

Concurrently Teaching Multiple Verbal Operants  
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Preposition Use to a Child with Autism

Amy King, Alison L. Moors, and Michael A.  
Fabrizio  
*Fabrizio/Moors Consulting*

Because understanding prepositions is useful to students for many skills such as following directions, requesting, and expanding expressive and receptive language, children should learn how prepositions function in language. This chart shows the progress a child with autism made in learning multiple ways of responding with and to prepositions.

Joe began timed practice on prepositions on December 9, 2002, when he was 5-years and 3-months old. Joe received approximately six hours of in-home behavior analytic intervention therapy per week. Joe also attended a half-day preschool program at a comprehensive early childhood center providing inclusive educational services for children with and without disabilities.

Joe practiced prepositions through the See/Say, Hear/Do, and Hear/Touch learning channels on this same chart. By varying the learning channel during the timing, Joe was able to improve concurrently his expressive (See/Say) and receptive (Hear/Touch) labeling of prepositions and his following directions that included prepositions (Hear/Do). Each day of practice, Joe's tutor set for him a daily improvement goal that he needed to reach in order to obtain his choice of rewards and finish working on the skill for the day.

Because we designed this skill using three different learning channels, Joe's tutor had to do change the cues she used during each timing-she had to ask Joe to identify the location of objects relative to one another ("Where is the glass?"), to touch items ("Find the item that is under the book."), and to place objects in relation to one another ("Put the pen behind your chair."). To avoid inappropriate stimulus control, the tutor varied the objects and the placement of the objects she used during the timing. His tutor used small toy figurines and any objects that Joe could put things in, on, or under for the initial slice. For example, Joe's tutor may have used a box and the lid of the box and said to Joe, "put the dog in the box." Once Joe put the dog in the box, the tutor would then give Joe another direction and vary the object as randomly as they could to avoid any pattern.

The first slice of the chart included the prepositions "in," "on," and "under." Joe completed two to three timings per day to reach his daily improvement goal. He began the slice at 18 cor-

rects per minute and two errors per minute. His corrects accelerated at X1.9 across the four days of timed practice to their high and ending frequency of 34 per minute, and bounced at X1.3. Joe's errors remained steady across the phase at X1.0. Because of Joe's steep acceleration in his corrects, his tutor moved to slice two, in which she added the preposition, "behind." Joe's rate of correct responding jumped down by /1.43 and turned down (/1.8). Joe met his daily improvement goal in one to two timings during this phase. Christmas break occurred for one week during this phase, but Joe's performance maintained after this break.

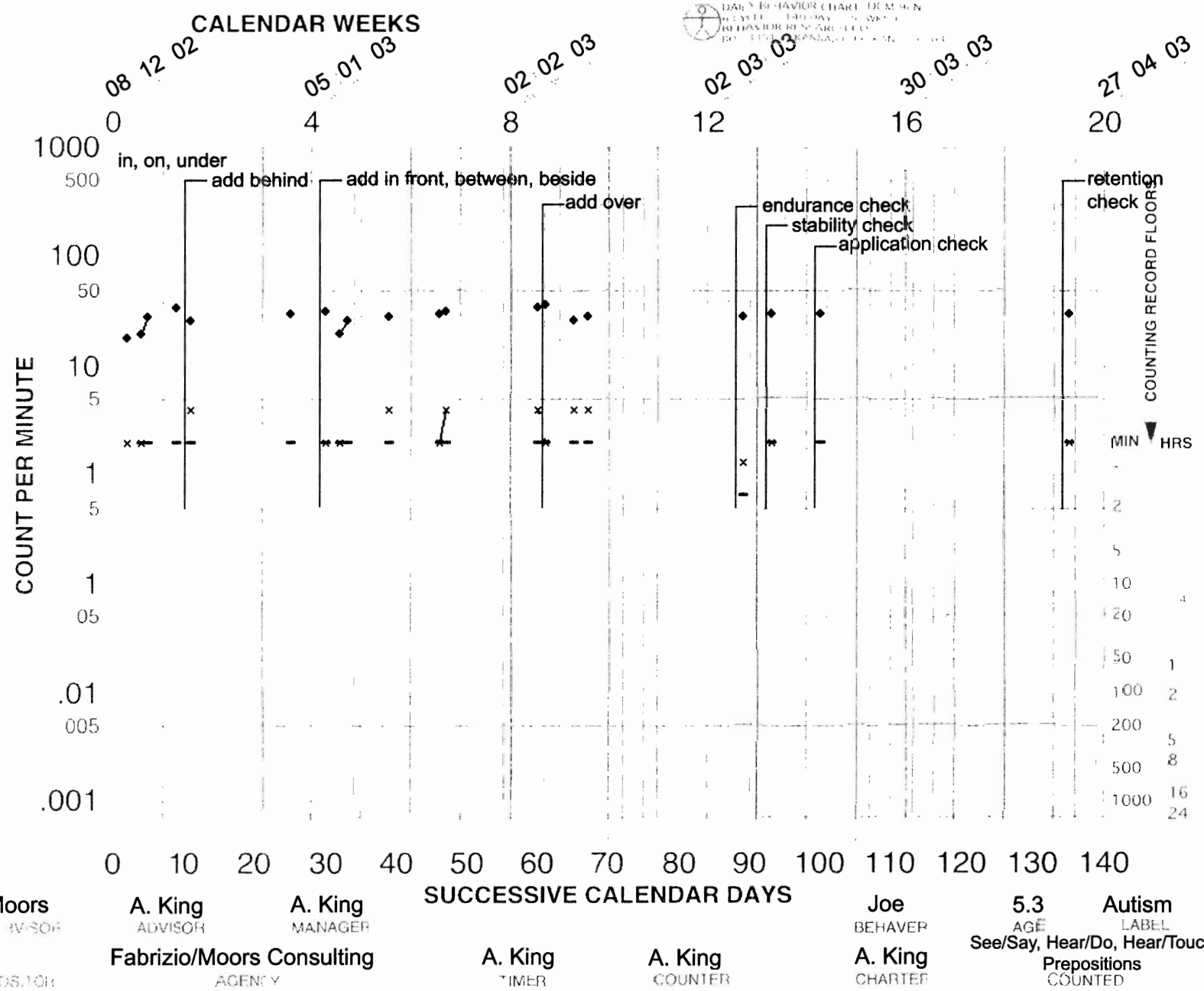
Joe's tutor next added three new prepositions in the next phase of the chart-"in front", "between", and "beside" or "next to." At the start of this phase, Joe's rate of correct responding did not jump, but turned up by X1.04 from the previous phase. Joe's rate of incorrect responding also did not jump with the phase change, but did turn up by X1.74 from the previous phase. Joe required three timings per day during this phase to reach his daily improvement goal. Joe's corrects reached a high and ending frequency of 36 per minute with four errors per minute in seven days of practice across five weeks.

In the next phase of the chart, Joe's tutor added the preposition "over." Here, again, his corrects did not jump with the start of the phase change, but did turn down by /1.49. Joe's errors jumped down at the start of the phase but turned up (X2.0) as the phase progressed across the four days of timed practice. Joe practiced for three days and ended with corrects at 28 per minute with two errors. He required three timings per day to reach his goal during this phase. Joe went on vacation for one week towards the end of the phase.

When Joe returned from vacation, his tutor decided to evaluate the fluency of Joe's performance because she was unsure what an appropriate frequency aim might be for this skill. If Joe's performance to date showed the features of fluent performance-retention, endurance, stability, and application-then there was no reason to continue daily timed practice on the skill.

Joe's tutor first completed an endurance check on Joe's performance. To do this, she tripled the timing interval to 90 seconds and presented Joe with the same materials. Joe maintained his rate of 34 corrects per minute and four errors per minute errors in one timing. After passing the endurance check, his tutor moved to a 30-second stability check to evaluate his performance in the presence of significant distractions. For the stability check timing, Joe's mother was in the kitchen (Joe is easily distracted from work when his mother is present), and the tutor played with one of Joe's

favorite toys during the timing. Joe passed his stability check at 30 corrects per minute and a drop down in his rate of incorrects. Next, Joe completed an application check. For the application check, his tutor asked Joe to identify prepositions in pictures within a book instead of using actual objects as they had been doing throughout the course of the chart. Joe passed his application check at 30 corrects per minute with zero errors on his first timing. Finally, to assess the skill's retention, Joe's tutor stopped all timed practice on this skill for four weeks. After four weeks, Joe's tutor presented Joe with the materials from the final slice before checks started and had him resume timed practice on all prepositions. Joe completed one 30-second timing and achieved 30 corrects per minute with two errors per minute. The chart was stopped, and we and Joe did a cheer!



A. Moors  
SUPERVISOR

A. King  
ADVISOR

A. King  
MANAGER

SUCCESSIVE CALENDAR DAYS

A. King  
TIMER

A. King  
COUNTER

Joe  
BEHAVIOR

5.3  
AGE

Autism  
LABEL

See/Say, Hear/Do, Hear/Touch  
Prepositions  
COUNTED