Exploring the Nature of Effective Scaffolding

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INTRODUCTION

Explores the nature of effective scaffolding in a 1-1 literacy tutoring intervention.

- Early intervention key for children most at risk of literacy failure (Vellutino, 2010).
- Simply providing 1-1 assistance is not sufficient (D'Agostino & Brownfield, 2014; Elbaum et al., 2000).
- No consensus in the literature about how to operationalize scaffolding (van de Pol, Volman, & Beishuizen, 2010).

THEORETICAL FRAME

- Reading development viewed as change over time in how the reader uses at least three sources of information to problem solve while reading: visual information in the print, the meaning of the story, and oral language (Clay, 2001; Doyle, 2013).
- Scaffolding as contingent tutoring (Wood & Wood, 1996).
- **Domain contingency**: what to help with
- **Instructional contingency**: level of help
- **Temporal contingency**: when to help

RESEARCH QUESTIONS

1. Is there a relationship between Instructional contingency and outcomes in a 1-1 intervention for beginning readers?
2. Is there a relationship between domain contingency and outcomes in a 1-1 intervention for beginning readers?

METHOD

Conducted HLM analyses to compute a teacher effectiveness index.

Selected 10 teachers from a larger study of 38 Reading Recovery teachers in their training year, Student year-long growth on the *Observation Survey* (Clay, 2013) total score was modelled at Level 1. Student covariates (gender, ELL status, & minority status) were included at Level 2 (student level), and teacher cluster covariates (mean fall test score, proportion ELL, rural/urban, & proportion minority) were controlled for at Level 3 (teacher level). The average adjusted student growth rate for each teacher served as the teacher effectiveness index. We rank ordered the teachers, and the lowest six and highest four were selected for this study.

Data Coding:

We analyzed 20 videos of the new book reading portion of the 10 teachers' lessons: 2 videos for each of the focal teachers, 10 weeks apart, for a total of 200 minutes of video.

Three coders:

Identified cycles of interactions

Coded levels of help

Analyzed whether contingent or not

Measures:

- **Domain contingency**: proportion of moves that teacher prompted neglected sources of information
- **Instructional contingency**: proportion of contingent vs. non-contingent interactions

Contingent:

- Increasing help when the child is not successful
- Decreasing help when the child is successful.

Not Contingent:

- Keeping help at same level when child is successful
- Keeping help at same level when the child is not successful
- Increasing help when the child succeeds
- Decreasing help when the child fails

Example of Contingent: Increasing help when the child is not successful

Time	*Child*	*Teacher*	*Code*	*Level of Help*	*Success or Failure?*	*Contingent*
1:22	*- /truck*					
		What is that?	*Q*	*3*		
	Milk				*Failure*	
1:29		*But the /tr/*	*De*	*5*		*Yes*

Categories of Level of Help

Amount of information (least to most)	Definition	Sample Teacher Move Text: A teddy bear picnic... Child: A teddy bear put...
1. Prompting (P)	Provides no information about anything helpful to use or do; calls on the student to solve	What can you try?
2. Prompting with information (Pi)	Provides some general information; the student must still decide what to use or do.	You know that word.
3. Directing (Di)	Provides specific information about what the student can use or do to solve the problem; the student must solve the	What is this part?
4. Demonstrating (De)	Provides all of the information needed to solve the problem by taking the student role and modelling, but the student must still solve the problem.	A teddy bear /pi/
5. Telling (T)	Provides all the information needed; the student does not need to do anything.	That word is picnic.

RESULTS

RQ1: Instructional contingency not related to outcome. Less contingency after 15 weeks of training

Proportion Of Cycles That Were Instructionally Contingent By Teacher Outcome And By Time

Group	Time 1	Time 2	Total
Low	.84(25)*	.55(58)	.64(83)
High	.85(13)	.56(48)	.62(61)
Total	.84(38)	.56(106)	.63(144)

**The number in parentheses indicates number of cases*

RQ2: Domain contingency

Teachers of students with higher outcomes were 8 times more likely to prompt students to use sources of information that they were neglecting.

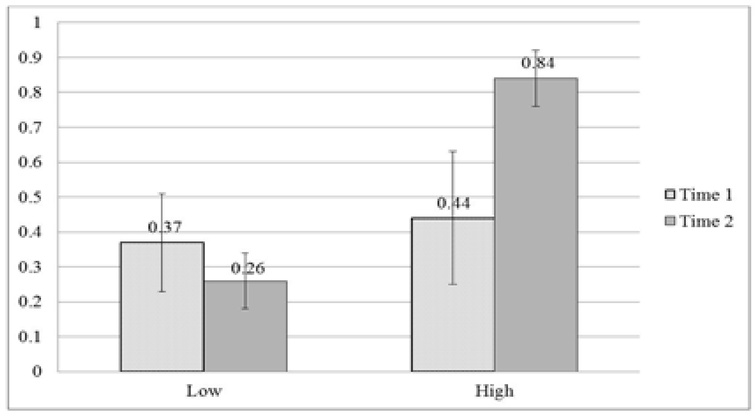

Figure 2. Proportion of domain contingent moves for teachers with lower and higher outcomes, Times 1 and 2. Error bars represent standard errors.

DISCUSSION

In line with Wood & Wood (1996) and van de Pol & Elbers (2013), contingency is very difficult to maintain despite the apparent simplicity of the tutoring rule, which is to provide more help when the learner is in trouble and less when the learner is successful, even when the tutors are in training to be contingent.

Teachers of students with higher outcomes were 8 times more likely to prompt students to use sources of information that they were neglecting while trying to decode a word. These teachers also significantly improved on domain contingency across time. They must carefully attend to the student's attempt at difficult, quickly analyze what source of information the student is neglecting, and then decide what source of information to prompt the student to use.

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