

# Appendix

## Appendix A1 Study characteristics: Chenault et al., 2006

Characteristic	Description
<b>Study citation</b>	Chenault, B., Thomson, J., Abbott, R. D., & Berninger, V. W. (2006). Effects of prior attention training on child dyslexics' response to composition instruction. <i>Developmental Neuropsychology</i> , 29(1), 243–260.
<b>Participants</b>	The sample for this study included 20 English-speaking dyslexic children. The study's criterion for dyslexia was a discrepancy of at least one standard deviation between a student's Verbal Comprehension Index on the Wechsler Intelligence Scale for Children (Second Edition) and his or her score on one or more measures of reading and writing. Children with diagnosed neurological or psychiatric disorders or Wechsler Verbal Communication indices below 88 were excluded from the study sample. The 20 children in the study had a mean Wechsler Verbal Communication Index of 106.7. Ten of the children were in the 4th grade, six were in the 5th grade, and four were in the 6th grade; 12 of the children were boys and 8 were girls. The 20 children were randomly assigned to one of two interventions: 10 children to <i>Read Naturally</i> ® and 10 children to <i>Pay Attention!</i> Pretest data were collected prior to the start of the interventions, and a first set of posttest data was collected after the completion of 10 sessions in <i>Read Naturally</i> ® or <i>Pay Attention!</i> At that point, students from the two groups were combined, and they participated in 10 more sessions with a third intervention ( <i>Writing Lessons with Attention Bridges</i> ), after which a second posttest was administered. As the focus of this report is <i>Read Naturally</i> ®, this review is based only on a comparison of pretest and first posttest data. There was no attrition of students between the pretest and first posttest.
<b>Setting</b>	The study was conducted with children from one parochial school in Washington State. The school serves children throughout the normal range of learning abilities, and teachers were trained to teach students with learning disabilities.
<b>Intervention</b>	Children in the <i>Read Naturally</i> ® group participated in ten 25-minute individual sessions. This involved teacher modeling, repeated reading, and progress monitoring to increase fluency in reading. The students chose a story, were asked to recall what they knew about the book topic, read the story aloud while the teacher identified missing or unknown words, and students marked a graph showing how many words were read in one minute. Student and teacher then read the story aloud together several times with the teacher modeling fluent reading. The student then practiced individually. In the final step, the student read aloud again for one minute and graphed the number of words read.
<b>Comparison</b>	Children in the <i>Pay Attention!</i> group participated in ten 25-minute individual sessions. Students practiced attention-focusing and executive functions using cognitive operations such as understanding of information and instructions they heard, switching tasks flexibly, and maintaining focus despite distractions. Materials included cards and tapes with spoken words and distracting sounds. Students received feedback on mistakes, and they charted their progress to track growth.
<b>Primary outcomes and measurement</b>	The authors assessed students with a battery of tests at the pretest, first posttest, and second posttest time points. The domain of reading fluency was measured by administration of the Reading Accuracy and Reading Rate subtests of the Gray Oral Reading Test—III (GORT-III). The domain of writing was measured by administration of the Written Expression subtest of the Wechsler Individual Achievement Test (Second Edition). Other outcomes (executive functioning and handwriting) were reported in the study but were not included in this report because they were outside the scope of the Students with Learning Disabilities review. For a more detailed description of the included outcome measures, see Appendices A2.1–A2.2.
<b>Staff/teacher training</b>	Participants were instructed by the first or second author or a graduate student in school psychology who was supervised by those authors.

## Appendix A2.1 Outcome measures for the reading fluency domain

Outcome measure	Description
<b>Reading Accuracy subtest from the Gray Oral Reading Test–III (GORT–III)</b>	The GORT-III Reading Accuracy subtest measures the number of word reading errors that occurred while reading a series of short paragraphs that increase in difficulty (as cited in Chenault et al., 2006) ( <a href="http://psychcorp.pearsonassessments.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8116-577">http://psychcorp.pearsonassessments.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8116-577</a> ).
<b>Reading Rate subtest from the Gray Oral Reading Test–III (GORT–III)</b>	The GORT-III Reading Rate subtest measures the amount of time taken to read short paragraphs that increase in difficulty (as cited in Chenault et al., 2006) ( <a href="http://psychcorp.pearsonassessments.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8116-577">http://psychcorp.pearsonassessments.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8116-577</a> ).

## Appendix A2.2 Outcome measures for the writing domain

Outcome measure	Description
<b>Written Expression subtest from the Wechsler Individual Achievement Test (Second Edition) (WIAT)</b>	In the WIAT Written Expression subtest, the student is asked to come up with examples in writing in specified categories, then combines short sentences into a single sentence, and finally is given a topic to write about for 10 minutes. Compositions are scored on organization, content, and mechanics of writing (as cited in Chenault et al., 2006). ( <a href="http://www.pearsonassessments.com/haiweb/cultures/en-us/productdetail.htm?pid=015-8983-505">http://www.pearsonassessments.com/haiweb/cultures/en-us/productdetail.htm?pid=015-8983-505</a> ).

## Appendix A3.1 Summary of study findings included in the rating for the reading fluency domain<sup>1</sup>

Outcome measure	Study sample	Sample size (students)	Authors' findings from the study		WWC calculations			
			Mean outcome (standard deviation) <sup>2</sup>		Mean difference <sup>4</sup> ( <i>Read Naturally</i> <sup>®</sup> – comparison)	Effect size <sup>5</sup>	Statistical significance <sup>6</sup> (at $\alpha = 0.05$ )	Improvement index <sup>7</sup>
			<i>Read Naturally</i> <sup>®</sup> group <sup>3</sup>	Comparison group				
<b>Chenault et al., 2006<sup>8</sup></b>								
GORT–III Reading Accuracy subtest	Grades 4, 5, 6	20	6.70 (3.13)	7.40 (2.95)	–0.70	–0.22	ns	–9
GORT–III Reading Rate subtest	Grades 4, 5, 6	20	7.70 (3.31)	8.10 (3.84)	–0.40	–0.11	ns	–4
<b>Domain average for reading fluency<sup>8</sup></b>						<b>–0.16</b>	<b>na</b>	<b>–6</b>

ns = not statistically significant

na = not applicable

GORT–III = Gray Oral Reading Test–III

1. This appendix reports findings considered for the effectiveness rating and the average improvement indices for the reading fluency domain.
2. The standard deviation across all students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. Each intervention group mean equals the unadjusted control mean plus the impact of the intervention, derived from an analysis that included the pretest as a control at the individual level. Standard deviations are unadjusted.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
5. For an explanation of the effect size calculation, see WWC Procedures and Standards Handbook, Appendix B.
6. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
7. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results for the intervention group.
8. The level of statistical significance was reported by the study authors or, when necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For the formulas the WWC used to calculate the statistical significance, see WWC Procedures and Standards Handbook, Appendix C for clustering and WWC Procedures and Standards Handbook, Appendix D for multiple comparisons. In the case of Chenault et al. (2006), no corrections for clustering or multiple comparisons were needed.

## Appendix A3.2 Summary of study findings included in the rating for the writing domain<sup>1</sup>

Outcome measure	Study sample	Sample size (students)	Authors' findings from the study		WWC calculations			
			Mean outcome (standard deviation) <sup>2</sup>		Mean difference <sup>4</sup> ( <i>Read Naturally</i> <sup>®</sup> – comparison)	Effect size <sup>5</sup>	Statistical significance <sup>6</sup> (at $\alpha = 0.05$ )	Improvement index <sup>7</sup>
			<i>Read Naturally</i> <sup>®</sup> group <sup>3</sup>	Comparison group				
<b>Chenault et al., 2006<sup>8</sup></b>								
WIAT Written Expression subtest	Grades 4, 5, 6	20	92.60 (9.14)	89.40 (9.10)	3.20	0.34	ns	+13

ns = not statistically significant

na = not applicable

WIAT = Wechsler Individual Achievement Test (Second Edition)

1. This appendix reports findings considered for the effectiveness rating and the average improvement indices for the writing domain.
2. The standard deviation across all students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. Each intervention group mean is calculated as the unadjusted control mean plus the WWC-adjusted mean difference. Standard deviations are unadjusted.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
5. For an explanation of the effect size calculation, see WWC Procedures and Standards Handbook, Appendix B.
6. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
7. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results for the intervention group.
8. The level of statistical significance was reported by the study authors or, when necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For the formulas the WWC used to calculate the statistical significance, see WWC Procedures and Standards Handbook, Appendix C for clustering and WWC Procedures and Standards Handbook, Appendix D for multiple comparisons. In the case of Chenault et al. (2006), no corrections for clustering or multiple comparisons were needed.

## Appendix A4.1 *Read Naturally*® rating for the reading fluency domain

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.<sup>1</sup> For the outcome domain of reading fluency, the WWC rated *Read Naturally*® as having no discernible effects on students with learning disabilities.

### Rating received

**No discernible effects:** No affirmative evidence of effects.

- Criterion 1: No studies showing a statistically significant or substantively important effect, either *positive* or *negative*.

**Met.** No study of *Read Naturally*® showed a statistically significant or substantively important effect, either positive or negative.

### Other ratings considered

**Positive effects:** Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a *strong* design.

**Not met.** No study of *Read Naturally*® showed a statistically significant positive effect.

### AND

- Criterion 2: No studies showing statistically significant or substantively important *negative* effects.

**Met.** No study of *Read Naturally*® showed a statistically significant or substantively important negative effect.

**Potentially positive effects:** Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect.

**Not met.** No study of *Read Naturally*® showed a statistically significant positive effect.

### AND

- Criterion 2: No studies showing a statistically significant or substantively important *negative* effect and fewer or the same number of studies showing *indeterminate* effects than showing statistically significant or substantively important *positive* effects.

**Met.** No study of *Read Naturally*® showed a statistically significant or substantively important negative effect, but one study showed an indeterminate effect.

**Mixed effects:** Evidence of inconsistent effects as demonstrated through either of the following criteria.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect, and at least one study showing a statistically significant or substantively important *negative* effect, but no more such studies than the number showing a statistically significant or substantively important *positive* effect.

**Not met.** No study of *Read Naturally*® showed a statistically significant or substantively important positive or negative effect.

### OR

- Criterion 2: At least one study showing a statistically significant or substantively important effect, and more studies showing an *indeterminate* effect than showing a statistically significant or substantively important effect.

**Not met.** No study of *Read Naturally*® showed a statistically significant or substantively important positive or negative effect, but one study showed an indeterminate effect.

(continued)

## Appendix A4.1 *Read Naturally*<sup>®</sup> rating for the reading fluency domain (continued)

**Potentially negative effects:** Evidence of a negative effect with no overriding contrary evidence.

- Criterion 1: One study showing a statistically significant or substantively important *negative* effect and no studies showing a statistically significant or substantively important *positive* effect.

**Not met.** No study of *Read Naturally*<sup>®</sup> showed a statistically significant or substantively important positive or negative effect.

**OR**

- Criterion 2: Two or more studies showing statistically significant or substantively important *negative* effects, at least one study showing a statistically significant or substantively important *positive* effect, and more studies showing statistically significant or substantively important *negative* effects than showing statistically significant or substantively important *positive* effects.

**Not met.** No study of *Read Naturally*<sup>®</sup> showed a statistically significant or substantively important positive or negative effect.

**Negative effects:** Strong evidence of a negative effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *negative* effects, at least one of which met WWC evidence standards for a *strong* design.

**Not met.** No study of *Read Naturally*<sup>®</sup> showed a statistically significant negative effect.

**AND**

- Criterion 2: No studies showing statistically significant or substantively important *positive* effects.

**Met.** No study of *Read Naturally*<sup>®</sup> showed a statistically significant or substantively important positive effect.

1. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain-level effect. The WWC also considers the size of the domain-level effect for ratings of potentially positive or potentially negative effects. For a complete description, see the WWC Procedures and Standards Handbook, Appendix E.

## Appendix A4.2 *Read Naturally*® rating for the writing domain

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.<sup>1</sup>

For the outcome domain of writing, the WWC rated *Read Naturally*® as having potentially positive effects for students with learning disabilities. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, negative effects) were not considered, as *Read Naturally*® was assigned the highest applicable rating.

### Rating received

**Potentially positive effects:** Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect.

**Met.** One study of *Read Naturally*® showed a substantively important positive effect.

#### AND

- Criterion 2: No studies showing a statistically significant or substantively important *negative* effect and fewer or the same number of studies showing *indeterminate* effects than showing statistically significant or substantively important *positive* effects.

**Met.** No study of *Read Naturally*® showed a statistically significant or substantively important negative effect, nor did any study show indeterminate effects.

### Other ratings considered

**Positive effects:** Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a *strong* design.

**Not met.** No study of *Read Naturally*® showed statistically significant positive effects.

#### AND

- Criterion 2: No studies showing statistically significant or substantively important *negative* effects.

**Met.** No study of *Read Naturally*® showed statistically significant or substantively important negative effects.

1. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain-level effect. The WWC also considers the size of the domain-level effect for ratings of potentially positive or potentially negative effects. For a complete description, see the WWC Procedures and Standards Handbook, Appendix E.

## Appendix A5 Extent of evidence by domain

Outcome domain	Number of studies	Sample size		Extent of evidence <sup>1</sup>
		Schools	Students	
Reading fluency	1	1	20	Small
Writing	1	1	20	Small
Alphabets	0	na	na	na
Reading comprehension	0	na	na	na
General reading achievement	0	na	na	na
Math	0	na	na	na
Science	0	na	na	na
Social studies	0	na	na	na
Progressing in school	0	na	na	na

na = not applicable/not studied

1. A rating of “medium to large” requires at least two studies and two schools across studies in one domain and a total sample size across studies of at least 350 students or 14 classrooms. Otherwise, the rating is “small.” For more details on the extent of evidence categorization, see the WWC Procedures and Standards Handbook, Appendix G.