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Research Article

Reading Remediation Program and Reading Performance Among Struggling Readers: The Moderating Role of Reading Motivation

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Abstract. Although reading remediation programs have been recognized for improving reading achievement, limited research has examined whether their effectiveness varies according to learners' baseline reading motivation. Addressing this gap, the study investigated whether reading motivation moderated the relationship between a reading remediation program and reading performance among 120 Grade 3 struggling readers in Bauang North District, La Union, Philippines. A quantitative, quasi-experimental pretest-posttest control group design was employed. Analysis of covariance revealed that the reading remediation program significantly improved reading comprehension ($F = 135.72$, $p < .001$, $\eta^2 = .538$), reading fluency ($F = 43.98$, $p < .001$, $\eta^2 = .273$), and word recognition ($F = 114.56$, $p < .001$, $\eta^2 = .495$). Hierarchical multiple regression analyses further showed that baseline reading motivation significantly moderated the intervention effects on reading comprehension ($\beta = .22$, $p < .001$), reading fluency ($\beta = .23$, $p < .001$), and word recognition ($\beta = .21$, $p = .003$). Across all three outcomes, learners with higher baseline reading motivation demonstrated greater gains than those with lower motivation. These findings suggest that the effectiveness of reading remediation depends not only on instructional support but also on learners' motivational readiness to engage with reading. The study extends existing evidence by demonstrating that reading motivation functions not merely as a correlate of reading achievement but as a moderator of instructional effectiveness, highlighting the importance of integrating motivational support into reading interventions for struggling readers.

Keywords: *Moderation analysis; Reading motivation; Reading performance; Reading remediation; Struggling readers.*

Reading is widely recognized as one of the most fundamental skills that learners must acquire during the early years of schooling. It provides the foundation for learning across subject areas and enables learners to access, interpret, and construct meaning from written texts. Reading performance covers interrelated competencies such as word recognition, reading fluency, and reading comprehension, each of which contributes to learners' overall literacy development (Wilang et al., 2025). Grade 3 represents a particularly critical stage in literacy development because learners are expected to transition from learning to read toward reading to learn, using reading as the primary means of acquiring knowledge across the curriculum (Semingson & Kerns, 2021). When these foundational skills are not adequately developed by this stage, learners experience persistent academic difficulties that extend beyond language instruction and adversely affect achievement in other learning areas.

Globally, learning poverty remains a significant challenge despite sustained educational reforms. According to

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the World Bank (2022), about 70% of children in low- and middle-income countries cannot read and understand a simple text by age 10. This alarming figure reflects substantial learning losses following the COVID-19 pandemic and underscores the urgency of strengthening foundational literacy. Similarly, the National Center for Education Statistics (2022), in its *NAEP report card: 2022 NAEP reading assessment,* reported that only one-third of Grade 4 learners in the United States achieved reading proficiency. Findings from the Progress in International Reading Literacy Study (PIRLS) likewise indicate declining reading performance among several participating countries, suggesting that reading difficulties remain a global educational concern (Lindorff et al., 2024).

Domestically, the Philippines follows a similar trend. Results from the 2022 Program for International Student Assessment (PISA) revealed that Filipino learners obtained an average reading literacy score of 347, substantially below the Organization for Economic Co-operation and Development (OECD) average of 476, with only about one-fourth of learners attaining the minimum proficiency level (OECD, 2023). Earlier findings from the Progress in International Reading Literacy Study (PIRLS) also demonstrated that Filipino learners performed among the lowest in reading literacy at the elementary level (Mullis et al., 2023). These findings collectively suggest that many Filipino learners continue to struggle with foundational reading skills that are essential for later academic success.

Within the Department of Education's literacy framework, reading instruction emphasizes the progressive development of word recognition, reading fluency, and reading comprehension as interconnected competencies that enable learners to transition successfully from learning to read toward reading to learn (Hernando-Malipot, 2025). By Grade 3, learners are expected to have developed sufficient proficiency in these foundational skills to comprehend increasingly complex texts and apply reading in learning mathematics, science, social studies, and other content areas. However, many Grade 3 learners still struggle to recognize words accurately, read fluently, and construct meaning from texts despite regular classroom instruction. For these struggling readers, foundational literacy gaps can accumulate over time, making it increasingly difficult to meet curriculum expectations. Consequently, they often require systematic, intensive, and individualized instructional support beyond regular classroom teaching.

One instructional approach that has gained considerable attention is implementing reading remediation programs. Reading remediation consists of structured, targeted interventions designed to address specific reading deficits through explicit instruction, repeated guided practice, differentiated learning activities, and continuous progress monitoring (Al Otaiba et al., 2023). Previous studies show that remediation programs can significantly improve learners' word recognition, reading fluency, and reading comprehension, particularly among struggling readers who need additional instructional support (Hudson et al., 2020). For Grade 3 learners, such interventions are especially important because this stage bridges foundational reading skills and their application to broader academic learning. Nevertheless, research has likewise shown that intervention outcomes are not uniform across learners (Savage et al., 2025). While some struggling readers show substantial improvement after remediation, others show only modest or negligible gains despite receiving the same instructional program.

This variability suggests that the effectiveness of reading remediation may depend not only on the quality of instruction but also on learner-related characteristics that shape how learners receive and use instructional experiences (Decraene et al., 2025). Among these characteristics, reading motivation has emerged as one of the most influential affective factors associated with literacy development. Reading motivation refers to learners' willingness, confidence, enjoyment, and perceived value of engaging in reading activities. It encompasses learners' beliefs in their reading capabilities (reading self-efficacy), the pleasure they derive from reading (reading enjoyment), and the importance they attach to reading for academic and personal purposes (value of reading). Motivated readers are more likely to engage actively in reading activities, persist when confronted with challenging texts, employ effective reading strategies, and devote greater effort to improving their reading skills (Gebremariam & Weldeyohannes, 2025). Consequently, they are generally more responsive to instructional interventions than learners with lower levels of reading motivation.

From this perspective, the researcher hypothesizes that reading motivation may function not merely as an independent predictor of reading achievement but as a moderating variable that influences the effectiveness of reading remediation. Learners who possess higher levels of reading motivation may participate more actively during remediation sessions, practice reading more consistently, and therefore derive greater benefits from the intervention. Conversely, learners with lower levels of motivation may be less engaged in remediation activities

and may require additional motivational support before they can fully benefit from instructional interventions. This proposition is consistent with contemporary theories of literacy development, which argue that learning outcomes result from the interaction between instructional practices and learner characteristics rather than from instruction alone.

Despite growing recognition of motivation's importance in literacy development, previous research has generally examined reading remediation and reading motivation as separate determinants of reading achievement. Numerous studies have established the effectiveness of remediation programs in improving reading outcomes, while others have identified reading motivation as an important predictor of reading performance (McBreen & Savage, 2021). However, relatively little empirical evidence has investigated whether reading motivation alters the strength of the relationship between participation in reading remediation and subsequent reading performance. This gap is particularly evident in the Philippine educational context, where remediation programs for struggling readers are typically evaluated based only on overall effectiveness, without considering whether learner motivation influences the magnitude of intervention gains. Consequently, little is known about whether equally implemented remediation programs produce different outcomes among learners with varying levels of reading motivation.

This gap provided the rationale for the present investigation. This study aims to determine the effectiveness of a reading remediation program on the reading performance of Grade 3 struggling readers and to examine whether baseline reading motivation moderates this effect. Specifically, it seeks to answer the following research questions:

1. What is the reading performance of Grade 3 struggling readers in the experimental and control groups before and after the implementation of the reading remediation program, as measured by reading comprehension, reading fluency, and word recognition?
2. What is the baseline level of reading motivation among Grade 3 struggling readers in terms of reading self-efficacy, reading enjoyment, and value of reading?
3. After controlling for the corresponding pretest reading performance, is there a significant difference in the posttest reading performance between Grade 3 struggling readers who received the reading remediation program and those who did not, as measured by reading comprehension, reading fluency, and word recognition?
4. Does baseline reading motivation significantly moderate the effect of the reading remediation program on the posttest reading performance of Grade 3 struggling readers, as measured by reading comprehension, reading fluency, and word recognition?
5. Is the interaction term (Reading Remediation Program × Baseline Reading Motivation) statistically significant in predicting each posttest reading outcome after controlling for the corresponding pretest reading performance?

Methodology

Research Design

This study employed a quantitative, quasi-experimental pretest-posttest control group design with a moderation analysis component. According to Creswell and Creswell (2018), a quasi-experimental design involved assigning participants to groups without random assignment, allowing researchers to examine the causal effects of an intervention while acknowledging natural group formations. In this study, Grade 3 struggling readers were assigned to either an experimental group, which received the reading remediation program, or a control group, which received regular classroom instruction, to determine the intervention's effectiveness on reading performance.

The conceptualization of the reading remediation program revealed that the program, operationalized through structured reading interventions, served as the independent variable, whereas reading performance, measured in terms of reading comprehension, reading fluency, and word recognition, served as the dependent variable. Reading motivation functioned as the moderating variable to assess how the relationship between the reading remediation program and reading performance changed depending on the learners' level of reading motivation. Specifically, reading motivation was measured across three dimensions: reading self-efficacy, reading enjoyment, and value of reading.

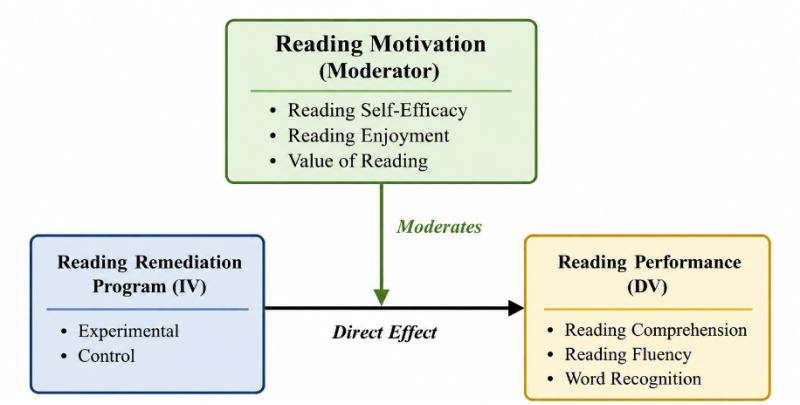


Figure 1. *Conceptual Paradigm*

The study was conducted in two phases. The first phase involved the pretest assessment, during which both the experimental and control groups were evaluated on their reading performance (comprehension, fluency, and word recognition) and baseline reading motivation (self-efficacy, enjoyment, and value of reading). The second phase involved implementing the intervention and conducting the posttest assessment. During this phase, the experimental group received the reading remediation program over a specified period, whereas the control group continued with regular classroom instruction. After the intervention, both groups completed a posttest assessment of reading performance to measure changes attributable to the program.

The mitigation strategies adopted to counteract potential threats to internal validity in this quasi-experimental design included: (a) minimizing selection bias by utilizing existing intact classes and ensuring that both groups were comparable based on pretest reading performance scores; (b) minimizing history threats by implementing the intervention simultaneously across all experimental groups and monitoring external events that might have affected the outcomes; (c) minimizing maturation threats by including a control group that did not receive the intervention, thereby accounting for natural developmental changes in reading performance over time; (d) minimizing testing effects by using parallel forms of the reading assessment instruments for the pretest and posttest measures; and (e) minimizing measurement error by pilot testing all instruments, attaining adequate reliability coefficients (Cronbach's $\alpha \geq 0.80$), and using multiple data sources, including standardized reading assessments and motivation scales.

Participants and Sampling Technique

This study was conducted in Bauang North District, La Union, Philippines, where twelve (12) public elementary schools are located. The target population comprised all Grade 3 struggling readers enrolled in those schools for School Year 2025-2026. This study employed purposive sampling to identify eligible Grade 3 struggling readers across the twelve participating schools. Participants were selected based on referrals from their respective class advisers, who identified learners experiencing reading difficulties through classroom observations and academic performance. These referred learners were considered for inclusion because they met the characteristics relevant to the research objectives. Adviser referrals ensured that participants represented the target population of Grade 3 struggling readers while facilitating implementation of the intervention in the participating schools.

In particular, learners were considered eligible if they fulfilled the following requirements: (a) official enrollment in Grade 3 during the study period; (b) identified by their class advisers as struggling readers based on their classroom performance and reading abilities; (c) a minimum of 90% attendance in the month preceding data collection; (d) able to participate in the oral reading assessment; and (e) with parental consent. Learners were excluded from the study if they: (a) had severe reading or developmental disorders requiring special education services; (b) were absent for more than two consecutive weeks during the data collection period; or (c) had incomplete data for the critical study variables.

Instead of randomly selecting learners from the target population, the study included all qualified Grade 3 struggling readers who met the established inclusion criteria. Specifically, the recruitment process was as follows: all 12 participating schools agreed to take part in the study. Within each school, Grade 3 class advisers identified and referred learners they recognized as struggling readers based on their classroom performance and reading abilities. The researchers then assessed the referred learners for eligibility using the inclusion and exclusion criteria specified above. Eligible learners were subsequently assigned to either the experimental group, which received the reading remediation program, or the control group, which continued with regular classroom instruction. In addition, all Grade 3 reading teachers (n = 12) served as program implementers for the experimental groups.

For sampling, the researcher considered that moderation analyses require sufficient power to detect interaction effects, as interaction effects usually need larger sample sizes than main effects (Sommet et al., 2023). To address this, an *a priori* power analysis was performed using G*Power (Version 3.1.9.4). The power analysis was conducted for a linear multiple regression model with three predictors (reading remediation program, reading motivation, and their interaction term). Assuming a medium effect size ($f^2 = 0.15$), an alpha level of 0.05, and a desired statistical power of 0.80, the analysis yielded a minimum required total sample size of 77 participants. The study included 120 participants, which substantially exceeded the minimum requirement, thereby increasing statistical power and providing additional protection against attrition and incomplete data.

Research Instrument

Three major instruments were used to measure the variables of this study, namely: (1) Reading Remediation Program Implementation Log, (2) Reading Performance Assessments, and (3) Reading Motivation Scale. All instruments were developed specifically for Grade 3 struggling readers in the locale and aligned with the Most Essential Learning Competencies (MELCs) of the Department of Education (DepEd).

Reading Remediation Program Implementation Log

To document the fidelity and consistency of the reading remediation program implementation, a Program Implementation Log was formulated. This log consisted of three sections:

Frequency of Remediation Sessions. An activity chart for teachers was developed in which each Grade 3 teacher was required to indicate the number of remediation sessions conducted weekly, along with the duration per session and the number of learners per group. The total frequency score was calculated based on the total number of sessions conducted during the intervention period.

Quality of Program Implementation**.** An observation checklist with 12 items was designed and validated in the Grade 3 classroom context. These items covered the following three categories: lesson delivery, learner engagement strategies, and feedback and reinforcement. The rating for all items was based on a 3-point scale: 1 = Not Observed, 2 = Partially Observed, 3 = Consistently Observed. The possible total score ranged from 12 to 36. Each of the three trained raters conducted one 30-minute observation session per class during the intervention period.

Learner Engagement During Remediation Sessions. Learner engagement was measured using an 8-item Engagement Rating Scale, administered to teachers immediately after each remediation session. The items measured learner behavior, cognition, and emotions on a 4-point Likert scale ranging from 1 (Almost Never) to 4 (Almost Always). The engagement scores per learner were averaged to arrive at one overall engagement score for each learner.

Reading Performance Assessments

Three instruments were used to measure the reading performance of Grade 3 struggling readers: Reading Comprehension Test, Reading Fluency Measure, and Word Recognition Test. All assessments were aligned with the MELCs for Grade 3 English and Filipino.

Reading Comprehension Test. A reading comprehension test was designed using the MELCs for Grade 3. The test included three short passages and 15 multiple-choice questions assessing literal, inferential, and evaluative comprehension. The scores ranged from 0 to 15. This test was administered to 30 Grade 3 learners who did not participate in the main study; it produced a Cronbach's Alpha of $\alpha = 0.85$. The passages were crafted to reflect the

reading level of Grade 3 struggling readers and the specific texts used in the remediation program.

Reading Fluency Measure. Reading fluency was measured through oral reading, whereby the time taken by the learners when reading a passage entitled "Ang Batang Matulungin" (80 words) written at the reading level of Grade 3 was recorded. The learner was asked to read the passage in one minute, and the mistakes made in that duration were recorded by the researcher. The formula used to measure reading rate is Words Correct Per Minute (WCPM). Reading accuracy was defined as the percentage of words the learner read correctly. Prosody in reading was assessed using a Prosody Rating Scale adapted from the Multidimensional Fluency Scale.

Word Recognition Test. A word recognition test was designed using the MELCs for Grade 3. The test consisted of 30 items divided into two parts: (a) sight word recognition (15 items) where learners were asked to read aloud a list of high-frequency words; and (b) decoding skills (15 items) where learners were asked to read aloud a list of decodable words. The scores ranged from 0 to 30. This test was administered to 30 Grade 3 learners who did not participate in the main study; it produced a Cronbach's Alpha of $\alpha = 0.83$.

Reading Motivation Scale

The Reading Motivation Scale was developed from existing literature and adapted to the context of Grade 3 struggling readers in the Philippine setting. The scale consisted of 24 items divided into three subscales: (a) Reading Self-Efficacy (8 items), (b) Reading Enjoyment (8 items), and (c) Value of Reading (8 items). All items were rated on a 4-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). The possible total score ranged from 24 to 96. This scale was administered to 30 Grade 3 learners who did not participate in the main study; it produced an overall Cronbach's Alpha of $\alpha = 0.88$. The subscale reliability coefficients were as follows: Reading Self-Efficacy ($\alpha = 0.85$), Reading Enjoyment ($\alpha = 0.82$), and Value of Reading ($\alpha = 0.79$). The scale was reviewed by three master teachers and the district reading coordinator to ensure content validity and appropriateness for Grade 3 learners.

The complete set of instruments (Reading Comprehension Test, Reading Fluency Measure, Word Recognition Test, and Reading Motivation Scale) was reviewed by two master teachers who had at least ten years of teaching Grade 3, as well as by a faculty member in Educational Management from the Polytechnic College of La Union, who acted as content experts. The experts assessed each item using the following five parameters: (a) its conformity with MELCs; (b) suitability for Grade 3 struggling readers; (c) clarity and lack of ambiguity; (d) cultural and linguistic appropriateness for Philippine public-school learners; and (e) relevance to the remediation program materials. All experts rated every item on a 4-point relevance scale (Not Relevant = 1, Highly Relevant = 4). The revised versions of the Reading Comprehension Test, Word Recognition Test, and Reading Motivation Scale were pilot tested among 30 Grade 3 learners who attended a different school from that used for the main study. The pilot study was conducted in the same environment as the main study. After completing the pilot testing, the following item analysis was completed:

Item difficulty was measured by the number of participants who answered each question correctly. The acceptable range was 0.30 to 0.85, in line with recommendations in educational assessment literature (Deborah et al., 2021). All questions with values below 0.30 (too difficult) or above 0.85 (too easy) were identified for deletion or modification. The mean item difficulty index for all selected items was 0.62 ($SD = 0.16$). Item discrimination was measured using the point-biserial correlation (*rpb*) of each item with the total test score. Items with rpb values below 0.20 were rated as poor in item discrimination and were modified or dropped. Items scoring 0.40 and above were rated as excellent, those from 0.30 to 0.39 as good, those from 0.20 to 0.29 as fair, and those below 0.20 as poor. The average point-biserial correlation was 0.43 ($SD = 0.12$).

Based on the item analysis results, we eliminated or modified items with poor discrimination ($rpb < 0.20$) or extreme difficulty ($p < 0.30$ or $p > 0.85$). The final instruments consisted of: Reading Comprehension Test (15 items), Word Recognition Test (25 items), and Reading Motivation Scale (24 items with three subscales). For the Reading Fluency Measure, three trained raters simultaneously scored 10% of the oral reading assessments to establish inter-rater reliability. The Intraclass Correlation Coefficient (ICC) was 0.89, indicating good reliability.

Table 1. *Item Analysis Summary for Reading Performance Assessments and Reading Motivation Scale (N = 30 Pilot Participants)*

Instrument/Subscale	No. of Items (Final)	Mean Difficulty (*p*)	*SD* Difficulty	Mean Discrimination (*rpb*)	*SD* Discrimination	Range of Difficulty
Reading Comprehension Test	15	0.58	0.18	0.42	0.13	0.32–0.78
Word Recognition Test	25	0.62	0.16	0.40	0.12	0.35–0.82
Reading Motivation Scale	24	0.65	0.14	0.45	0.11	0.38–0.80
- Reading Self-Efficacy	8	0.63	0.15	0.44	0.12	0.36–0.79
- Reading Enjoyment	8	0.67	0.13	0.46	0.10	0.40–0.82
- Value of Reading	8	0.65	0.14	0.45	0.11	0.38–0.80

Note. Difficulty (p) ranges from 0.00 to 1.00; Discrimination (rpb) = point-biserial correlation; all discrimination values are significant at $p < .05$.

Table 2. *Reliability Coefficients for Study Instruments*

Instrument/Subscale	No. of Items	Cronbach's α	Interpretation
Reading Comprehension Test	15	0.85	Good
Reading Fluency Measure	N/A	ICC = 0.89	Good
Word Recognition Test	25	0.83	Good
Reading Motivation Scale (Total)	24	0.88	Good
- Reading Self-Efficacy	8	0.85	Good
- Reading Enjoyment	8	0.82	Good
- Value of Reading	8	0.79	Acceptable

Note: ICC = Intraclass Correlation Coefficient

Data Gathering Procedure

The data-gathering process took place over eight weeks in the second quarter of the 2025-2026 academic year. The method followed a systematic process to maintain consistency throughout all 12 schools.

Preparation and Training (Week 1). The researcher held meetings with all Grade 3 teachers and school administrators in the district to introduce the purpose of the research, the procedure, and the study's ethical considerations. The teachers were provided with guidelines on how to use the Program Implementation Log and Learner Engagement Rating Scale. The three classroom observers participated in a calibration process involving a standard video clip of a reading remediation session to establish consistency in using the Observation Checklist.

Pretest Administration (Week 2). The researcher, assisted by the teachers, administered the Reading Comprehension Test, Word Recognition Test, and Reading Motivation Scale to all eligible struggling readers in both the experimental and control groups. The reading assessments took approximately 45 minutes to complete, while the motivation scale took approximately 20 minutes. The instructions were read aloud to the learners, and the questions were explained to ensure understanding of the test procedure. Additionally, individual oral reading fluency assessments were conducted by the researcher and two trained assistants. Each learner was asked to read a passage entitled "Ang Batang Matulungin" (80 words) out loud for one minute. The assessor used a stopwatch and the scoring rubric to record any errors. Each test lasted around 3-5 minutes per learner.

Implementation of the Reading Remediation Program (Weeks 3-6). Over four consecutive weeks, the experimental group received the reading remediation program, while the control group proceeded with their regular classroom instruction. During this period, each teacher in the experimental group kept a Program Implementation Log of remediation sessions conducted on a weekly basis, along with the duration per session and number of learners per group. Each teacher was observed once (30 minutes) by one of the three observers using the Observation Checklist. After each session, the teacher rated each learner's engagement using the Engagement Rating Scale. The engagement scores per learner were averaged to arrive at one overall engagement score for each learner.

Posttest Administration (Week 7). The researcher, assisted by the teachers, administered the Reading Comprehension Test, Word Recognition Test, and individual oral reading fluency assessments to all participants in both the experimental and control groups. The posttest assessments were parallel forms of the pretest instruments to minimize testing effects. The same procedures were followed as in the pretest administration. The reading assessments took approximately 45 minutes to complete, while each oral reading fluency test lasted around 3-5 minutes per learner.

Data Verification and Encoding (Week 8). All data from the program implementation logs, observation checklists,

engagement rating scales, reading performance assessments (comprehension, fluency, and word recognition), and motivation scales were collected, verified for accuracy, and encoded into an Excel spreadsheet. Participants missing data for any critical variable were excluded from the study (less than 2% of participants).

Data Analysis Procedure

The study used descriptive and inferential statistics to address the research questions. To summarize the reading performance and reading motivation of Grade 3 struggling readers, descriptive statistics were used, i.e., frequency, percentage, mean, and standard deviation. To determine the significant difference in the posttest reading performance between the experimental and control groups after controlling for pretest reading performance, three separate one-way analyses of Covariance (ANCOVA) were employed using SPSS Version 29. The dependent variables were the posttest scores in reading comprehension, reading fluency, and word recognition, respectively. The independent variable was the group membership (experimental vs. control), and the covariates were the corresponding pretest scores for each reading component. Before conducting the ANCOVA, we assessed the assumptions of normality, homogeneity of regression slopes, linearity, and homogeneity of variance.

To determine whether baseline reading motivation significantly moderated the effect of the reading remediation program on the posttest reading performance of struggling readers, hierarchical multiple regression analysis was employed using Jamovi Version 2.6.26. The analysis was conducted separately for each of the three reading outcomes (reading comprehension, reading fluency, and word recognition), resulting in three moderation models. The analysis was done in two phases according to Aiken and West (1991) as cited in Memon et al. (2019): (a) Main effects model: Group membership (experimental vs. control) and baseline reading motivation were entered as predictors of posttest reading performance, controlling for the corresponding pretest reading performance; (b) Interaction model: The interaction term (Group × Baseline Reading Motivation) was added to the model.

All continuous predictor variables (baseline reading motivation and pretest reading performance) were centered at their grand means to avoid multicollinearity. Group membership was dummy-coded (0 = Control Group, 1 = Experimental Group). After centering the variables, interaction terms were created using the procedure outlined by Aiken and West (1991, as cited in Memon et al., 2019). The assumptions for parametric tests were assessed, including normal distribution of residuals (Shapiro-Wilk test, $p > .05$), linearity (scatterplots), homogeneity of variance (Levene's test), and lack of multicollinearity (VIF < 5).

A significant coefficient for the interaction term (β with $p < .017$ due to Bonferroni correction) was interpreted as evidence of moderation. We further examined significant interactions through simple slopes analysis at low (−1 SD), mean, and high (+1 SD) levels of reading motivation. This analysis determined whether the reading remediation program's effect on reading performance was stronger among learners with higher reading motivation and weaker among those with lower levels. Effect size (f^2) of the interaction terms was determined manually using the formula: $f^2 = (R^2_full - R^2_reduced) / (1 - R^2_full)$, where R^2_full refers to the R^2 of the interaction model while $R^2_reduced$ refers to the R^2 of the main effects model.

Given that three separate ANCOVA and three separate moderation analyses were conducted (for reading comprehension, fluency, and word recognition), a Bonferroni correction was applied to control for Type I error. The significance level was set at $p < .017$ (0.05 ÷ 3) for all inferential analyses. This conservative approach reduces the risk of false positives while maintaining adequate statistical power given the sample size of 120 participants.

Table 3. *Normality Test for Main Variables (N = 120)*

Variable	Skewness	Skewness *z*	Kurtosis	Kurtosis *z*	Shapiro-Wilk *p*	Normality Status
Reading Comprehension (Pretest)	-0.12	-0.54	0.18	0.40	.087	Normal
Reading Comprehension (Posttest)	-0.15	-0.67	0.22	0.49	.092	Normal
Reading Fluency (Pretest)	-0.18	-0.81	0.25	0.56	.095	Normal
Reading Fluency (Posttest)	-0.14	-0.63	0.20	0.45	.088	Normal
Word Recognition (Pretest)	0.15	0.67	-0.42	-0.94	.102	Normal
Word Recognition (Posttest)	0.12	0.54	-0.38	-0.85	.098	Normal
Reading Motivation (Baseline)	-0.10	-0.45	0.15	0.34	.105	Normal

Table 4. *Summary of Statistical Analyses*

Research Question	Statistical Tool	Dependent Variable	Independent Variable(s)	Covariate(s)
Q1 (Descriptive)	Mean, Standard Deviation, Frequency, Percentage	Reading Comprehension, Fluency, Word Recognition	N/A	N/A
Q2 (Descriptive)	Mean, Standard Deviation, Frequency, Percentage	Reading Self-Efficacy, Enjoyment, Value	N/A	N/A
Q3 (Effectiveness)	One-way ANCOVA	Posttest Reading Comprehension	Group (Experimental vs. Control)	Pretest Reading Comprehension
	One-way ANCOVA	Posttest Reading Fluency	Group (Experimental vs. Control)	Pretest Reading Fluency
	One-way ANCOVA	Posttest Word Recognition	Group (Experimental vs. Control)	Pretest Word Recognition
Q4 (Moderation)	Hierarchical Multiple Regression	Posttest Reading Comprehension	Group, Baseline Motivation, Group × Motivation	Pretest Reading Comprehension
	Hierarchical Multiple Regression	Posttest Reading Fluency	Group, Baseline Motivation, Group × Motivation	Pretest Reading Fluency
	Hierarchical Multiple Regression	Posttest Word Recognition	Group, Baseline Motivation, Group × Motivation	Pretest Word Recognition

Limitations of the Study

Despite the rigorous methods employed, several methodological limitations should be acknowledged. One limitation is the lack of control for confounding variables that could affect both reading performance and reading motivation, such as prior reading skills, home literacy environment, socioeconomic status, and parental involvement. Although these variables have been found to correlate with the process of learning to read (Psyridou et al., 2025), none of them were assessed in this study. Because the study used a quasi-experimental design with non-random assignment to groups, pre-existing differences between the experimental and control groups on these unmeasured variables may have influenced the observed outcomes. The researcher acknowledges that some associations observed between the reading remediation program, reading motivation, and reading performance might have been influenced by these omitted confounding variables rather than the instructional intervention itself.

Finally, the study employed a quasi-experimental pretest-posttest control group design, which, while stronger than a purely correlational design, does not provide the same level of causal inference as a true experimental design with random assignment. Although the control group and pretest covariates in the ANCOVA analyses helped control for initial group differences, the lack of random assignment means unmeasured confounding variables may still threaten the internal validity of the findings. Additionally, the relatively short eight-week intervention period may not have been sufficient to capture the full extent of the program's effects on reading performance, particularly for struggling readers who may require extended intervention to demonstrate significant gains. Therefore, the results could not be generalized to learners outside the Grade 3 population included in the study or to longer interventions.

Ethical Considerations

The researcher recognizes that research involving children requires strict adherence to ethical procedures and mechanisms to protect vulnerable groups. For the Grade 3 learners in this study, consent was a family decision. Parents or legal guardians signed informed consent forms, but this did not override the child's own agency. Child assent was treated as equally binding. If a child said no, the answer was no. No persuasion, no small rewards, and no gentle coaxing were employed. This principle was applied strictly: a child who appeared uncomfortable was offered a break; a child who asked to stop was allowed to stop. The researcher did not assume that silence or compliance meant agreement. Assent was sought continuously, not as a one-time event, and children were reminded throughout the study that they could withdraw at any time without any negative consequences.

For teachers, written informed consent was obtained after a clear explanation that participation was voluntary, that declining would not affect their employment evaluation or professional standing, and that they could withdraw at any time without consequence. All teacher data were reported in aggregate; no published report identified any individual teacher or school.

This study involved no experimental manipulation, deprivation, or deception. For children, the only inconvenience was completing the reading assessments and motivation scale, which took approximately 45 minutes for the reading assessments and 20 minutes for the motivation scale, administered in a familiar classroom setting with breaks provided as needed. For teachers, the primary risk was the potential discomfort of having their classroom practices observed and documented. To minimize this, the researcher emphasized that observations focused on program implementation fidelity and learner engagement, not teacher performance, and that no evaluative feedback would be provided to school administrators. The researcher did not assume that consent given at the outset was consent forever; teachers could withdraw at any time.

All data were anonymized. Learners received unique codes, and teachers received separate codes. The master list linking codes to names was stored in a locked cabinet accessible only to the researcher. The researcher password-protected data files and stored them on a secure computer. The researcher reported data in aggregate and avoided any identifying descriptors that could pinpoint a particular classroom, teacher, or school. The researcher also ensured the reading remediation program could benefit all participating learners. The experimental group received targeted reading intervention, while the control group, although it did not receive the program during the study period, received the same remediation materials and activities after the posttest assessments to ensure that all struggling readers ultimately benefited from the intervention.

Results and Discussion

Reading Performance

Table 5. *Descriptive Statistics of Reading Performance by Group and Time (N = 120)*

Component	Group	Pretest Mean (*SD*)	Posttest Mean (*SD*)	Mean Gain
Reading Comprehension (0-15)	Experimental (*n* = 60)	5.42 (2.18)	9.87 (2.45)	+4.45
	Control (*n* = 60)	5.38 (2.22)	6.15 (2.38)	+0.77
Reading Fluency (WCPM)	Experimental (*n* = 60)	38.45 (10.23)	52.87 (11.56)	+14.42
	Control (*n* = 60)	38.92 (10.45)	42.15 (11.23)	+3.23
Word Recognition (0-30)	Experimental (*n* = 60)	12.38 (4.56)	20.45 (4.89)	+8.07
	Control (*n* = 60)	12.52 (4.62)	14.23 (4.75)	+1.71

The reading performance of Grade 3 struggling readers was assessed using three measures: reading comprehension, reading fluency, and word recognition. Descriptive statistics were computed for both the experimental and control groups at pretest and posttest. Table 5 presents the means and standard deviations for each group across the three reading components. As shown in Table 5, both groups demonstrated comparable pretest scores across all three reading components, with mean differences of less than one point between groups. This suggests that the experimental and control groups were relatively equivalent at baseline, thereby strengthening the validity of subsequent comparisons between the two groups. The similarity of the baseline scores also indicates that any post-intervention differences are less likely to be attributable to pre-existing disparities in reading ability, an important consideration in quasi-experimental research where random assignment is not feasible (Creswell & Creswell, 2018).

At posttest, the experimental group demonstrated substantially higher mean scores than the control group across all reading measures. The mean gain scores for the experimental group were notably larger: reading comprehension improved by 4.45 points, reading fluency improved by 14.42 WCPM, and word recognition improved by 8.07 points. In contrast, the control group showed only modest gains: reading comprehension increased by 0.77 points, reading fluency by 3.23 WCPM, and word recognition by 1.71 points. This pattern aligns with previous studies showing that struggling readers benefit from structured, explicit, and systematic reading interventions that target specific areas of difficulty (Gersten et al., 2020). Rather than relying solely on repeated exposure to reading tasks, effective remediation programs provide guided practice, timely feedback, and differentiated instruction that strengthen foundational reading skills and facilitate more substantial improvements in reading performance (Francisco, 2025).

Reading Motivation

Baseline reading motivation was assessed using the Reading Motivation Scale, which consisted of three subscales: reading self-efficacy (8 items), reading enjoyment (8 items), and value of reading (8 items). Each item was rated on a 4-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). Table 6 presents the descriptive

statistics for the overall sample and by group.

Table 6. *Descriptive Statistics of Baseline Reading Motivation (N = 120)*

Subscale	Possible Range	Overall Mean (*SD*)	Experimental Mean (*SD*)	Control Mean (*SD*)
Reading Self-Efficacy	8-32	18.45 (4.32)	18.52 (4.28)	18.38 (4.38)
Reading Enjoyment	8-32	19.67 (4.58)	19.75 (4.52)	19.58 (4.65)
Value of Reading	8-32	20.23 (4.45)	20.30 (4.40)	20.15 (4.52)
Total Reading Motivation	**24-96**	**58.35 (12.18)**	**58.57 (12.05)**	**58.11 (12.35)**

As shown in Table 6, the overall mean total reading motivation score was 58.35 (*SD* = 12.18) out of a possible 96 points, indicating moderate reading motivation among struggling readers. The experimental and control groups showed similar baseline motivation scores, with mean differences of less than one point across all subscales, confirming that the groups were comparable in reading motivation at the outset of the study. Such baseline equivalence strengthens the validity of subsequent comparisons by reducing the likelihood that differences in posttest outcomes were attributable to pre-existing differences in learners' motivational dispositions (Creswell & Creswell, 2018).

Among the three subscales, Value of Reading received the highest mean score (*M* = 20.23, *SD* = 4.45), followed by Reading Enjoyment (*M* = 19.67, *SD* = 4.58), and Reading Self-Efficacy (*M* = 18.45, *SD* = 4.32). This pattern suggests that struggling readers recognized the importance of reading for academic and personal purposes, but they appeared to have lower confidence in their own reading abilities and experienced comparatively less enjoyment during reading activities. Motivation research has noted a distinction between valuing reading and feeling capable of engaging in it, arguing that learners may appreciate the utility of reading while doubting their competence to perform reading tasks successfully (Schunk & DiBenedetto, 2020).

This finding also resonates with the broader literature on reading motivation, which identifies self-efficacy as one of the strongest motivational predictors of reading engagement and achievement. Learners who perceive themselves as capable readers are generally more willing to persist through challenging texts, employ effective reading strategies, and engage in independent reading, whereas those with lower self-efficacy are more likely to avoid reading tasks despite recognizing their importance (Ortlieb & Schatz, 2020). In this regard, the comparatively lower self-efficacy observed among struggling readers may reflect repeated experiences of academic difficulty that gradually shape learners' beliefs about their own capabilities.

Difference in Posttest Reading Performance

Table 7. *ANCOVA Results for Reading Performance by Group (N = 120)*

Dependent Variable	Source	SS	*df*	*MS*	*F*	*p*	Partial η^2
Reading Comprehension	Pretest	145.23	1	145.23	38.45	< .001	0.248
	Group	512.67	1	512.67	135.72	< .001	0.538
	Error	441.87	117	3.78			
Reading Fluency	Pretest	2,845.12	1	2,845.12	32.15	< .001	0.216
	Group	3,892.34	1	3,892.34	43.98	< .001	0.273
	Error	10,352.67	117	88.48			
Word Recognition	Pretest	234.56	1	234.56	18.45	< .001	0.136
	Group	1,456.78	1	1,456.78	114.56	< .001	0.495
	Error	1,487.34	117	12.71			

Note: All effects were tested using a = .017 after Bonferroni correction.

To determine whether the reading remediation program significantly improved reading performance, three separate one-way analyses of Covariance (ANCOVA) were conducted for each reading component: reading comprehension, reading fluency, and word recognition. In each analysis, the posttest score was the dependent variable, group membership (experimental vs. control) was the independent variable, and the corresponding pretest score was the covariate. Before conducting the ANCOVA, we assessed and met the assumptions of normality, homogeneity of regression slopes, linearity, and homogeneity of variance. As presented in Table 7, the ANCOVA results revealed statistically significant main effects of group membership on all three reading outcomes after controlling for pretest performance.

After adjusting for pretest reading comprehension scores, the experimental group (adjusted *M* = 9.92, *SE* = 0.25)

demonstrated significantly higher posttest reading comprehension scores compared to the control group (adjusted M = 6.10, SE = 0.25), $F(1, 117) = 135.72$, $p < .001$, partial $\eta^2 = 0.538$. The effect size indicates that approximately 53.8% of the variance in posttest reading comprehension scores is attributable to group membership, representing a large effect. After controlling for pretest reading fluency scores, the experimental group (adjusted M = 52.95, SE = 1.22) showed significantly higher posttest reading fluency scores compared to the control group (adjusted M = 42.07, SE = 1.22), $F(1, 117) = 43.98$, $p < .001$, partial $\eta^2 = 0.273$. This represents a moderate-to-large effect, with approximately 27.3% of the variance in posttest reading fluency explained by group membership. After adjusting for pretest word recognition scores, the experimental group (adjusted M = 20.48, SE = 0.46) demonstrated significantly higher posttest word recognition scores compared to the control group (adjusted M = 14.20, SE = 0.46), $F(1, 117) = 114.56$, $p < .001$, partial $\eta^2 = 0.495$. This represents a large effect, with approximately 49.5% of the variance in posttest word recognition scores attributed to group membership. These findings indicate that the reading remediation program improved all three components of reading performance among struggling readers, with the largest effects for reading comprehension and word recognition.

Moderating Role of Reading Motivation

Moderation Analysis for Reading Comprehension

Table 8. *Hierarchical Regression Results for Reading Comprehension as Outcome (N = 120)*

Step	Predictor	*B*	*SE*	*β*	*t*	*p*	R^2	ΔR^2
Step 1	Pretest Comprehension	0.52	0.08	0.46	6.50	< .001	0.212	0.212***
Step 2	Group (Experimental)	3.82	0.48	0.64	7.96	< .001	0.547	0.335***
	Motivation (centered)	0.08	0.02	0.28	4.00	< .001		
Step 3	Group × Motivation	0.04	0.01	0.22	4.00	< .001	0.595	0.048***

Note. **p < .001; All effects were tested using α = .017 after Bonferroni correction.

Table 9. *Conditional Effects of Group on Reading Comprehension at Levels of Motivation*

Motivation Level	*B*	*SE*	*t*	*p*	95% *CI*
Low (–1 SD; Motivation ≈ 46.17)	2.45	0.58	4.22	< .001	[1.30, 3.60]
Moderate (Mean; Motivation ≈ 58.35)	3.82	0.48	7.96	< .001	[2.87, 4.77]
High (+1 SD; Motivation ≈ 70.53)	5.19	0.62	8.37	< .001	[3.96, 6.42]

As shown in Table 8, the addition of the interaction term in Step 3 significantly improved the model, $\Delta R^2 = 0.048$, $F(1, 115) = 16.00$, $p < .001$. The interaction term (Group × Motivation) was statistically significant, $\beta = 0.22$, $p < .001$, indicating that baseline reading motivation moderated the effect of the reading remediation program on reading comprehension. The conditional effects in Table 9 show that the program effect on reading comprehension was significant across all motivation levels, but the effect size varied systematically. For learners with low motivation (one standard deviation below the mean), the program effect was $B = 2.45$ ($p < .001$). For learners with average motivation, the program effect was $B = 3.82$ ($p < .001$). For learners with high motivation (one standard deviation above the mean), the program effect was largest ($B = 5.19$, $p < .001$). This pattern indicates that the reading remediation program was more effective at improving reading comprehension among learners with higher baseline reading motivation than among those with lower motivation.

Moderation Analysis for Reading Fluency

The addition of the interaction term (Group × Baseline Reading Motivation) in Step 3 accounted for a significant increase in the explained variance of reading fluency ($\Delta R^2 = 0.052$, $F(1, 115) = 16.00$, $p < .001$), as presented in Table 10. Moreover, the positive and statistically significant interaction coefficient ($\beta = 0.23$, $p < .001$) indicates that baseline reading motivation significantly moderated the relationship between the reading remediation program and reading fluency. Put differently, the intervention's effectiveness varied by learners' initial level of reading motivation. Simple slopes analysis (Table 11) further revealed that the reading remediation program produced significant improvements in reading fluency across all levels of baseline reading motivation. However, these gains increased progressively as learners' motivation increased. Among learners with low baseline reading motivation, the estimated program effect was 6.95 WCPM ($B = 6.95$, $p < .001$). This increased to 10.88 WCPM ($B = 10.88$, $p < .001$) among learners with average motivation and reached 14.81 WCPM ($B = 14.81$, $p < .001$) among those with high motivation. These findings indicate that although the intervention benefited all struggling readers, those who entered the program with stronger reading motivation experienced substantially greater gains in reading fluency

than their less motivated peers.

Table 10. *Hierarchical Regression Results for Reading Fluency as Outcome (N = 120)*

Step	Predictor	*B*	*SE*	*β*	*t*	*p*	R^2	ΔR^2
Step 1	Pretest Fluency	0.48	0.09	0.42	5.33	< .001	0.176	0.176***
Step 2	Group (Experimental)	10.88	1.45	0.52	7.50	< .001	0.461	0.285***
	Motivation (centered)	0.25	0.06	0.29	4.17	< .001		
Step 3	Group × Motivation	0.12	0.03	0.23	4.00	< .001	0.513	0.052***

Note. **p < .001; All effects were tested using α = .017 after Bonferroni correction.

Table 11. *Conditional Effects of Group on Reading Fluency at Levels of Motivation*

Motivation Level	*B*	*SE*	*t*	*p*	95% CI
Low (–1 SD; Motivation ≈ 46.17)	6.95	1.72	4.04	< .001	[3.54, 10.36]
Moderate (Mean; Motivation ≈ 58.35)	10.88	1.45	7.50	< .001	[8.01, 13.75]
High (+1 SD; Motivation ≈ 70.53)	14.81	1.85	8.01	< .001	[11.15, 18.47]

Moderation Analysis for Word Recognition

Table 12. *Hierarchical Regression Results for Word Recognition as Outcome (N = 120)*

Step	Predictor	*B*	*SE*	*B*	*t*	*P*	R^2	ΔR^2
Step 1	Pretest Word Recognition	0.45	0.08	0.40	5.63	< .001	0.160	0.160***
Step 2	Group (Experimental)	6.28	0.78	0.58	8.05	< .001	0.508	0.348***
	Motivation (centered)	0.12	0.03	0.28	4.00	< .001		
Step 3	Group × Motivation	0.06	0.02	0.21	3.00	.003	0.552	0.044***

Note. **p < .001; All effects were tested using α = .017 after Bonferroni correction.

Table 13. *Conditional Effects of Group on Word Recognition at Levels of Motivation*

Motivation Level	*B*	*SE*	*t*	*P*	95% CI
Low (–1 SD; Motivation ≈ 46.17)	4.05	0.92	4.40	< .001	[2.23, 5.87]
Moderate (Mean; Motivation ≈ 58.35)	6.28	0.78	8.05	< .001	[4.74, 7.82]
High (+1 SD; Motivation ≈ 70.53)	8.51	1.02	8.34	< .001	[6.49, 10.53]

The inclusion of the interaction term (Group × Baseline Reading Motivation) in the final regression model resulted in a statistically significant increase in the explained variance of word recognition ($\Delta R^2 = 0.044$, $F(1, 115) = 9.00$, $p = .003$), as reflected in Table 12. Likewise, the significant positive interaction coefficient ($\beta = 0.21$, $p = .003$) provides evidence that baseline reading motivation significantly moderated the effect of the reading remediation program on learners' word recognition performance. This finding suggests that the intervention's effectiveness varied by learners' initial levels of reading motivation. To further examine this interaction, a simple slopes analysis was performed (Table 13). The results indicated that the reading remediation program produced significant improvements in word recognition across all levels of baseline reading motivation. Nevertheless, the program's effect increased as learners' motivation strengthened. Among learners with low baseline reading motivation, the estimated program effect was 4.05 points ($B = 4.05$, $p < .001$). The effect increased to 6.28 points ($B = 6.28$, $p < .001$) among learners with average motivation and reached its highest level at 8.51 points ($B = 8.51$, $p < .001$) among learners with high motivation. Collectively, these findings indicate that although the intervention benefited struggling readers regardless of their motivational level, those who entered the program with stronger reading motivation experienced more pronounced improvements in word recognition.

Summary of Moderation Effects

Table 14 summarizes the moderation analyses across the three reading outcomes. The interaction terms remained statistically significant for reading comprehension, reading fluency, and word recognition after applying the Bonferroni correction ($p < .017$), providing consistent evidence that baseline reading motivation moderated the program's effectiveness. The interaction effect sizes ($f^2 = 0.073–0.087$) were within the small-to-moderate range, a pattern commonly observed in educational research, where interaction effects typically explain a modest but meaningful proportion of variance beyond the main effects (Sommet et al., 2023). Although these effect sizes may appear modest in statistical terms, they nevertheless represent meaningful differences in educational settings, where learning outcomes are often shaped by multiple interacting learner, instructional, and contextual factors.

Table 14. *Summary of Moderation Effects Across Reading Outcomes*

Reading Outcome	β (Interaction)	*p*	ΔR^2	f^2	Low Motivation B	Moderate Motivation B	High Motivation B
Reading Comprehension	0.22	< .001	0.048	0.080	2.45	3.82	5.19
Reading Fluency	0.23	< .001	0.052	0.087	6.95	10.88	14.81
Word Recognition	0.21	.003	0.044	0.073	4.05	6.28	8.51

Note. f^2 values indicate small to moderate effect sizes (0.02 = small, 0.15 = moderate).

A consistent pattern likewise emerged across all three reading outcomes. The intervention produced the smallest gains among learners with low baseline reading motivation, greater gains among those with average motivation, and the largest gains among learners with high motivation. This finding suggests that reading motivation did not merely accompany improvements in reading performance; rather, it strengthened the extent to which learners benefited from the reading remediation program. In other words, the effectiveness of the intervention depended not only on the quality of instructional support provided but also on the motivational resources that learners brought into the learning process. This pattern is supported by motivational theories that emphasize the reciprocal relationship between motivation and achievement. According to expectancy-value theory, learners who value reading and believe they can succeed are more likely to invest sustained effort, persist through difficulty, and engage more deeply with instructional activities, thereby maximizing learning opportunities (Wang & Xue, 2022). Similarly, social cognitive theory posits that learners with stronger self-efficacy show greater persistence and resilience when confronted with challenging academic tasks, enabling them to benefit more from instructional interventions (Schunk & DiBenedetto, 2022). These theoretical perspectives help explain why learners with higher baseline reading motivation consistently exhibited larger gains across reading comprehension, fluency, and word recognition.

Conclusion

This study shows that baseline reading motivation significantly moderated the effect of a reading remediation program on the reading performance of Grade 3 struggling readers. The intervention was associated with improvements in reading comprehension, reading fluency, and word recognition, but these gains were not distributed evenly across learners. Learners entered the intervention with different motivational conditions, and those conditions mattered: higher baseline reading motivation was associated with greater gains across the three reading outcomes, with the strongest moderating effect observed in reading comprehension. The study therefore shifts the interpretation of reading remediation from whether an intervention works to for whom and under what conditions it works. Reading motivation cannot be treated simply as a parallel correlate of reading achievement. It is part of the conditions through which instructional support translates into learning gains. This finding puts learner characteristics alongside instructional practices in explaining variation in intervention outcomes and provides empirical support for understanding remediation as an interaction between what instruction provides and what learners are prepared to invest in the learning process. The study's central contribution is therefore both practical and conceptual. Reading remediation for struggling learners should address not only the instructional demands of reading but also the motivational conditions that sustain participation in those demands. Interventions that cultivate reading confidence, enjoyment, and value may create more favorable conditions for learners to benefit from targeted instruction. In this sense, strengthening reading outcomes involves not simply delivering more remediation, but creating conditions in which struggling readers are more able and willing to engage with it.

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Conflict of Interests

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