Using Student Data to Improve Response to a Multisyllabic Word Reading Intervention

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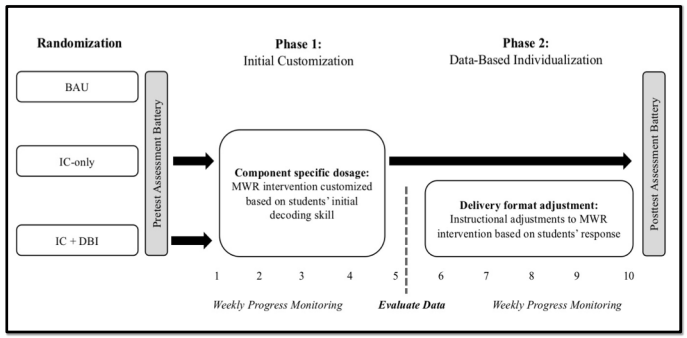
Data-Based Individualization in Upper Elementary

- Beginning at the fourth-grade level, students are exposed to a substantial number of multisyllabic words (Kearns, 2015) that often carry the meaning of text (Archer, Gleason, & Vachon, 2003).
- In order to support students' access to more complex text, some students require explicit multisyllabic word reading intervention. However, up to 50% of students with disabilities do not respond adequately to research-based reading interventions and, as such, require more intensive intervention (Fuchs & Fuchs, 2015).
- One recommended way to intensify intervention, particularly for students with the most severe difficulties, is intervention intensification using student data—data-based individualization (DBI; Deno & Mirkin, 1977; National Center on Intensive Intervention, 2013).
- To date, there is a dearth of research on reading interventions that utilize DBI to intensify such interventions, particularly for upper elementary struggling readers.

Research Questions

1. What are the effects of initial customization (IC-only) of a multisyllabic word reading intervention compared to business-as-usual (BAU) on reading outcomes for 4th and 5th grade students with word reading difficulties?
2. What are the effects of initial customization with data-based individualization (IC+DBI) of a multisyllabic word reading intervention compared to BAU on students' reading outcomes?
3. What are the effects of IC+DBI compared to IC-only on students' reading outcomes?
4. Are the effects of either treatment moderated by student characteristics, particularly initial levels of word reading performance or Limited English Proficiency (LEP) status?

Methodology



Data Analysis

- Due to the nesting of students within classrooms, multilevel modeling was used (Enders & Tofighi, 2007; Raudenbush & Bryk, 2002).

Level 1 $Y_{ij} = \beta_{0j} + \beta_{1j}T1_{ij} + \beta_{2j}T2_{ij} + \beta_{3j}(pre_{ij} - \overline{pre}_j) + e_{ij}$

Level 2 $\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10} + u_{1j}$

$\beta_{2j} = \gamma_{20} + u_{2j}$

Level 1 $Y_{ij} = \beta_{0j} + \beta_{1j}T1_{ij} + \beta_{2j}T2_{ij} + \beta_{3j}(pre_{ij} - \overline{pre}_j) + \beta_{4j}$ $(preTOWRE_{ij} - \overline{preTOWRE}_j) + \beta_{5j}T1_{ij}(preTOWRE_{ij} - \overline{preTOWRE}_j) + \beta_{6j}T2_{ij}(preTOWRE_{ij} - \overline{preTOWRE}_j) + \beta_{7j}EL_{ij} + \beta_{8j}T1_{ij}EL_{ij} + \beta_{9j}T2_{ij}EL_{ij} + e_{ij}$

Ongoing use of progress monitoring data to intensify a multisyllabic word reading intervention for upper elementary struggling readers improved effects above and beyond the initial use of diagnostic data to adjust component specific dosage.

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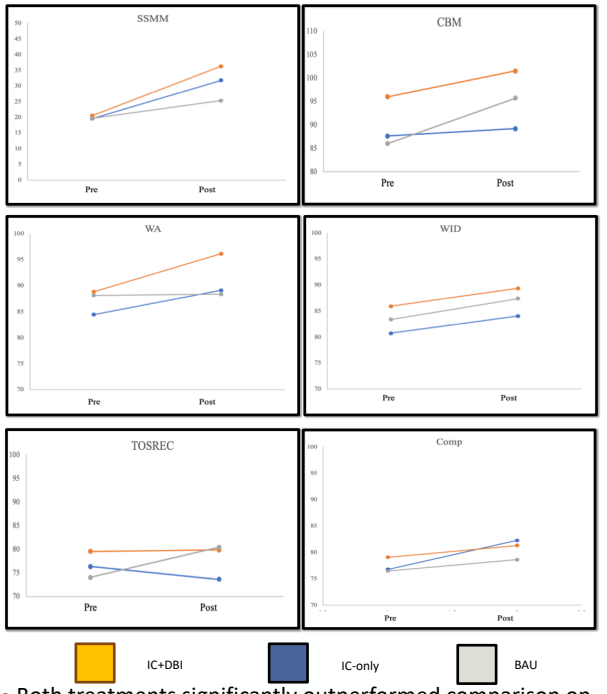
Participants

	IC-only (n = 26)	IC+DBI (n = 33)	BAU (n = 29)	Total (n = 88)	
	n	n	n	n	%
Gender					
Male	9	18	15	42	48
Female	17	15	14	46	52
Grade					
4th	15	17	15	47	53
5th	11	16	14	41	47
Ethnicity					
Hispanic	24	30	27	81	92
Black	2	2	1	5	6
White	0	1	1	2	2
Other	0	0	0	0	0
FRL	26	33	29	88	100
Disability	6	5	6	17	19
LEP Status	14	18	16	48	55

Results and Discussion



- Both treatments significantly outperformed comparison on proximal measure of multisyllabic word reading.
- IC+DBI significantly outperformed BAU on measure of decoding but did not outperform IC-only treatment group.
- BAU significantly outperformed IC-only and IC+DBI on silent reading efficiency.
- Initial word reading significantly moderated effects of IC-only treatment on silent reading efficiency outcome.
- It is possible that students spent too much cognitive energy on reading words at the expense of understanding.