**Title:**
Predictors and Moderators of Teacher Learning and Changes in Practice: Evidence from a Randomized Trial of a Teacher-Adapted Literacy Program

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**Background / Context:**

An important and enduring question for education scholars and practitioners is how to scale up effective educational practices (Coburn, 2003; Elmore, 1996). The dominant framework for scale-up has been one in which researchers evaluate specific instructional treatments and then advocate for the widespread adoption of those showing positive effects on student learning (Coburn & Stein, 2010; Slavin, 2002). One challenge with this model is that program effects often vary by context, and consequently approaches that show initial promise during efficacy trials often fail to produce the same effects when new researchers attempt to replicate the results (Makel & Plucker, 2014). This can happen because the program is only effective with certain students, or because program implementation is difficult (Slavin, 2002).

Recognizing that standardized instructional treatments may not be equally effective across contexts, a growing number of scholars are arguing that the strategy of adopting packaged programs and striving to implement them faithfully is neither realistic nor desirable. An alternative view is that scaling up educational treatments requires balancing program fidelity with program adaptation (McDonald, Keesler, Kauffman, & Schneider, 2006; McLaughlin, 1990; US Department of Health and Human Services, 2002). In other words, programs may have the best chance of improving educational outcomes at scale if the "core components" of the program are kept intact, while practitioners at particular sites adapt the intervention so as to make it more compatible with their context. This approach has been described as "context-focused approach to scale-up," which recognizes that "proven" approaches must be implemented with a combination of fidelity and flexibility (McDonald et al., 2006).

The "fidelity of implementation" approach and the "adaptive implementation" approach make different demands on the teachers and practitioners implementing the treatment. In the former, the teacher's job is to achieve the program ideal envisioned by the program developers; in other words, to follow the recipe as closely as possible. Teachers are not expected to diagnose, prescribe, design, or innovate – their job is only to implement. In contrast, teachers under the adaptive approach must be able to recognize what is working and what is not working. When something is not working, teachers much determine why, devise solutions, test these solutions, and devise new solutions as needed. The contrasting approaches also call for different instructional management approaches and work arrangements. While the fidelity approach is well-supported by top-down management styles and has no role for collaborative or democratic work arrangements (Rowan, 1990), the adaptive approach calls for more teacher control (as opposed to administrator control) over classroom practices and is enhanced by collaborative work structures (Elmore, 1996).

These differing requirements of teachers and work structures across approaches suggest that the each approach may be best-suited for different circumstances. Observational evidence from Frank and colleagues (Frank, Zhao, Penuel, Ellefson, and Porter, 2011) suggests a scaffolded continuum of implementation in which practitioners move from an implementation-based approach to an adaptive approach as they gain experience. In a study of teachers' use of computers, these authors found that teachers who were initially at a low level of implementation of computer technology experienced greater implementation gains when they got direct professional development on technology use (what they called "focus"). Teachers who were initially at medium levels of implementation benefitted most from having opportunities to experiment with the technology (what they called "fiddle"), while teachers initially at a high level of implementation benefitted from interacting with colleagues about computers (what they called "friends").

**Purpose / Objective / Research Question / Focus of Study:**

Much remains to be learned about how contrasting program structures that encourage program adherence versus adaptation interact with the characteristics of teachers and school contexts to affect teacher learning and instructional practice. It may be possible to maximize intervention-related teacher learning, and subsequently incorporation of intervention techniques, by matching the intervention approach with the teacher's current capacity. In this study, we sought to understand whether different intervention management approaches (fidelity versus adaptive) are differentially effective for teachers with varying levels of experience with the intervention. Specifically, we use data from a cluster-randomized trial of READS, a summer literacy intervention for elementary school students, to address the questions:

- Does intervention management approach affect teachers' intervention-related learning? Does the effect of the approach on teacher learning differ depending on the past intervention experience of the teachers and overall experience level of the implementation team?
- Do teachers under contrasting intervention management approaches find different types of learning experiences to be more helpful? Do these effects differ by teachers' past intervention experience?
- Does intervention management approach affect teachers' incorporation of intervention techniques into their regular classroom practice? Do effects differ depending on teachers' past experience with the intervention and overall experience level of the implementation team?

**Setting:**

Twenty-seven high-poverty elementary schools in seven North Carolina school districts participated in READS over the 2014-2015 school year and summer of 2015. All participating schools were recruited from a pool of schools that had participated in Traditional READS for at least one year prior. Although each participating school had experience implementing the fidelity version of READS, the prior READS experience of participating teachers varies because in past years, students and teachers were randomly assigned to READS within schools.

**Population / Participants / Subjects:**

Participating teachers were predominately female (91%), with an average of approximately 10 years of experience in the field of education. Approximately 55% had prior experience with READS. In Table 1, we present descriptive statistics by condition at the school and teacher levels.

**Intervention / Program / Practice:**

**READS.** READS is a program designed to narrow income-based reading skill gaps. We compare two versions of READS executed over the 2014-2015 school year and summer of 2015: a fidelity approach ("Traditional READS") and an adaptive approach ("Adaptive READS"). In both versions, only fourth grade students, and their teachers participated. Traditional READS is an evidence-based program (White, Kim, Kingston, & Foster, 2013) with a top-down management approach in which teachers receive training and resources to support their adherence to researcher-designed program procedures. In contrast, Adaptive READS has teachers work collaboratively with their grade-level teams to adapt READS in ways they believe will increase the program's effectiveness.

***Traditional READS.*** Students in Traditional READS receive books at the end of the school year, which are matched to their reading level and interests. Each book includes a "tri-fold" that leads students through the "READS reading routine." This routine, which is designed

to engage students and scaffold their reading, includes a pre-reading activity that focuses students' attention on important text elements and a post-reading comprehension check. Students are expected to mail back completed tri-folds (with postage prepaid). Traditional READS teachers attend a two-hour training during which they learn how to implement six scripted lessons at the end of the school year to prepare students for the summer activities.

***Adaptive READS.*** Teachers at schools assigned to Adaptive READS attended an orientation session in November 2014 in which they learned the underlying principles of READS. Teachers received school-specific data from a previous year of (Traditional) READS implementation (e.g. data on tri-fold return rates) and examined these data with their grade-level teams to develop hypotheses about ways the program may be improved in their school. Teachers then formally met twice more – once in January and once in February – to finalize a plan, based on the data and the research-based principles, for how they would adapt READS. Examples of potential adaptations include developing new strategies to better scaffold the summer reading process, developing strategies to strengthen the home-school connection, or using more detailed information about students' interests and reading levels to improve the summer book matches.

**Research Design:**

Within districts, pairs (and one triad) of schools were matched based on school poverty level and performance on the state standardized test. Within each pair (or triad), one randomly-selected school was assigned to Adaptive READS; the other schools were assigned to Traditional READS.

**Data Collection and Analysis:**

Teachers and school coordinators completed a web-based survey in the spring with questions about their intervention experiences; teachers were given a gift card for completing the survey and 100% of participants submitted a survey. Using principal components analysis, we created two indices: one measuring teachers' literacy-related learning over the past school year and one measuring the extent to which teachers incorporated intervention-related practices into their regular classroom practice. Both item sets had alpha coefficients above .84 and one component with an eigenvalue above one (see Appendix C for survey items). To test for Adaptive-Traditional differences on these indices, we fit OLS regression models[1] of the form:

$$Y_{is} = \beta_0 + \beta_1 ADAPTIVE_s + \beta_2 EXPERIENCE_i + \pi RB_s + \epsilon_{is}\ , \quad (1)$$

where is the standardized PCA score for teacher *i* in school *s* on either the learning index or the classroom practices index, *ADAPTIVE* is an binary indicator variable expressing whether school *s* was randomly assigned to the Adaptive READS condition, *EXPERIENCE* is a binary indicator expressing whether teacher *i* had previously participated in the READS intervention, and *RB* is a vector of dummy variables indicating the school's randomization bloc. We add interaction terms to test whether the effect of *ADAPTIVE* varied by experience. Standard errors are clustered at the school level to account for non-independence of residuals within school.[2]

To measure the extent to which teachers found "focus, fiddle, or friends" activities (Frank et al., 2011) more useful to their intervention-related learning, we provided teachers with a list of different learning experiences from READS and asked them to select the one that they found most useful. Each choice was coded as being a focus, fiddle, or friend activity (see Appendix D for detail). We analyzed these outcomes using multinomial logistic regression with "focus" as

[1] We test the sensitivity of our results using an ordered probit model to relax the assumption of an interval-scaled outcome. These models replicate all of our results using OLS models.

[2] We also fit multi-level models with random intercepts for schools; these models supported the same conclusions.

the baseline category (controlling for randomization bloc and clustering standard errors at the school level).

**Findings / Results:**

In Table 2, we present models predicting teachers' standardized scores on the literacy learning index. In the first column, we see that condition did not have a significant effect on teachers' self-reported learning, but teachers across conditions who were new to READS reported learning more than teachers who had participated in READS before (ES=.51 *sd*).

In the second column, we find that the effect of Adaptive READS differed significantly depending on whether teachers had past experience with READS. As hypothesized, the structures and activities of Adaptive READS were more beneficial for experienced teachers than were the structures and activities of Traditional READS. This interaction is depicted graphically in Figure 1. Column three shows that the effect of Adaptive READ did not differ depending on the share of participating teachers in a school with READS experience.

In Table 3, we present the multinomial logistic regression models predicting the types of learning experiences that teachers reported to be most helpful in improving their implementation of READS (coefficients are presented as odds ratios). In columns 1 and 2, we see that, as hypothesized, Adaptive READS teachers were more likely than Traditional READS teachers to report that both "friends" (column 1) and "fiddle" (column 2) learning experiences were more helpful to their implementation than "focus" activities. The effect of Adaptive READS on friends vs. focus did not differ by READS experience (column 3), but the effect of Adaptive READS on fiddle vs. focus may have been larger for teachers with READS experience compared to teachers without READS experience (column 4).

In Table 4, we present models predicting the extent to which teachers incorporated READS-related principles into their regular classroom practice outside of READS. As seen in column 1, the Adaptive condition had no significant effect on this outcome (with a positive coefficient of .21 *sd*). In column 2, we see that, similar to the teacher learning outcome, the effect of Adaptive READS differed significantly depending on whether the teacher had READS experience. The effect of condition was negatively signed and statistically zero for teachers new to READS, and was positive and significant (.57 *sd*, $p$=.05) for teachers experienced with READS. This interaction is depicted graphically in Figure 2. Column 3 shows that the effect of Adaptive READS on individuals' literacy practices outside of READS was stronger when teachers were in READS teams with more collective READS experience.

**Conclusions:**

A central question in education research is how to scale up educational interventions. Some scholars have advocated that schools adopt proven programs and implement them with fidelity. Others have argued that schools must adapt programs for their context. Although our analyses are limited by the self-report nature of our outcomes, the results suggest the answer to the question of which program management approach is best may depend on the circumstances. For teachers experienced with a particular set of instructional practices, a collaborative, adaptive approach may be preferable to a fidelity-based approach, a finding that is consistent with other research comparing fidelity and adaptive approaches to implementing evidence-based literacy programs (Lemons, Fuchs, Gilbert, & Fuchs, 2014). A major question unanswered by these analyses is whether the interaction effects observed here for teacher learning and program spread translate into different outcomes for students. Future analyses will address this question for READS, but even in the absence of detectable effects for students, the dynamics observed here among teachers may have implications for teachers' investment in program implementation.

## Appendix A. References


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## Appendix B. Tables and Figures

Table 1. Descriptive Statistics by Condition

| | Control | | | Treatment | | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | N | Mean | SD | N | Adj. T-C Diff | p-value |
| Background Characteristics | | | | | | | | |
| *School-level variables* | | | | | | | | |
| School percent free or reduced-price lunch | 84.61 | 10.39 | 14 | 85.81 | 6.5 | 13 | 1.38 | 0.54 |
| Average score on 4th grade state reading test | 441.72 | 3.08 | 14 | 442.08 | 3.18 | 13 | 0.12 | 0.87 |
| Percent of 4th graders scoring proficient or above on state reading test | 41.84 | 14.61 | 14 | 43.66 | 13.34 | 13 | 0.79 | 0.84 |
| *Teacher-level variables* | | | | | | | | |
| Number years working in field of education | 9.8 | 7.7 | 54 | 10.31 | 6.75 | 55 | 0.91 | 0.24 |
| Number of years teaching in current grade level (grade 4) | 4.44 | 4.92 | 55 | 4.04 | 4 | 54 | -0.38 | 0.41 |
| Number of years working at current school | 4.64 | 5.68 | 55 | 4.73 | 5.4 | 55 | 0.15 | 0.8 |
| Worked with READS before this school year? (1=Y, 0=N) | 0.51 | | 61 | 0.59 | | 64 | 0.09 | 0.2 |
| Have, or working toward, master's degree? (1=Y, 0=N) | 0.53 | | 55 | 0.55 | | 55 | 0.02 | 0.69 |
| Female (1=Y, 0=N) | 0.87 | | 61 | 0.95 | | 64 | 0.09 | 0.03 |
| Black (1=Y, 0=N) | 0.22 | | 55 | 0.31 | | 55 | 0.1 | 0.28 |
| White (1=Y, 0=N) | 0.65 | | 55 | 0.58 | | 55 | -0.08 | 0.34 |
| Outcomes | | | | | | | | |
| Literacy Learning Index (Std.) | -0.04 | 1.06 | 60 | 0.04 | 0.94 | 62 | 0.09 | 0.65 |
| How much learn this sch yr about: matching books to students for indep. Reading | 3.32 | 0.85 | 60 | 3.6 | 0.85 | 63 | 0.3 | 0.01 |
| How much learn this sch yr about: teaching students a reading comprehension routine | 3.62 | 0.94 | 60 | 3.6 | 0.85 | 63 | 0 | 0.99 |
| How much learn this sch yr about: engaging students' families in student literacy | 3.53 | 0.77 | 60 | 3.52 | 0.82 | 63 | 0 | 0.98 |
| How much learn this sch yr about: supporting students' independent reading | 3.67 | 0.91 | 60 | 3.6 | 0.82 | 62 | -0.08 | 0.58 |
| How much learn this sch yr about: increasing students' engagement in reading | 3.65 | 0.84 | 60 | 3.71 | 0.83 | 63 | 0.07 | 0.65 |
| READS-related Lit Practices Index (Std.) | -0.08 | 1.12 | 58 | 0.08 | 0.87 | 62 | 0.18 | 0.4 |
| Over past 2 months, to what extent did you guide students' in selecting books for independent reading? | 3.23 | 0.93 | 60 | 3.38 | 0.94 | 63 | 0.17 | 0.29 |
| This school year, to what extent did you incorporate new strategies for teaching reading comprehension into your regular classroom practice? | 3.45 | 0.98 | 60 | 3.67 | 0.8 | 63 | 0.2 | 0.23 |
| Over past 2 months, how much emphasis did you place on engaging students' families in student literacy? | 3.15 | 0.92 | 60 | 3.21 | 0.81 | 63 | 0.11 | 0.41 |
| This school year, to what extent did you incorporate new strategies for supporting students' independent reading? | 3.48 | 1.02 | 60 | 3.58 | 0.82 | 62 | 0.08 | 0.7 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| This school year, to what extent did you incorporate new strategies for engaging students in independent reading? | 3.45 | 0.99 | 58 | 3.56 | 0.78 | 63 | 0.12 | 0.49 |
| Focus | 0.77 | | 60 | 0.48 | | 63 | -0.29 | 0 |
| Fiddle | 0.07 | | 60 | 0.22 | | 63 | 0.16 | 0 |
| Friends | 0.17 | | 60 | 0.3 | | 63 | 0.12 | 0.02 |
| Most helpful in improving implementation of READS: training/lesson box (focus) | 0.4 | | 60 | 0.13 | | 63 | -0.29 | 0 |
| Most helpful in improving implementation of READS: practice implementing strategies from lesson box (focus) | 0.37 | | 60 | 0.24 | | 63 | -0.12 | 0.01 |
| Most helpful in improving implementation of READS: online modules (focus) | 0 | | 60 | 0.11 | | 63 | 0.12 | 0.01 |
| Most helpful in improving implementation of READS: experimenting with adaptations to strategies in lesson box (fiddle) | 0.07 | | 60 | 0.22 | | 63 | 0.16 | 0 |
| Most helpful in improving implementation of READS: informal conversations (friends) | 0.17 | | 60 | 0.11 | | 63 | -0.05 | 0.14 |
| Most helpful in improving implementation of READS: working group meetings (friends) | 0 | | 60 | 0.19 | | 63 | 0.18 | 0 |

*Note*. Means and sd are unadjusted. Adj. T-C Diff=difference estimated from regression that controls for fixed effects of randomization blocs. P-value is for test of the null hypotheses that T-C=0 (standard errors clustered at the school level).

Table 2. Regression Models Predicting Teachers' Literacy-related Learning.

| | (1) Literacy Learning Index (Std.) | (2) Literacy Learning Index (Std.) | (3) Literacy Learning Index (Std.) |
|---|---|---|---|
| Adaptive | 0.127 | -0.245 | -0.493 |
| | (0.190) | (0.234) | (0.736) |
| READS Experience | -0.510** | -0.848*** | -0.434** |
| | (0.141) | (0.158) | (0.141) |
| Adaptive*READS Experience | | 0.677* | |
| | | (0.270) | |
| Adaptive*Mean READS Experience | | | 1.221 |
| | | | (1.245) |
| Mean READS Experience | | | -1.310 |
| | | | (0.775) |
| Constant | -0.0460 | 0.106 | 0.640 |
| | (0.141) | (0.112) | (0.431) |
| *N* | 122 | 122 | 122 |
| $R^2$ | 0.234 | 0.259 | 0.253 |

*Note*. Cluster-robust standard errors in parentheses. All models control for fixed effects of randomization blocs.
$^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$

Table 3. Multinomial Logistic Regression Models Predicting Teachers' Preferences for Different Types of Learning Activities.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Model 1 | | Model 2 | |
| | Friends_vs _Focus b/se | Fiddle_vs_ Focus b/se | Friends_vs _Focus b/se | Fiddle_vs_ Focus b/se |
| Adaptive | 1.137*** | 2.071*** | 1.057~ | 0.834 |
| | (0.288) | (0.475) | (0.616) | (1.021) |
| READS Experience | 0.712 | 0.568 | 0.647 | -1.144 |
| | (0.439) | (0.785) | (0.702) | (0.885) |
| Adaptive*READS Experience | | | 0.208 | 2.633~ |
| | | | (0.929) | (1.557) |
| *N* | 123 | | 123 | |

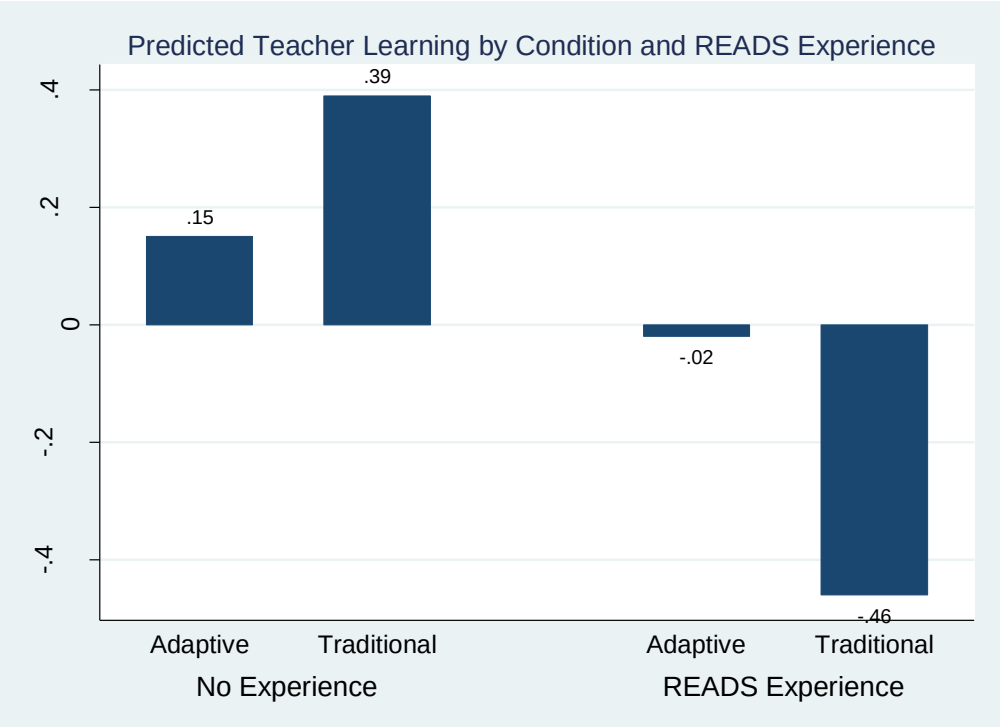
*Note.* Coefficients reported as odds ratios. Cluster-robust standard errors in parentheses. All models control for fixed effects of randomization blocs. “Focus” refers to focused PD activities to implement the program as designed by researchers; “Friends” refers to informal discussions with colleagues; “Fiddle” refers to experimenting with variations on the researcher-designed procedures.

Table 4. Regression Models Predicting Teachers' use of READS-related Literacy Activities Outside of READS.

| | (1) READS-related Lit Practices Index (Std.) | (2) READS-related Lit Practices Index (Std.) | (3) READS-related Lit Practices Index (Std.) | (4) READS-related Lit Practices Index (Std.) |
|---|---|---|---|---|
| Adaptive | 0.208 | -0.239 | -1.477* | -1.483* |
| | (0.210) | (0.253) | (0.599) | (0.596) |
| READS Experience | -0.304 | -0.720** | -0.224 | -0.525 |
| | (0.197) | (0.240) | (0.220) | (0.256) |
| Adaptive*READS Experience | | 0.812* | | 0.583 |
| | | (0.364) | | (0.408) |
| Adaptive*Mean READS Experience | | | 3.141** | 2.571* |
| | | | (1.030) | (1.141) |
| Mean READS Experience | | | -2.220** | -1.944* |
| | | | (0.753) | (0.735) |
| Constant | 0.511 | 0.717 | 1.619* | 1.641* |
| | (0.403) | (0.423) | (0.652) | (0.653) |
| *N* | 120 | 120 | 120 | 120 |
| $R^2$ | 0.112 | 0.149 | 0.173 | 0.191 |

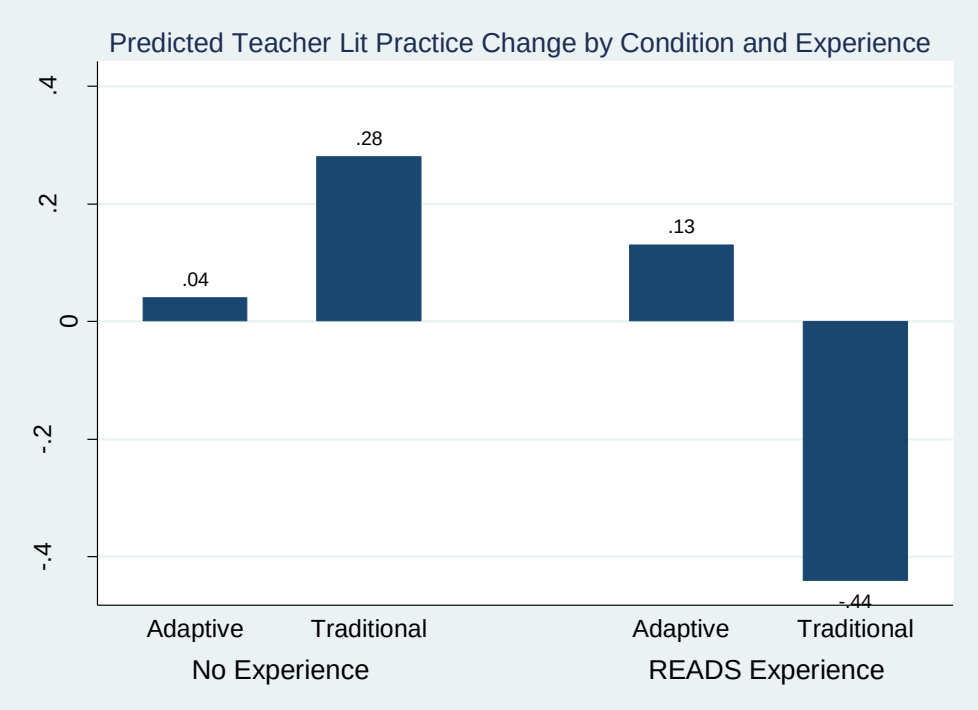
*Note.* Cluster-robust standard errors in parentheses. All models control for fixed effects of randomization blocs.
$^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$

Figure 1.




*Note.* Outcome is standardized to mean=0 and sd=1.

Figure 2.




*Note.* Outcome is standardized to mean=0 and sd=1.

**Appendix C Survey Items Comprising Indices**

Q3.1 In this first set of questions, we'd like you to think about your literacy-related learning this school year. This learning could have taken place in any setting.

Q3.2 How much did you learn this school year about each of the following?

| | Nothing (1) | Very little (2) | Some (3) | Quite a bit (4) | A tremendous amount (5) |
|---|---|---|---|---|---|
| Matching books to students for independent reading (1) | ❍ | ❍ | ❍ | ❍ | ❍ |
| Teaching students a reading comprehension routine (2) | ❍ | ❍ | ❍ | ❍ | ❍ |
| Engaging students' families in student literacy (3) | ❍ | ❍ | ❍ | ❍ | ❍ |
| Supporting students' independent reading (4) | ❍ | ❍ | ❍ | ❍ | ❍ |
| Increasing students' engagement in reading (5) | ❍ | ❍ | ❍ | ❍ | ❍ |

Q3.3 When implementing an intervention like READS, teachers learn how to improve their implementation through a variety of means. Below is a list of different types of learning experiences through which you may have learned how to better implement READS. This school year, what type of learning experience helped you the most at improving your implementation of READS?

- ❍ Getting information about researcher-designed procedures through training or by reading the materials in the READS lesson box (1)
- ❍ Having informal conversations about READS (2)
- ❍ Practicing implementing strategies as described in the READS lesson box (3)
- ❍ Experimenting with adaptations to the strategies in the READS lesson box (4)

Q2.4 In this next set of questions, we would like you to think about your literacy instruction this school year OUTSIDE OF YOUR PLANNED READS ACTIVITIES.

Q2.5 Over the past 2 months (i.e. since READS ITBS testing), to what extent did you guide students in selecting books for independent reading that were matched to their reading level and interests?

- ❍ Not at all (1)
- ❍ Very little (2)
- ❍ Some (3)
- ❍ Quite a bit (4)
- ❍ A tremendous amount (5)

Q2.6 This school year, to what extent did you incorporate new strategies for teaching reading comprehension into your regular classroom practice (i.e. outside of your planned READS activities)?

- ❍ Not at all (1)
- ❍ Very little (2)
- ❍ Some (3)
- ❍ Quite a bit (4)
- ❍ A tremendous amount (5)

Q2.7 Over the past 2 months (i.e. since READS ITBS testing), how much emphasis did you place on engaging students' families in student literacy (unrelated to READS)?

- ❍ None at all (1)
- ❍ Very little (2)
- ❍ Some (3)
- ❍ Quite a bit (4)
- ❍ A tremendous amount (5)

Q2.8 This school year, to what extent did you incorporate new strategies for supporting students' independent reading into your regular classroom practice (i.e outside of your planned READS activities)?

- ❍ Not at all (1)
- ❍ Very little (2)
- ❍ Some (3)
- ❍ Quite a bit (4)
- ❍ A tremendous amount (5)

Q2.9 This school year, to what extent did you incorporate new strategies for getting students engaged in independent reading into your regular classroom practice (i.e. outside of your planned READS activities)?

- ❍ Not at all (1)
- ❍ Very little (2)
- ❍ Some (3)
- ❍ Quite a bit (4)
- ❍ A tremendous amount (5)

**Appendix D. Coding Survey Items for *Focus, Fiddle, and Friends* Learning Experiences**

We wanted to measure whether teachers found that they learned more through "focus" activities (i.e. receiving basic information about the intervention and gaining experience implementing it with fidelity), "fiddle" activities (i.e. experimenting with variations on the intervention), or "friends" activities (i.e. consulting with colleagues about the intervention). To do so, we presented the following prompt to teachers: When implementing an intervention like READS, teachers learn how to improve their implementation through a variety of means. Below is a list of different types of learning experiences through which you may have learned how to better implement READS. This school year, what type of learning experience helped you the most at improving your implementation of READS?" Answer choices were: 1) Getting information about researcher-designed procedures through training or by reading the materials in the READS lesson box, 2) Having informal conversations about READS, 3) Practicing implementing strategies as described in the READS lesson box, or 4) Experimenting with adaptations to the strategies in the READS lesson box. Because Adaptive READS teachers had additional learning opportunities that were not part of the Traditional READS treatment, teachers in the Adaptive condition were given the following answer choices in addition to those described above: 5) Going through the online modules, 6) Attending working group meetings in November, January, and February. We coded answer choices one, three, and five as "focus" learning activities; answer choice 4 as "fiddle," and answer choices two and six as "friends" learning activities in order to generate a measure of whether each teacher perceived focus, fiddle, or friends activities to be the most useful learning experiences.