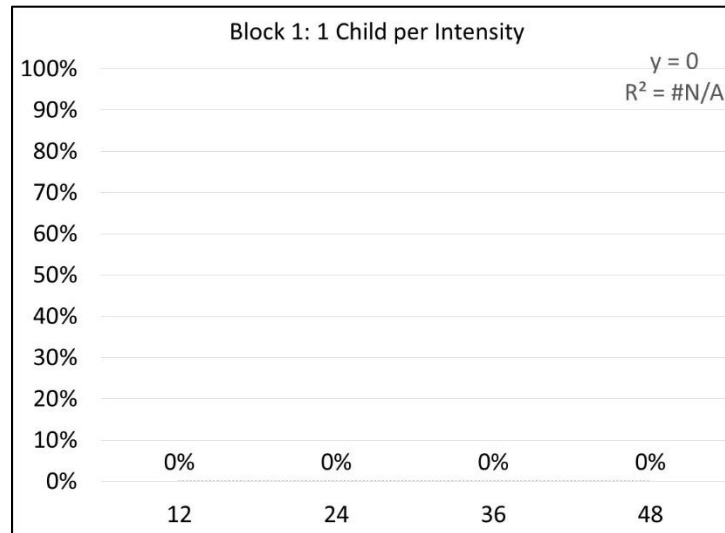


Results: Treatment Intensity—Definition task: Percentage of children responding to treatment

Supplemental Figure S1 shows the percentage of children who responded to treatment based on the definition task (i.e., post-treatment score of 5 or higher for treated words), for each intensity as blocks accumulated. Block-by-block data were used to determine when the pattern of the effect of intensity had stabilized. Once a stable pattern has been reached, data collection can be discontinued and the adequate intensity can be identified. Supplemental Figure S1 notes the pattern for each block and provides a detailed description of each pattern.

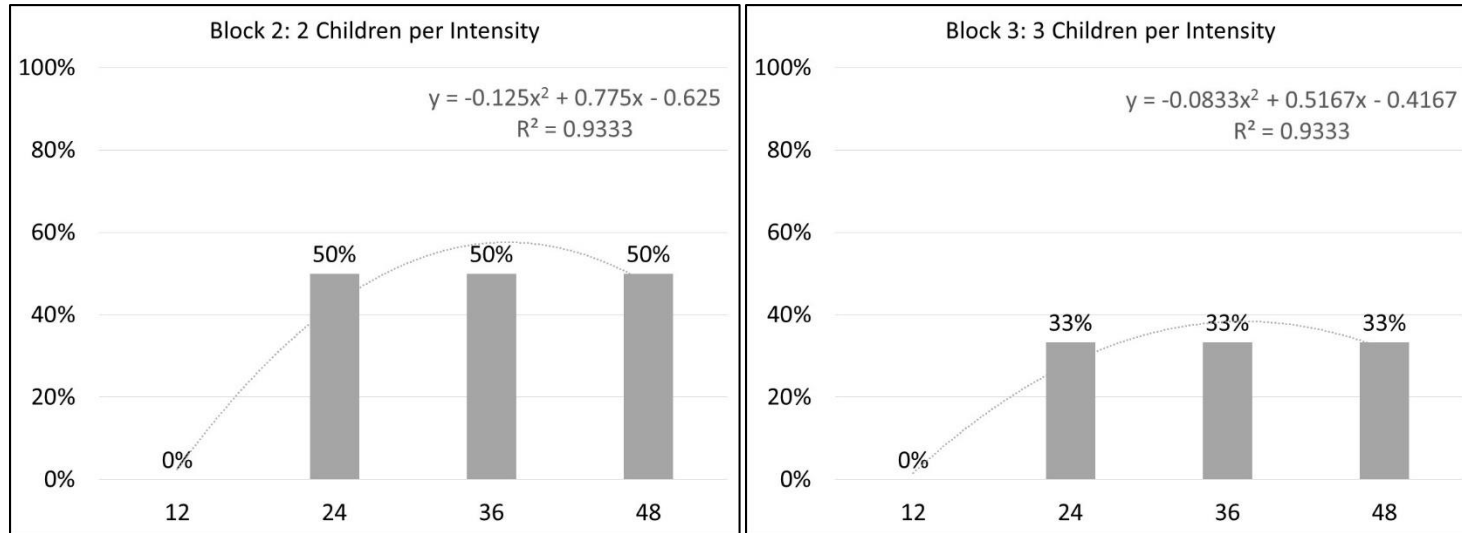
Supplemental Figure S1. Percentage of children responding to the treatment (i.e., post-treatment definition score of 5 or higher for treated words) for each treatment intensity condition (12, 24, 36, 48) by enrollment block. The trendline illustrates the polynomial trend also depicted by the regression equation noted in each panel.

Pattern 1: No Treatment Response



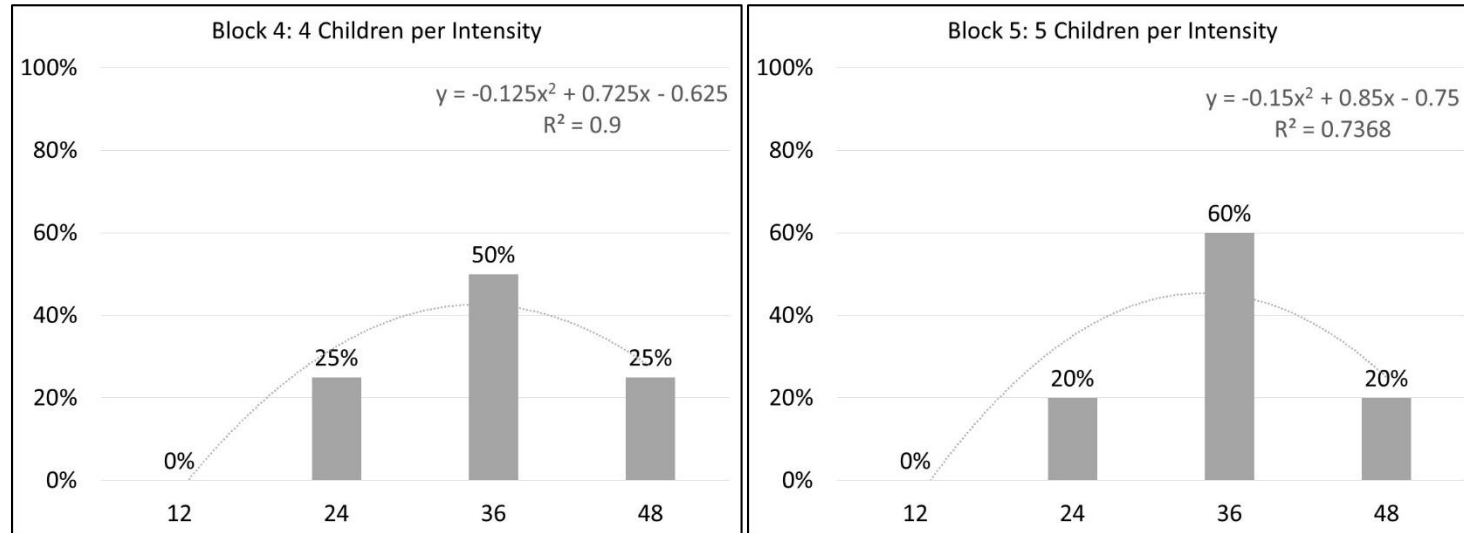
As shown above, no child in any treatment intensity condition showed a treatment response in the first block.

Pattern 2: Better Treatment Response in Intensities 24, 36, 48 Than in Intensity 12

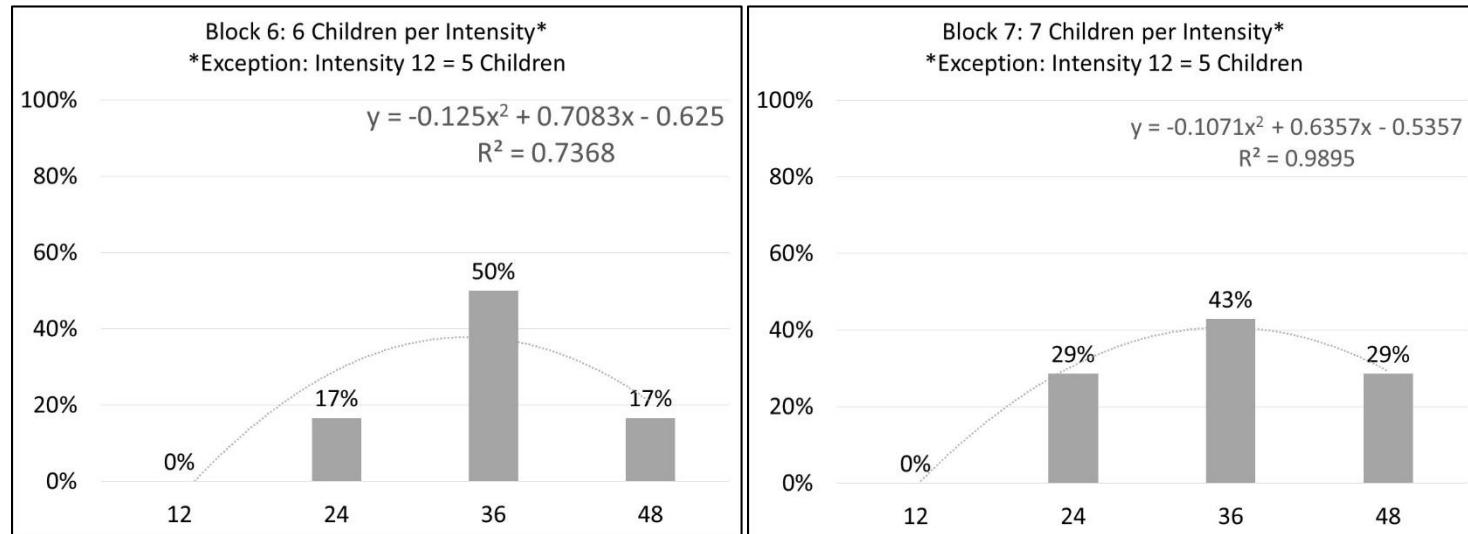


As shown above, a different pattern emerged at block 2 and was maintained in block 3. Specifically, within each of these blocks, no children showed a treatment response in intensity 12, but children in intensities 24, 36, and 48 did show a treatment response. Thus, intensity 12 appeared less effective than intensities 24, 36, and 48, which were not differentiated from one another within block 2 or block 3.

Pattern 3/Final Pattern: Treatment Response Increases From Intensity 12 to 24 to 36 and Then Decreases for Intensity 48.



A different pattern emerged within block 4 whereby the number of children responding to treatment increased as intensity increased but then plateaued. Specifically, within block 4, the percent of children responding to treatment was 0% at intensity 12 but increased to 25% of children as intensity increased to 24 exposures and further increased to 50% of children as intensity increased to 36 exposures. Then, the percent of children responding to treatment decreased to 25% as intensity increased to the maximum of 48 exposures. This is a desirable pattern in an escalation design because it indicates that the benefit of merely increasing the intensity of the treatment has potentially plateaued. That is, further increases in intensity do not lead to an increase in the percent of children responding to the treatment. Thus, a plateau is indicative that the promising or adequate intensity has been identified. This pattern is replicated in block 5 with intensity 36 showing greatest response to treatment.



Following block 5, no additional children were randomized to intensity 12 because 0% of children responded to the treatment, indicating that intensity 12 was not sufficient for word learning by children with specific language impairment. Block 6 replicated the pattern observed in blocks 4 and 5. Data collection likely could have been discontinued after this block because the pattern observed was replicated across three blocks; however, block 7 was already in progress so it was completed. Block 7 showed the same pattern as the immediately prior blocks. Therefore, data collection for all conditions was discontinued. The final pattern was that the percentage of children responding to treatment increased as intensity increased from 12 to 24 to 36 exposures, but then the percentage of children responding to treatment decreased as intensity increased from 36 to 48 exposures, indicating that additional exposures beyond 36 did not improve treatment responding. Thus, the primary analysis identified 36 exposures as the adequate intensity out of the four intensities tested.