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Stephanie Kaesmann

Southern Connecticut State University, misskaesmann@gmail.com

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**Evaluating Treatment Fidelity of EMPOWERED Strategies in a Kindergarten Dialogic
Reading Intervention**

Stephanie Kaesmann

Department of Psychology, Southern Connecticut State University

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In schools in urban areas that serve large populations of students reading below grade-level, the number of students needing intervention far outweighs the resources of most schools (Abbott & Wills, 2012; Abbott et al., 2008). Over the past seven years, our lab has partnered with Title I schools in our area to provide research-based interventions to improve reading outcomes of at-risk K-2 students. Focusing the work in low-income school communities is critical because children who live in concentrated or extreme poverty have significantly poorer language skills than even their working-class counterparts (Neuman et al., 2018).

The primary weaknesses of participating children were lack of adequate vocabulary, reading comprehension, and print exposure, all essential for benefitting from literacy instruction (Authors, 2016). In order to remediate these skills, we use a research-based intervention known as Dialogic Reading (DR), in which a reader and a child read together, stopping frequently to discuss the book. The Dialogic Reading method was originally developed by Whitehurst and colleagues (Lonigan, 1993; Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al., 1988, 1994) who found that when adults asked more open-ended questions, expanded on and praised responses, children's language skills improved significantly. We adapted DR for school-age beginning readers and trained undergraduate research assistants (RAs) to implement this approach using strategies summarized by our acronym, POWERED. The strategies include: Prompting frequently, Open-ended questions, Wh-questions, Expanding the child's responses, encouraging Repetition, Evaluating the child's responses, and Distancing prompts. Based on our prior research with at-risk first and second graders in Title I elementary schools, providing DR

for 10 minutes per session (a total of about 2 hours) for 6-8 weeks improved children's reading comprehension and vocabulary (Authors, 2016, 2018a).

Recently we expanded the DR technique to emphasize Making the reading session fun and Encouraging discussion of vocabulary words in the story. Taking time to discuss the meaning of important vocabulary in the story can foster development of oral vocabulary, support children's comprehension of the story, and lead to improved reading comprehension (Authors, 2020; Verhoeven et al., 2011). Hence, our approach is called Dialogic Reading with Integrated Vocabulary Enrichment (DRIVE) and our updated acronym of strategies within this approach is called EMPOWERED (see Table 1).

Evaluating the efficacy of the DRIVE intervention requires investigating the treatment fidelity of those conducting the intervention to demonstrate that RAs are consistently using the EMPOWERED strategies and do not differ in their implementation. Previous work by Author (2018b) and Author (2018c) investigated treatment fidelity among RAs using the POWERED strategies when working with first and second grade at-risk readers. Both found overall treatment fidelity, but certain strategies had significant variability among RAs, including Wh-questions, Open-ended questions, Expanding on responses, and encouraging Repetition. The present study investigates the treatment fidelity of RAs using the EMPOWERED strategies during DRIVE sessions with kindergarteners from a Title I elementary school during the 2018-2019 school year.

Method

Participants

Seven participants from three kindergarten classes (N=48) in the 2018-2019 school year at a Title I elementary school were chosen to receive the DRIVE intervention based on their performance on our test battery and the school staff's judgement (Authors, 2020). Eleven RAs

worked with children on a rotating basis, ensuring RAs were not assigned solely to specific children. We first analyzed frequency distributions of the use of EMPOWERED strategies to identify the RAs who worked most frequently with the children. The five RAs with the most interactions were included in analyses.

Procedure

Trained undergraduate RAs read to kindergarteners using the DRIVE technique in 10-minute sessions for 6-8 weeks. Students received an average of 98.75 minutes of intervention, with a range from 42-145 minutes (Authors, 2020). To ensure RAs were following the EMPOWERED strategies, they recorded their strategy usage at each child's session. The frequency of strategy use across and between the RAs was then analyzed using frequency distributions and Chi Square analyses in SPSS.

Results and Discussion

Table 2 shows the frequencies of EMPOWERED strategies used by the five RAs who had the most interactions with the children. Significant variability in strategies across RAs was found in Making it fun, $\chi^2(4, N = 52) = 9.52, p = .049$, Wh-questions $\chi^2(4, N = 52) = 21.42, p = .000$, and encouraging Repetition $\chi^2(4, N = 52) = 19.21, p = .001$. This variability may have been due to RA 1 and RA 8 who had the lowest self-reported EMPOWERED scores compared to the other RAs. The overall lowest reported strategies were Open-ended questions (63.5%), Wh-questions (59.6%), Expanding on responses (67.3%), encouraging Repetition (63.5%), and Distancing prompts (69.2%).

Based on the low overall frequency scores in half the EMPOWERED acronym, treatment fidelity was only partially supported. This was the first time our lab worked with kindergarteners, which may have been a factor affecting the overall treatment fidelity compared to previous

studies with first and second graders (Author, 2018b; Author, 2018c). The kindergarteners had severe reading impairments and were more developmentally immature, some with extreme attentional issues. This led to more difficulty scaffolding and utilizing all strategies. The low frequency of Wh-questions is likely because RAs were allowed to ask close-ended Wh-questions (e.g. “what is that?”) at the beginning of the intervention since the kindergartners initially had trouble responding to more open-ended questions. Our finding of significant variability among RAs in Making it fun, Wh-questions, and encouraging Repetition partially replicates the previous findings by Author (2018b) and Author (2018c) who found significant variability in the encouraging Repetition, Open-ended questions, Wh-questions, and Expanding responses. Our results deviate from the previous research which found generally high frequencies across RAs (e.g., 86% to 97%). The low scores in Open-ended questions, Wh-questions, Expanding on responses, encouraging Repetition, and Distancing prompts suggests that more extensive training was needed in these areas. Working with at-risk kindergarteners may require more training and additional on-site monitoring by supervisors to encourage better strategy use by RAs in order to improve children’s reading and vocabulary skills.

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Table 1

Dialogic Reading with Integrated Vocabulary Enrichment (DRIVE) Strategies

Technique	Description
<i>Encourage Vocabulary</i>	Discuss what vocabulary words mean within the story using <u>Wh</u> -questions, expansion, encouraging repetition, and evaluation techniques.
<i>Make it fun</i>	Have fun reading and keep the dialogue light and engaging.
<i>Prompt frequently</i>	Prompt the child to identify vocabulary in the story and talk about the story and its characters.
<i>Open-ended questions</i>	Encourage children to respond in their own words using more than a one-word answer.
<i>Wh-Questions</i>	What, where, and why questions (most of which are open-ended)
<i>Expand the child's responses</i>	Model slightly more advanced language by repeating what the child says, but with a bit more information or in a more advanced form.
<i>Encourage Repetition</i>	Encourage the child to <i>repeat</i> the expanded utterance
<i>Evaluate the child's responses</i>	Praise the child's correct responses and gently offer alternative labels or answers for incorrect responses.
<i>Distancing prompts</i>	Ask questions that involve personal connections of book to the child's own life.

Table 2

Frequency of Use of EMPOWERED Strategies (Shown in Percentages) by Research Assistants

RA	E	M	P	O	W	E	R	E	D
RA 1	76.9	69.2	76.9	76.9	15.4	76.9	38.5	92.3	69.2
RA 4	92.3	92.3	100	76.9	100	76.9	69.2	84.6	61.5
RA 6	100	100	70	40	60	70	90	100	70
RA 8	85.7	100	100	28.6	42.9	42.9	14.3	100	71.4
RA 9	100	100	77.8	77.8	77.8	55.6	100	77.8	77.8
Overall	88.2	90.4	84.6	63.5	59.6	67.3	63.5	90.4	69.2