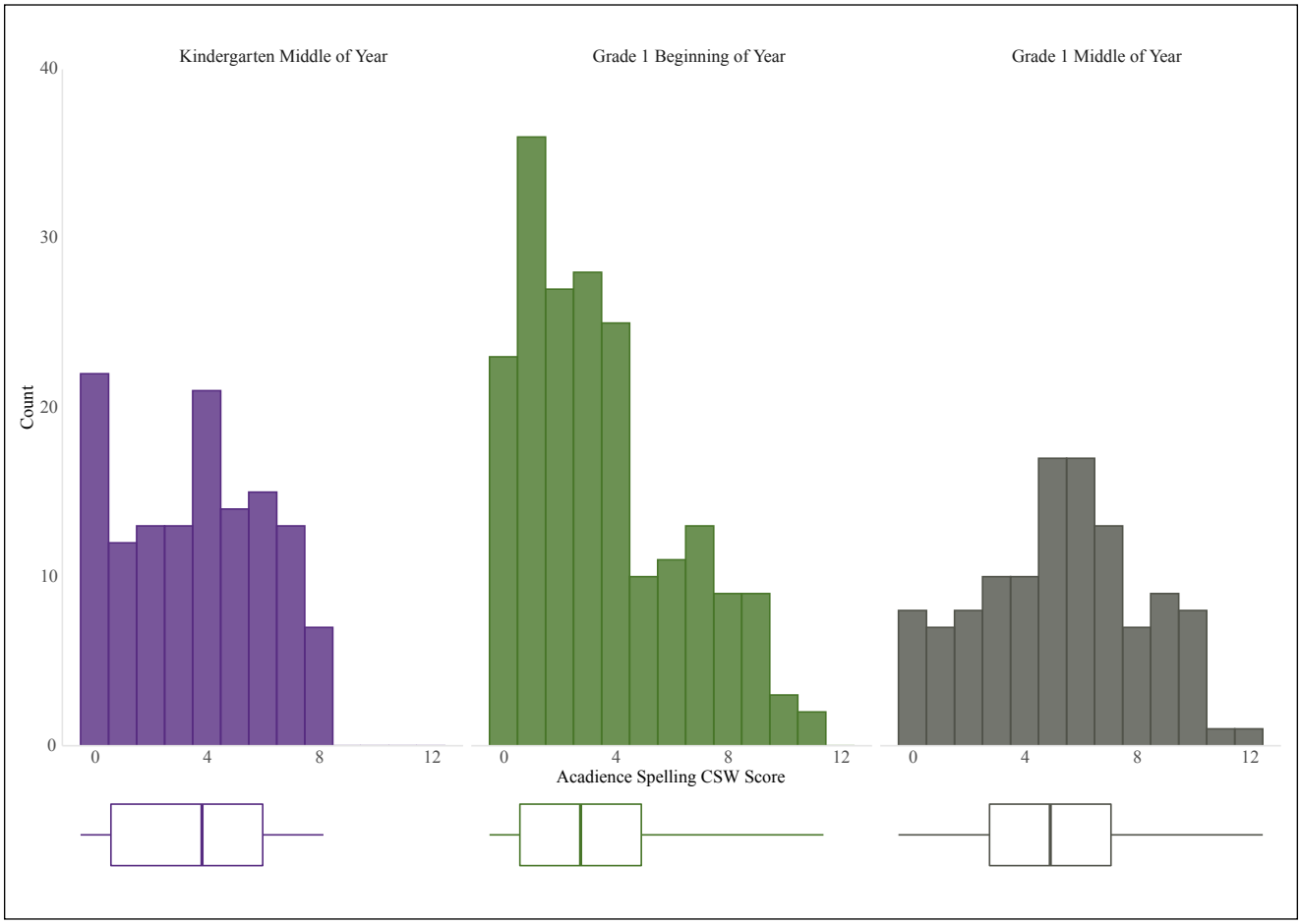
Distributions of Acadience Spelling Correct Spelling Sequences for Middle of Kindergarten and Middle and End of First Grade



Note. CSS = Correct Spelling Sequences. Distributions for the end of kindergarten and first grade are not reported due to insufficient sample sizes. Samples sizes as follows. Kindergarten middle of year = 130. Grade 1 beginning of year = 197. Grade 1 middle of
year = 116.

Figure 3

Distributions of Acadience Spelling Correctly Spelled Words for Middle of Kindergarten and Middle and End of First Grade



Note. CSW = Correctly Spelled Words. Distributions for the end of kindergarten and first grade are not reported due to insufficient sample sizes. Samples sizes as follows. Kindergarten middle of year = 130. Grade 1 beginning of year = 196. Grade 1 middle of year = 116.

Table 6

Concurrent Validity of Acadience Spelling with Acadience Reading

	Acadience Reading Measure							
	FSF	LNF	PSF	NWF CLS	NWF WWR	ORF Words Correct	ORF Acc	RCS
Kindergarten Middle of Year								
CSS	.59	.63	.60	.53	.23**	–	–	.70
CSW	.55	.61	.58	.53	.20***	–	–	.67
Grade 1 Beginning of Year								
CSS	–	.43	.34	.43	.39	–	–	.55
CSW	–	.42	.14†	.71	.63	–	–	.65
Grade 1 Middle of Year								
CSS	–	–	–	.52	.59	.51	.65	.61
CSW	–	–	–	.54	.64	.55	.66	.65

Note. CSS = Correct Spelling Sequences. CSW = Correctly Spelled Words. FSF = First Sound Fluency. LNF = Letter Naming Fluency. PSF = Phoneme Segmentation Fluency. NWF CLS = Nonsense Word Fluency Correct Letter Sounds. NWF WWR = Nonsense Word Fluency Whole Words Read. ORF Words Correct = Oral Reading Fluency Words Correct. ORF Acc = Oral Reading Fluency Accuracy. RCS = Reading Composite Score. Dashes indicate the Acadience Reading measure is not administered at the specified grade and time of year. Correlations for the end of kindergarten and first grade are not reported due to insufficient sample sizes. Pairwise samples sizes as follows. Kindergarten middle of year = 130. Grade 1 beginning of year = 194–197. Grade 1 middle of year = 95–115.
Unless marked, correlations significant, $p < .001$. $^{**}p < .01$. $^{***}p < .05$. †Not significant.

Table 7

Predictive Validity of Acadience Spelling with Acadience Reading

	Acadience Reading Measure						
	LNF	PSF	NWF CLS	NWF WWR	ORF Words Correct	ORF Acc	RCS
Middle of Kindergarten to Beginning of Grade 1							
CSS	.57	.50**	.52*	.42**	–	–	.63
CSW	.54*	.44**	.52*	.48**	–	–	.60
Beginning to Middle of Grade 1							
CSS	–	–	.44	.51	.35	.46	.46
CSW	–	–	.67	.68	.63	.61	.71
Beginning to End of Grade 1							
CSS	–	–	.49	.53	.64	.67	.69
CSW	–	–	.69	.67	.71	.58	.74
Middle to End of Grade 1							
CSS	–	–	.48*	.51*	.64	.75	.75
CSW	–	–	.50*	.55	.72	.74	.80
Middle of Grade 1 to Beginning of Grade 2							
CSS	–	–	.58	.58	.55	.65	.66
CSW	–	–	.58	.63	.56	.67	.69

Note. CSS = Correct Spelling Sequences. CSW = Correctly Spelled Words. LNF = Letter Naming Fluency. PSF = Phoneme Segmentation Fluency. NWF CLS = Nonsense Word Fluency Correct Letter Sounds. NWF WWR = Nonsense Word Fluency Whole Words Read. ORF Words Correct = Oral Reading Fluency Words Correct. ORF Acc = Oral Reading Fluency Accuracy. RCS = Reading Composite Score. Dashes indicate the Acadience Reading measure is not administered at the specified grade and time of year. Correlations for (a) middle to end of kindergarten, (b) end of kindergarten to beginning or middle of first grade, (c) end of first grade to beginning of second grade, and (d) end of first grade to middle of second grade are not reported due to insufficient sample sizes. Pairwise samples sizes as follows. Middle of kindergarten to beginning of first grade = 41. Beginning to middle of first grade = 176–187. Beginning to end of first grade = 57. Middle to end of first grade = 44. Middle of first grade to beginning of second grade = 71–83. Unless marked, correlations significant, $p < .0001$. *$p < .001$. **$p < .01$.

Discussion

Results from this study provide initial evidence to support the use of Acadience Spelling from the middle of kindergarten through the end of first grade and that scores are sensitive to increasing spelling skill over that time span. Although performance was on the lower end for students in middle of kindergarten, a floor effect does not appear to be a significant issue, in particular relative to the CSS score. Additionally, the validity coefficients appear to be consistent with, though slightly lower than, those found in previous Curriculum-Based Measurement (CBM) Spelling research (Deno et al., 1980; Marston, 1982). One explanation for these differences may be that the previous studies examined CBM spelling measures in relation to other spelling and overall achievement tests. Importantly, our findings indicate that Acadience Spelling is moderately to strongly related to concurrent and future overall reading performance, with most correlations being in the strong range. These findings are important because difficulties with spelling are often observed in students with dyslexia (Lohvansuu et al., 2021) and spelling is frequently cited as a necessary component of dyslexia screening. This study supports the utility of Acadience Spelling as an additional dyslexia screening tool during the critical literacy development period.

Limitations

1. The Acadience Spelling and Acadience Reading measures were administered under uncontrolled conditions. Information on training of assessors and fidelity of assessment is unavailable. However, the data examined in this study do represent the way these measures are used in practice.
2. Although the data were gathered from 37 schools across a broad and diverse geographic area, sample sizes were modest and data from NCES indicated that a majority of the students attending participating schools were White. Additionally, the students in this study were overall high performing, as indicated by their average Acadience Reading scores. The data collected from this sample of schools may not be representative of national or local demographics and performance. Both of these factors potentially limit the generalizability of the results.
3. Students assessed with Acadience Spelling had lower RCS compared to students who were not assessed with Spelling, indicating potential restriction in range.
4. This study included data gathered during the COVID-19 pandemic and did not differentiate between the mode of assessment (i.e., remote vs. in-person) for scores collected after the end of the 2019–2020 school year. It is possible there may be differences in scores collected prior to vs. during the pandemic and based on the mode of assessment.

Future Research

Future research should (a) replicate these analyses with a larger, more diverse sample of students, (b) evaluate results using selection criteria to only include students attending schools which used Acadience Spelling as a universal screener, (c) examine the contribution of Acadience Spelling in predicting future reading outcomes relative to other Acadience Reading measures, and (d) develop cut points for risk. Additional research is also needed to explore the reliability of the Acadience Spelling assessment and to obtain user feedback.

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Appendix

Frequency and Percentage of Correctly Spelled Words (CSW)

	Kindergarten Middle of Year		Grade 1 Beginning of Year		Grade 1 Middle of Year	
CSW Score	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
0	22	16.92%	23	11.73%	8	6.90%
1	12	9.23%	36	18.37%	7	6.03%
2	13	10.00%	27	13.78%	8	6.90%
3	13	10.00%	28	14.29%	10	8.62%
4	21	16.15%	25	12.76%	10	8.62%
5	14	10.77%	10	5.10%	17	14.66%
6	15	11.54%	11	5.61%	17	14.66%
7	13	10.00%	13	6.63%	13	11.21%
8	7	5.38%	9	4.59%	7	6.03%
9	–	–	9	4.59%	9	7.76%
10	–	–	3	1.53%	8	6.90%
11	NA	NA	2	1.02%	1	0.86%
12	NA	NA	–	–	1	0.86%
Total	130	100.00%	196	100.00%	116	100.00%

Note. Dashes indicate unobserved scores. NA corresponds to scores beyond the maximum possible for the specified grade and time of year.