



# National Institute for Direct Instruction

## Selected Studies of the Efficacy of Direct Instruction Language Programs

Timothy W. Wood

May 12, 2016

- 1). Flores, M., & Ganz, J. (2014). Comparison of Direct Instruction and discrete trial teaching on the curriculum-based assessment of language performance of students with autism. *Exceptionality*, 22(4), 191-204.

**Affiliation:** Auburn University & Texas A & M University

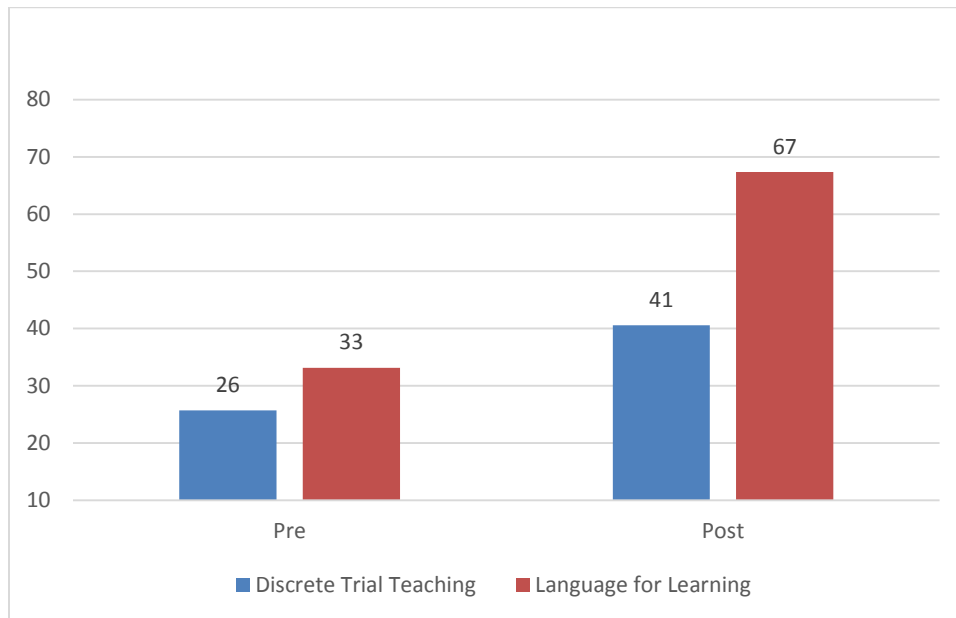
**Design:** Pretest-posttest control group design with random assignment

**Participants:** Students with autism spectrum disorder (ASD), students with developmental disabilities (DD), preschool students, kindergarten students, elementary students

**Description of the study:** This study compared the effect of two language programs (*Language for Learning*, discrete trial teaching) on the acquisition of language skills of students with autism spectrum disorder and/or developmental disabilities. Thirteen students were selected to participate in the study and were randomly assigned to one program or the other. Students received instruction for three hours a day over a four week period. The mastery test from *Language for Learning* was administered for pre- and posttest measures.

**Results:** Results indicate a statistically significant difference in student performance favoring students in the *Language for Learning* (LL) group. Students in the discrete trial teaching group improved an average of 15% correct answers from pretest to posttest while students in the LL group demonstrated an average improvement of 34%.

**Figure 1: Average Percentage Correct, Pre- and Post-Intervention, Discrete Trial Teaching and Language for Learning**



2). Ganz, J., & Flores, M. (2009). The effectiveness of Direct Instruction for teaching language to children with autism spectrum disorder: Identifying materials. *Journal of Autism and Developmental Disorders*, 39, 75-83.

**Affiliation:** Texas A & M University, Auburn University

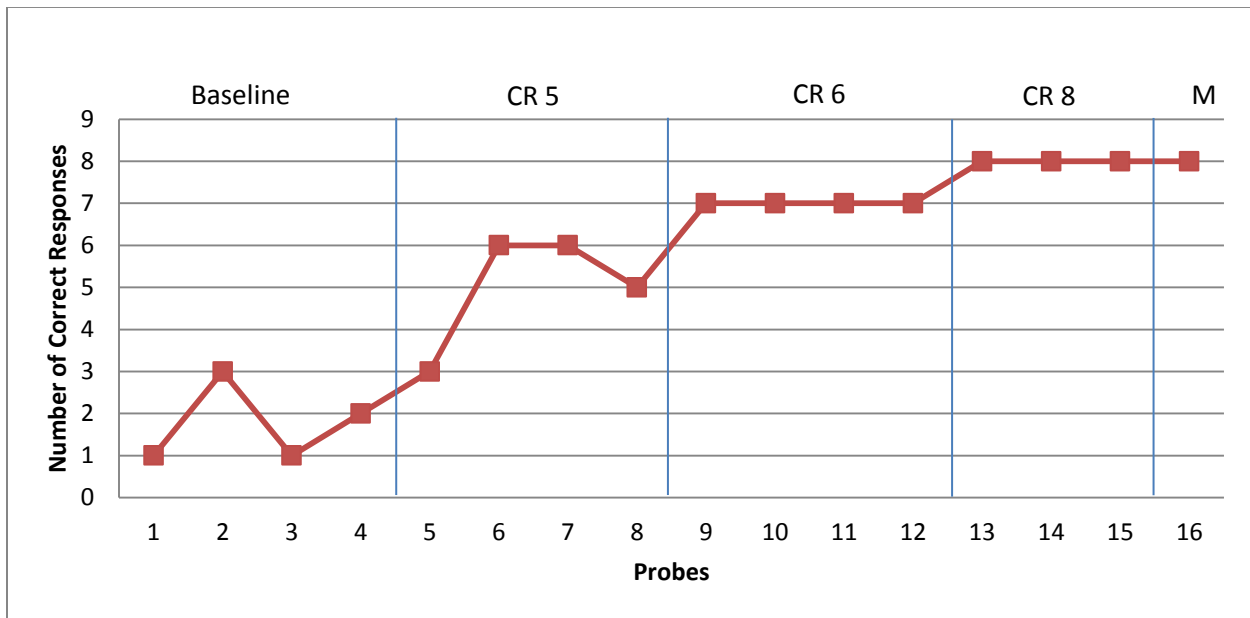
**Design:** Single subject changing criteria design

**Participants:** Students with autism spectrum disorder (ASD), elementary students, special education students, students with disabilities

**Description of the study:** This study examined the effect of the Direct Instruction program, *Language for Learning (LL)*, on the oral language skills of three elementary students with Autism Spectrum Disorder (ASD). Students were chosen to participate based on their scores from the *LL* placement test. Language probes were modeled after the tasks in *LL* and administered during baseline and throughout the study to measure students' oral language skills and ability to identify eight materials. A changing criterion design was used to set goals at each phase of the study and adjust criteria as students progressed.

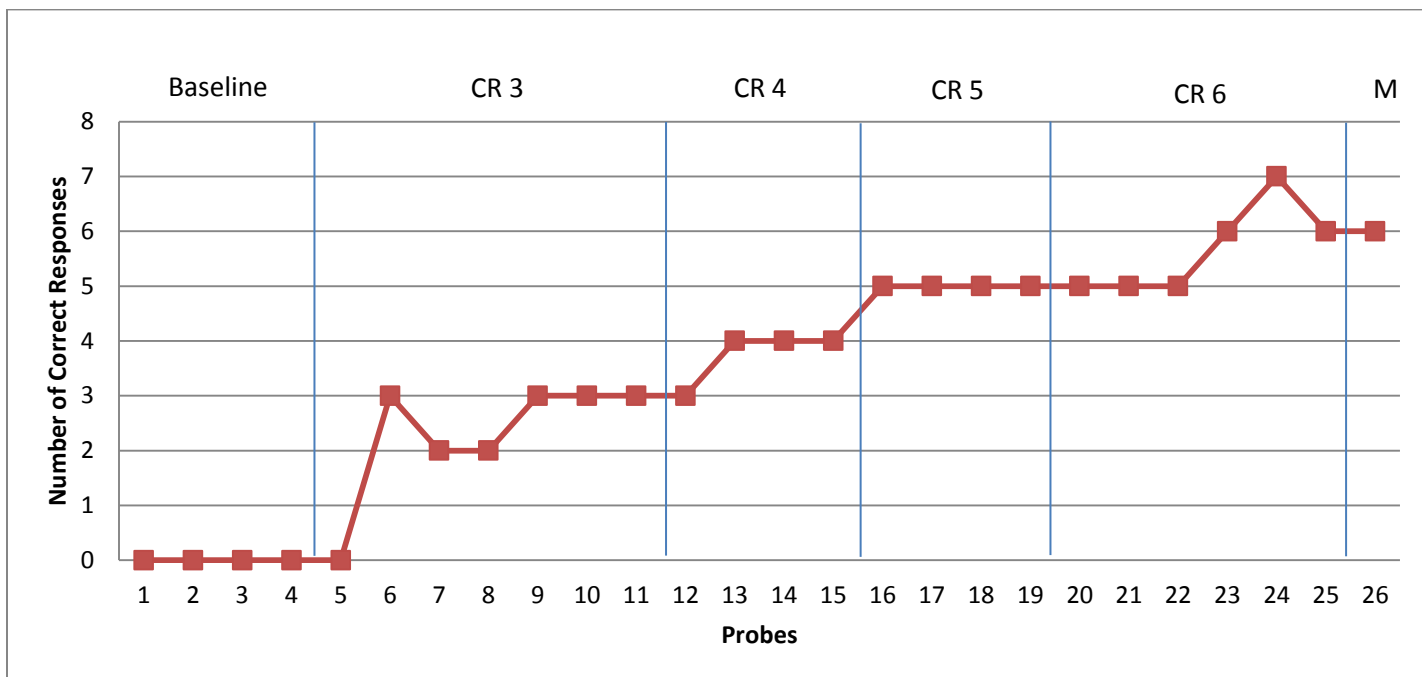
**Results:** Results indicate that *LL* was a highly effective intervention with all three students demonstrating increased ability in identifying materials over the course of the study. All three participants quickly responded to the treatment and met criteria in each phase. Additionally, students maintained their performance following the conclusion of the study.

**Figure 2: Student 1**

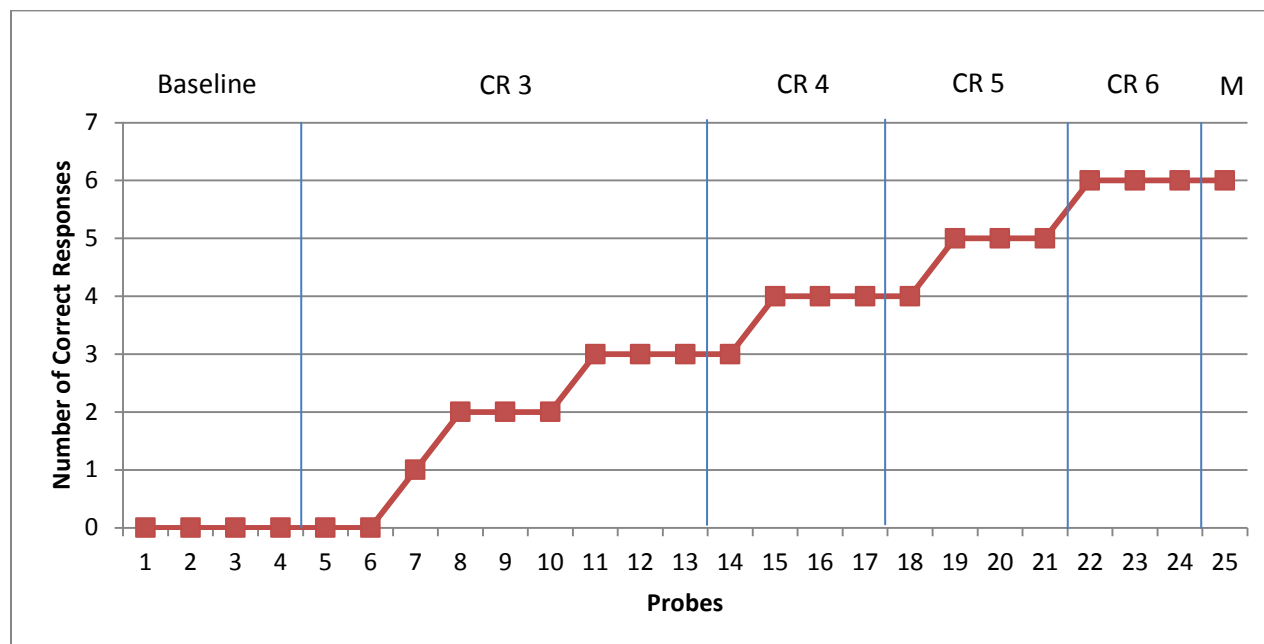


Note: CR= Criterion, M = Maintenance (3 weeks after instruction)

**Figure 3: Student 2**



Note: CR= Criterion, M = Maintenance (3 weeks after instruction)

**Figure 4: Student 3**

Note: CR= Criterion, M = Maintenance (3 weeks after instruction)

**3). Shillingsburg, M. A., Bowen, C. N., Peterman, R. K., & Gayman, M. D. (2015). Effectiveness of the Direct Instruction *Language for Learning* curriculum among children diagnosed with autism spectrum disorder. *Focus on Autism and Other Developmental Disabilities, 30*(1), 44-56.**

**Affiliation:** Marcus Autism Center, Emory University School of Medicine; Georgia State University

**Design:** Pretest posttest control group design with matched comparisons

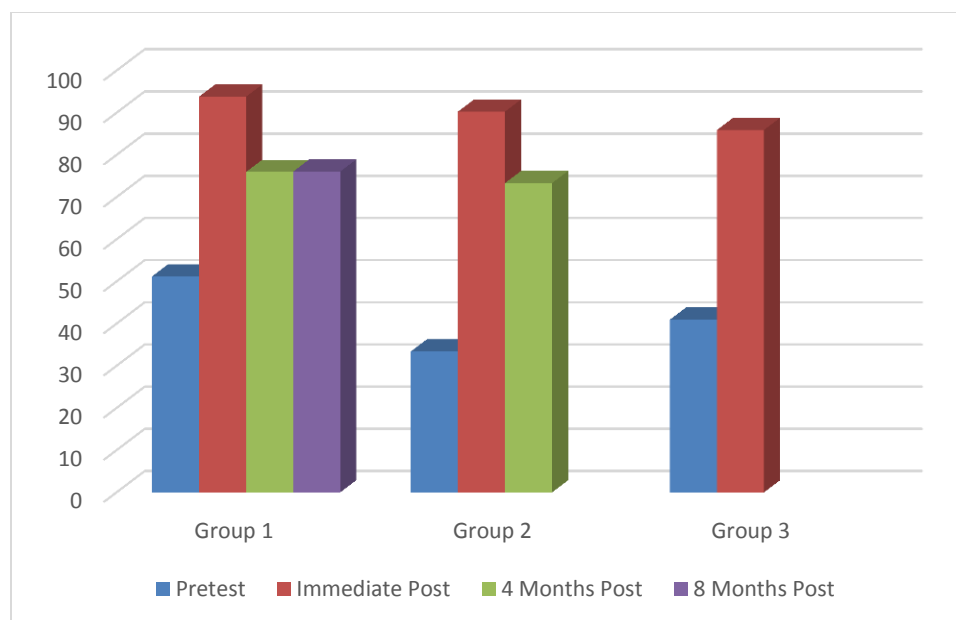
**Participants:** Students with learning disabilities, students with autism spectrum disorder (ASD), elementary students, kindergarten students, preschool students

**Description of the study:** This study examined the effect of the Direct Instruction program, *Language for Learning (LL)*, on 18 students (4-12 years of age) diagnosed with autism spectrum disorder (ASD). Using pretest scores to create equivalent groups, students were randomly assigned to one of three groups with each receiving instruction with *LL* for a 4 month period. The first group began instruction with *LL* while the other two received no exposure. Group 2 received instruction with *LL* after 4 months, and Group 3 received instruction after 8 months. Curriculum-based tests were administered for pre- and posttest measures.

**Results:** Results indicate a significant difference between pre- and post-intervention language scores for all three groups. Posttest scores remained significantly higher than

pretest scores up to 6 to 8 months after the intervention. Students in the *LL* group also demonstrated significantly higher language skills than students in the no-exposure group. At the conclusion of the study, students who most recently received instruction with *LL* demonstrated the greatest language skills, but no significant differences between groups were present.

**Figure 5: Group Mean Scores on Language Acquisition Skills**



4). Tincani, M., Ernsbarger, S., Harrison, T. J., & Heward, W. L. (2005). Effects of two instructional paces on pre-k children's participation rate, accuracy, and off-task behavior in the *Language for Learning* program. *Journal of Direct Instruction*, 5(1), 97-109.

**Affiliation:** Ohio State University

**Design:** Alternating treatment single study design

**Participants:** Preschool students, general education students, African American students, at-risk students

**Description of the study:** This study compared the effect of the *Language for Learning (LL)* program when delivered at a slow-pace and the recommended fast-pace. The study specifically sought to compare the effect of the two approaches on the response opportunities, participation, participation accuracy, and off-task behavior of the four preschool students. All four were typically developing African American students at-risk for academic failure. Two teachers participated in the study with each utilizing a slow- and fast

paced teaching technique with their groups. Each group consisted of two study participants and two students from the regular classrooms, whose data was not included in the study.

**Results:** Results indicate that fast-paced instruction increased teacher-presented response opportunities, participants' rate of responding, and rate of correct responding. On average, students recorded 6.7 responses per minute during fast-paced instruction and 2.9 responses per minute during slow-paced instruction. When receiving fast-paced instruction students averaged 5.4 correct responses per minute, but only 2.1 correct responses during slow-paced instruction. Additionally, there was a lower occurrence of off-task behavior when students received fast-paced instruction.

**Table 1: Student Academic Behavior by Pacing of Teacher**

	Fast Pacing (Recommended)	Slow Pacing
Percentage of Academic Responses	80%	79%
Responses per Minute	6.65	2.88
Correct Responses per Minute	5.35	2.10
Percentage of Time Off Task	52%	74%

5). Salaway, J. L. (2008). *Efficacy of a Direct Instruction approach to promote early learning* (Unpublished doctoral dissertation). Duquesne University: Pittsburgh, PA.

**Affiliation:** Duquesne University

**Design:** Pretest posttest control group design with random assignment

**Participants:** Preschool students, at-risk students, low-SES students, African American students, Caucasian students

**Description of the study:** This study examined the effectiveness of the Direct Instruction program, *Language for Learning (LL)*, as supplemental instruction to a Developmentally Appropriate Preschool (DAP) curriculum on the acquisition of academic, language, and early literacy skills of 61 at-risk preschool students. Students were randomly assigned to either the LL and DAP group or the DAP only group. Students received instruction with their respective programs for six months and then switched groups and received instruction for an additional six months with the other program. The Kaufman Survey of Early Academic and Language Skills (K-SEALS) and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) were administered to all students for pre- and posttest measures.

**Results:** Results indicate that students who received instruction with the combination of LL and DAP for six months demonstrated statistically significant larger gains in pre-academic, language, and early literacy skills than student who received instruction only with DAP for six months. Students who received instruction with LL and DAP demonstrated statistically

significant improvement in their number naming and number recognition skills, letter and word naming and recognition skills, expressive communication and receptive communication skills, and initial sounds fluency skills in comparison to students who received instruction only with DAP. Results from DIBELS testing indicated that students who received instruction with *LL* and DAP demonstrated greater, more consistent, and earlier change in their average initial sounds fluency skills than students in the DAP only group.

**Table 2: K-SEALS pre- and post-test mean scores and standard deviations for pre-academic skills as a function of instructional group**

Group	Number Skills				Letter and Word Skills			
	Pre-test		Post-test		Pre-test		Post-test	
	M	SD	M	SD	M	SD	M	SD
DI	9.26	2.73	11	2.38	4.91	3.58	8	2.91
Control	9.04	3.13	9.73	2.86	4.31	3.72	6.12	3.85

Note: n=35 for DI Group and n=26 for Control Group

**Table 3: K-SEALS Pre- and Post-Test Mean Scores and Standard Deviations for Language Skills as a Function of Instructional Group**

Group	Expressive Language				Receptive Language			
	Pre-test		Post-test		Pre-test		Post-test	
	M	SD	M	SD	M	SD	M	SD
DI	17.37	4.66	21.11	3.89	21.46	5.55	27.34	4.16
Control	16.96	5.59	18.85	4.77	21.85	6.79	24.73	5.68

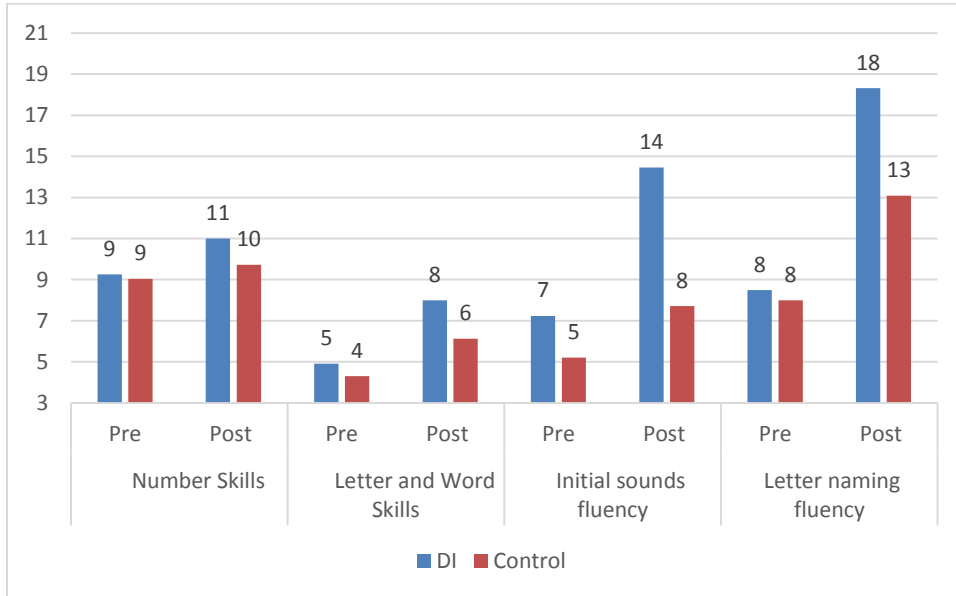
Note: n=35 for DI group and n=26 for control group

**Table 4: DIBELS Pre- and Post-Test Mean Scores and Standard Deviations for Early Literacy Skills as a Function of Instructional Group**

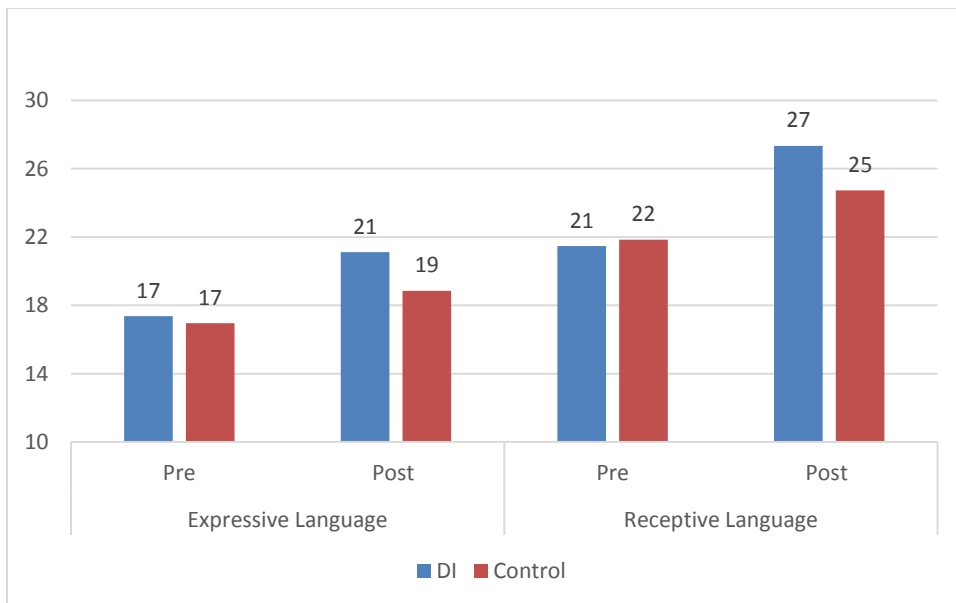
Group	Initial sounds fluency				Letter naming fluency			
	Pre-test		Post-test		Pre-test		Post-test	
	M	SD	M	SD	M	SD	M	SD
DI	7.24	6.73	14.46	11.94	8.49	9.31	18.31	12.07
Control	5.21	7.58	7.72	6.59	8	12.04	13.08	9.74

Note: n=35 for DI group and n=26 for control group

**Figure 6: Numeracy and Literacy Skills, Pre and Post, by Program**



**Figure 7: Expressive and Receptive Language Skills, Pre and Post, by Program**





### **Appendix A: Efficacy Studies on Direct Instruction Language Programs**

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