

## How Much Phonemic Awareness Is Enough?

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### Abstract

#### Purpose:

Research on how much early phonemic awareness (PA) instruction is optimal has produced inconclusive answers. We conducted a non-linear meta-analysis to estimate the optimal cumulative dosage of early PA instruction with an associated maximum effect size in preschool through first-grade students.

#### Method:

Sixteen experimental and quasi-experimental primary studies (35 effect sizes) on PA instruction effectiveness that reported cumulative dosage data were included. There were 613 students in treatment and 542 students in control conditions.

#### Results:

The cumulative dosage response model took a concave parabolic form (an upside-down U shape). Specifically, PA instruction effects improved with increasing dosage up to 10.20 hours of instruction ( $d_{max} = 0.74$ ), after which the effects declined. Moderator analyses revealed these results were generalizable for students at-risk for reading disabilities and across various PA skills. Furthermore, moderator analyses showed that for small-group PA instruction and PA instruction with letters, the dosage response curves exhibited a convex parabolic form (a U shape), with effects continually increasing with increasing cumulative dosage after 15.41 and 16 hours of PA instruction, respectively.

#### Discussion:

Overall, our findings highlight the importance of planning the optimal cumulative dosage of early PA instruction to improve PA instruction efficiency and cost-effectiveness.

**Keywords:** phonemic awareness, dosage

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