Improving Speech Intelligibility through Precision Teaching

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When conceptualizing and intervening with language development, it is often helpful to think of two important distinctions – language form and language function. Language form refers to words, sounds, gestures, or other topographies used to communicate something. Language function refers to how those topographies are used- the conditions under which the topographies occur and the consequent events that maintain them. The two sets of issues are separate, but each is often important when working with children with autism and related disabilities. This chart share describes our experience using Precision Teaching to improve one aspect of the articulation of a child with autism.

David was 7 years and 7 months old when we began this project and had a diagnosis of moderate autism. He had intact speech, but this was limited in terms of its intelligibility, length of utterance, and use. He would request items using 3-4 word phrases, label items using 1-2 word phrases, and engage in simple reciprocal conversations usually consisting of 2-3 "turns." David attended a self-contained classroom for children with disabilities in a public elementary school and received in-home intervention 4-6 days per week, for about 3-hours per day.

The majority of his in-home program was dedicated to improving his language performance with about 4/5 of the language portion of his program devoted to improving how David used language (language function) and about 1/5 of the language portion of his program devoted to improving the form of his language (articulation and length of utterance). David's grandmother and father indicated that he often substituted /v/ and /b/ sounds for each other in words and he was most likely to make these errors in the final (end) position of a word.

Across all phases of the chart, several practices were in place that warrant explanation. Each day, David's therapist (the person working with him in his in-home program) set a daily improvement goal based on his previous best performance. David practiced the skill until he met or exceeded his daily improvement goal, or until the time scheduled for work on the skill (10 minutes) expired. He earned tokens for meeting the improvement goal set for him and his therapist's other expectations. His therapist charted each timing David completed on a Timings Chart, and the best performance from the Timings Chart along with the number of practices completed on the Daily per Minute Chart shown here.

The chart shows David's performance on skills related to his use of the phonemes /v/ and /b/. The dots in the upper two cycles of the chart are David's rate of correct responding for the acceleration targets within each phase. The X's are his rate of incorrect responding for the deceleration targets. The dots in the lower cycle of each phase are the number of practices completed, charted as per day frequencies (number of practices/1000 minutes).

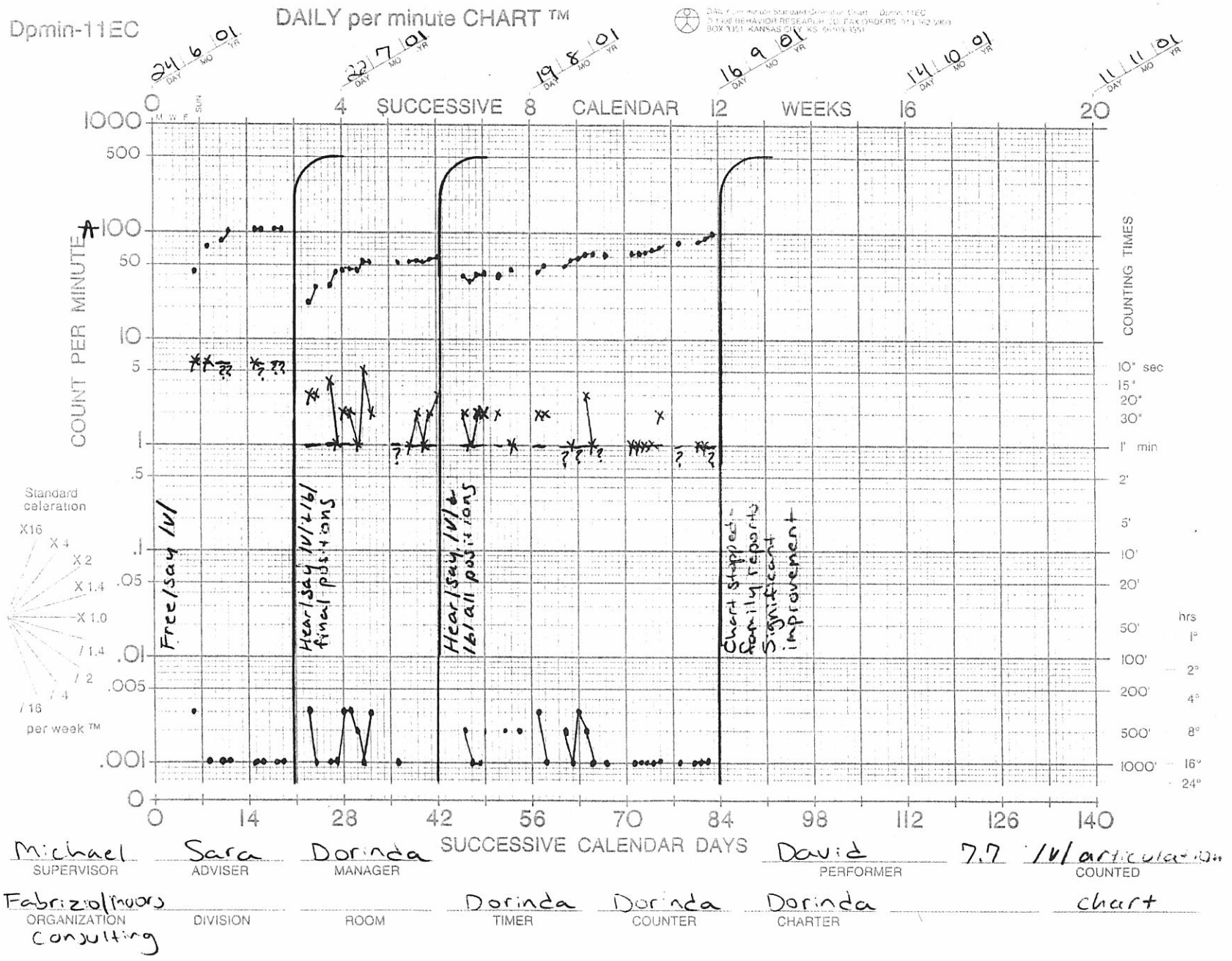
Phase one of the chart shows David's growth on producing the /v/ sound in isolation for very short timing intervals (10-seconds). His rate of correct responding accelerated at x 1.4 across the 8 days he practiced this skill from an initial best performance of 43 correct responses per minute to just over 100 responses per minute. He spent very little time practicing this, as indicated by the timing interval length and the number of practices (usually 1) completed per day.

Once David's performance on producing /v/ in isolation improved significantly, we changed the task to Hear/Say words with /v/ and /b/ in the final position. This is the second phase on the chart. For this part of the project, David's therapist would say Consonant-Vowel-Consonant (CVC) words with either a /v/ or a /b/ in the final position. David would repeat each word they said. We were careful to include word pairs where the final sound of the word was either /v/ or /b/ was in the final position. So, if David heard and repeated the word "gave," he also heard and repeated the word "gabe." David's correct performance began this phase at approximately 22 CVC combinations repeated correctly per minute with 3 errors per minute. His corrects accelerated at x 1.2 across 15 days of practice to 61 corrects per minute. He required between 1 and 3 practices per day to produce that growth.

Because our ultimate objective for this chart was to ensure that David could accurately produce words with /v/ and /b/ regardless of their position in the word, we moved David on to the next slice in the sequence we had identified – Hear/Say words with /v/ and /b/ in all positions. This is the third phase on the chart. David's correct performance began this phase at 40 corrects per minute with 2 errors. His rate of correct responding accelerated at x 1.15 across the 23 days of practice within this phase to a final frequency of 100 correct responses with no errors. In the first half of this phase, David required a median of 2 practices to reach his daily improvement goal. During the second half of the phase, he only required 1

practice per day to continue improving.

We stopped this chart on September 15, 2001 because David reached his frequency aim of 100 CVC words with /v/ and /b/ in all positions and because his family indicated that he was no longer making /v/ and /b/ substitution errors when speaking with them.


Dpmin-11EC
DAILY per minute CHART ™
24 6 01
22 7 01
19 8 01
16 9 01
14 10 01
11 11 01
DAY MO YR
0 4 SUCCESSIVE 8 CALENDAR 12 WEEKS 16 20
M W F SUN
1000
500
100
50
10
5
1
.5
.1
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.01
.005
.001
0
COUNT PER MINUTE
COUNTING TIMES
10" sec
15"
20"
30"
1' min
2'
5'
10'
20'
50'
100'
200'
500'
1000'
hrs 1°
2°
4°
8°
16°
24°
Standard celeration
X16
X 4
X 2
X 1.4
X 1.0
/ 1.4
/ 2
/ 4
/ 16
per week ™
Free/say 1v/
Hear/say 1v/2v/ final positions
Hear/say 1v/ & 2v/ all positions
Chart stopped - Can't report Significant improvement
0 14 28 42 56 70 84 98 112 126 140
SUCCESSIVE CALENDAR DAYS
Michael SUPERVISOR
Sara ADVISER
Dorinda MANAGER
David PERFORMER
7.7 1v/ articulation COUNTED
Fabrizio/Ivors ORGANIZATION
Consulting
DIVISION
ROOM
Dorinda TIMER
Dorinda COUNTER
Dorinda CHARTER
chart