

**PROCEDURES TO ASSESS FOCUS
FOR THE CAPABILITY-FOCUS TREATMENT FRAMEWORK**

Phonology Project Technical Report No. 5

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INTRODUCTION

Background

This technical report summarizes findings from a series of studies to measure *focus*, one of the two clinical constructs in the *capability-focus treatment framework* described in Kwiatkowski and Shriberg (in submission). Rationale and conceptual background for the capability-focus treatment framework (henceforth, the *C-F framework*) is reviewed elsewhere (Kwiatkowski, 1991; Kwiatkowski & Shriberg, 1993, in submission). The C-F framework evolved from clinical research supported initially by grants from the United States Department of Education in the mid 1980s. All assessment and treatment data have been collected at the Phonology Clinic, located at the Waisman Center on Mental Retardation and Human Development. A grant from the National Institute on Deafness and Communication Disorders supports research in the clinic and other funding supports clinical training at this facility for graduate students in the Department of Communicative Disorders, University of Wisconsin-Madison.

In this report we provide (a) complete procedures for the Focus Task, the Focus Rating System, and the Focus Scoring System (see appendices), (b) validity information for the focus construct and the Focus Scoring System, and (c) reliability information for the Focus Scoring System. Support for the predictive validity of the C-F framework is presented in Kwiatkowski and Shriberg (in submission). Readers interested in continued development of the C-F framework, including a project using structural equation modeling of capability and focus as latent traits, should contact the authors.

Overview

The *Focus Rating System* and the *Focus Scoring System* are ways to quantify a child's perceived focus during a five-condition, extended stimulability protocol termed the *Focus Task*. The Focus Rating System, which requires clinicians to judge whether or not a child is focused during a specified segment of time, yields interval data on the proportion of time a child was perceived as focused. It was the first instrument developed to quantify clinicians' subjective judgments of a child's focus. The Focus Scoring System, which codes a child's postural, verbal, and facial behaviors during the Focus Task, yields an interval-level focus

score. Each of these systems can be used to judge focus during the Focus Task or during ongoing treatment.

For retrospective or prospective studies using only case records data, clinician logs have been used as the source to code a child's focus status during each treatment session. The data of interest are the strategies used to facilitate the child's learning and to manipulate effort and motivation for speech change. Children who made progress in treatment structures comparable to conditions V or IV on the Focus Task (see below) were classified as having high focus. Children whose logs indicated the need for structures comparable to conditions III, II, or I on the Focus Task were classified as having low focus.

The following section describes the sequence of procedures used to obtain focus information from the Focus Task, using either the Focus Rating System or the Focus Scoring System. Included is information on changes to the procedures which were made after several pilot and development studies. Procedures to judge focus from archival or ongoing treatment records are described elsewhere (Kwiatkowski & Shriberg, 1993, in submission).

THE FOCUS TASK, THE FOCUS RATING SYSTEM, AND THE FOCUS SCORING SYSTEM

Procedures to assess focus were developed over a 4-year period, with earliest development including discussions among clinicians to identify behavioral correlates of the construct of focus. The most recent version of the assessment procedure includes the three elements introduced above—the Focus Task, the Focus Rating System, and the Focus Scoring System. Appendix A includes a complete description of each of these elements. Appendix B is a description of the *Stimulability Task*, which is used to identify stimuli for the Focus Task. The reader may find it useful to scan the information in Appendix A and Appendix B before continuing with the following overview of the procedures.

The Focus Task

The structure of the Focus Task is consistent with dynamic assessment procedures described by Bain (1994) to assess potential for phonological learning (cf. Kwiatkowski & Shriberg, in submission). It involves systematic manipulation of a hierarchy of teaching

conditions within a stimulability protocol. Although every effort is made to help the child to produce a speech target correctly at the sound, syllable, and word level, the primary objective is to assess motivation for speech change, as reflected in the degree of attention and effort the child is disposed to invest in two opportunities to change his or her speech. Therefore, the emphasis in the Focus Task is on the manipulation of conditions subsequent to the response, namely on response-contingent events and conditions for reinforcement.

The Focus Task includes five teaching conditions (see Appendix A1). As shown in Table 1, the five conditions are ordered to provide most to least support relative to the manipulation

Table 1

Type of Clinician Support for Participation in the Five Conditions of the Focus Task. Conditions are Ordered from Least Supportive (Condition V) to Most Supportive (Condition I)

Focus Condition	Type of Support				
	Verbal Feedback	Token System	Tangible Reinforcer	Contingent Reinforcer	Response Cost
V	X				
IV	X	X			
III	X	X	X		
II	X	X	X	X	
I	X	X	X	X	X

of the child's participation in an extended stimulability protocol. In the least supportive condition, Condition V, the clinician provides only social reinforcement for participation. The child is given no

external feedback on the intended duration of the task or progress through it. Using standard reinforcement hierarchies (cf. Bleile, 1995), clinician support for participation is gradually increased in each of the other four conditions. Beginning with Condition IV, a token system is added. A token (i.e., a sticker) is moved one space on a six-space grid to both acknowledge the child's participation after each response and to identify the duration of the task and progress through it. Beginning with Condition III, a tangible reinforcer is introduced with the child now keeping the tokens. Response contingencies are added in the remaining two conditions. In Condition II, movement of the token is contingent on participation. In Condition I, response-cost is added with the token moving backward when the child is not participating. Standard response evocation procedures are used in each of the five conditions, with the examiner

attempting to shape and stabilize two sounds from the isolated sound to the word level. Maximal participation in Condition V is presumed to reflect a child's self-directed motivation for speech change. Maximal participation at each of the successively more supportive levels shown in Table 1 is presumed to reflect increasing need for externally-directed motivation for speech change.

Two slightly different versions of the Focus Task—termed the *original* and *current* versions—were used in Kwiatkowski and Shriberg (in submission), and in the studies reported later. Changes were made to accommodate three problems observed with the original version. Rationale and information for three changes are as follows.

Permissible trials per condition. In the original version of the Focus Task—which was used in the first of two prospective predictive validity studies reported in Kwiatkowski and Shriberg (in submission, Study 2)—there were no limits on the number of teaching trials per focus condition. The examiner was allowed to teach at a particular focus condition until convinced that the child understood the expectations for the condition and until confident about the child's level of participation. When the examiner judged the child was not participating, she moved to the next focus condition. When the child was judged to be participating maximally in a condition, administration of the Focus Task for the particular sound was discontinued.

A problem with the Focus Task procedures in this study was that there were considerable differences in the number of focus conditions administered for each speech target and in the number of teaching trials per focus condition. The opportunity to have an unlimited number of trials increased the length of the Focus Task, possibly introducing a fatigue factor which could have negatively affected performance. Moreover, increased teaching trials in a condition could have biased the examiner's judgment of focus by weighting the child's most recent level of participation more strongly than prior levels. For these reasons, the Focus Task was revised to require a minimum of three trials and a maximum of six trials to determine the child's participation during each focus condition.

Number of focus conditions per target. In the original Focus Task used in several pilot studies, both the first and the second target were taught in each of the five Focus Task

conditions. A potential problem with this approach was that exposure to the more supported conditions for the first target could have influenced children's expectations and behaviors on the second target. Once provided the more supported activities in conditions IV - I (see Table 1 and Appendix A1), a child might be less inclined to participate fully in the second target when supported only by the social reinforcement provided in Condition V. In the current version of the Focus Task, used in the second of the two prospective studies in Kwiatkowski and Shriberg (in submission, Study 3), the first target sound is taught only under Condition V and the second target sound is taught under all five focus conditions.

Stimulability status of the target sound. The third change in the Focus Task concerns stimulability task needs. In the original Focus Task—used in the first prospective, predictive validity study in Kwiatkowski and Shriberg (in submission, Study 2)—the examiner used the Stimulability Task to identify two target sounds: one consonant sound that was not stimulable, termed the *difficult* target, and one that was stimulable, termed the *easy* target. A potential problem with this approach was that the difficult target sound could be one that was developmentally inappropriate for a child's age or cognitive-linguistic development. There was concern that the level of difficulty of the nonstimulable sound might have considerable and uncontrolled effect on a child's participation. To obviate the problem, the current version of the Focus Task (used in the second prospective, predictive validity study in Kwiatkowski and Shriberg (in submission, Study 3)) requires both target sounds to be stimulable—minimally at the sound level and maximally at the syllable level—and to be within the same developmental class (i.e., Early-8, Middle-8, or Late-8 consonants; cf. Shriberg, 1993).

The Focus Rating System

The Focus Rating System evolved from pilot work in which experienced clinicians and student clinicians subjectively rated children's focus during segments of treatment. These procedures were eventually formalized, to be used for concurrent validity studies with the behaviorally-based Focus Scoring System described below. As shown in Appendix A2, the *Focus Rating Form* provides a means for an examiner to estimate the percentage of time a child is focused during each of the five Focus Task conditions. The examiner circles a percentage estimate of the time the child was judged to be focused. For all focus estimates

lower than 100% of the time, the examiner annotates the postural, verbal, and/or facial behaviors that signaled the child's loss of focus. Compared to a number of alternative measures pilot-tested with different children, this simple rating procedure best met effectiveness and efficiency criteria.

A precursor to The Focus Rating System (the forms shown in Appendix A2 were not yet developed) was used for the first of the two concurrent validity studies reported below. The finalized Focus Rating System was used for the second concurrent validity study. Although this measurement approach yields interval-level data, limitations in cell sizes required that focus ratings be converted to dichotomous values in both studies. To be classified as high focus, children in both studies had to receive a 100% rating for both target sounds in Condition V. Children who did not meet this criterion were classified as low focus.

The Focus Scoring System

The Focus Scoring System was developed to provide interval-level data on a child's focus. The behavioral domains observed were derived from a system used in prior research to study children's levels of engagement in table-top versus computer-based treatment programs (Shriberg, Kwiatkowski, & Snyder, 1989, 1990). As described in Appendix A3, the Focus Scoring System is based on the three-event, serial structure of response development termed *antecedent event*, *response*, and *subsequent event*. Using the descriptors listed in Appendix A3, the examiner codes behaviors as indicating *acceptable focus* (2), *questionable focus* (1), or *reduced focus* (0) within each of three behavioral domains termed *postural*, *verbal*, and *facial*. Within each domain, a summary score is determined by adding the scores for all trials and dividing by the number of trials. The average scores for the three domains are then added to obtain an overall average score for the condition. The 2-1-0 scoring system yields a maximum obtainable score of 6 for each of the five conditions in the Focus Task.

For the studies reported in the present paper and in Kwiatkowski and Shriberg (in submission), focus scores were limited to those obtained in Condition V because data on all of the other four conditions were not obtained for both speech targets for most children. Pilot studies using several statistical approaches indicated that the following criteria had maximum sensitivity and specificity: To be classified as high focus, a child was required to

have an overall score for Condition V that was no less than 5 for at least one of the target sounds, and an overall score that was greater than or equal to 4.6 for the other target sound. Children whose focus scores did not meet these criteria were classified as low focus.

Summary of Focus Task Procedures

The Focus Task, the Focus Scoring System, and the Focus Rating System were developed to meet measurement needs in studies of a clinical treatment framework. The Focus Task procedure begins with administration of a Stimulability Task, from which the examiner identifies two speech sounds on which a child is stimutable. Appendix B is a description of the Stimulability Task used in all studies. Other standard procedures for stimulability testing described in the literature could also be used. As described in Appendix B, the Stimulability Task assesses a child's ability to modify all error sounds when provided with auditory models at the sound, syllable, and word levels, depending on the child's success at each level. After administration of the Stimulability Task, correct articulation of each of the two selected sounds at the word level is the goal of response development in the Focus Task, using information from the Focus Rating System or the Focus Scoring System to code a child's focus at the ordinal or interval level.

The predictive validity of the C-F framework, including estimates of strength of association between the two constructs and treatment outcomes, is assessed in the companion report (Kwiatkowski & Shriberg, in submission). The following studies of focus scores using the Focus Scoring System were undertaken to support (a) content and concurrent validity, (b) interjudge and intrajudge reliability, and (c) retest stability.

VALIDITY STUDIES OF THE FOCUS SCORING SYSTEM

Content Validity

Method

To assess whether the Focus Scoring System included the range of content that experts might label as reflecting "focus," 14 experienced graduate students were recruited as judges for a videotape-viewing task. The students were in their last semester of graduate study and had an average of 345 hours of supervised clinical experience (range 170 to 570 hours). Each

student individually judged a prerecorded child's "level of effort" during a videotaped administration of the Focus Task for two different target sounds. The selected videotape was of a child whose postural, verbal, and facial behavior during administration of the Focus Task ran the full range, from optimal attention and effort to no participation in the learning process. For purposes of this study, the focus construct was never mentioned to the judges. The task was presented as a request for their clinical impressions of the level of this child's effort to produce the target sound under several teaching conditions. For each of the focus conditions, judges indicated on a form (a) whether the child appeared to exert effort during the condition (*yes, no, unsure*), (b) perceived degree of effort (*considerable, moderate, little*), and (c) perceived

consistency of effort during the condition (*consistent, variable*).

Table 2
Summary of Rationales Provided by 14 Clinically-Experienced Students for Judging a Child as Showing or Not Showing Effort During the Focus Task

Domain ^a	Rationale	Number of judges offering rationale
Postural	Played with task materials	12
	Got out of chair	10
	Maintained or did not maintain an upright sitting posture	10
	Touched part of own face	10
	Faced or did not face examiner	4
Verbal	Responded with an attempt to produce the target immediately after the examiner's model	12
	Appeared or did not appear to be trying to say target correctly	11
	Made task-related verbal comments	4
	Made off-task verbal comments	3
	Made off-task vocal noises	1
Facial	Maintained or failed to maintain eye contact	14
	Looked at other objects in room	8
	Looked at task materials/reinforcers	3
	Made negative facial expression	3
General	Maintained or did not maintain on-task behavior and attention	8
	Motivated or not motivated	3

^a Rationales are organized into the three behavioral domains used to judge focus in the Focus Scoring System (postural, verbal, facial) plus a category termed *general*.

The central question for the test of content validity was the judges' rationale for each judgement, which was annotated on the same form.

Results

Table 2 is a list of all rationales provided by the judges to support their perceptions of the child's effort during the Focus Task, including the number

of judges who provided each rationale. As shown, all rationales could be organized into the three focus domains included in the Focus Scoring System. The entries in Table 3 were

interpreted as providing several types of content validity support for the Focus Scoring System. First, the number and types of comments on child behaviors during the Focus Task indicated that the five conditions represented teaching situations that were familiar and real to these experienced clinicians, rather than reflecting a contrived experimental task. Second, all but two of the entries in Table 2—comprising the content of a total of 301 rationales by the 14 clinicians—can be subsumed by one of the three domains in the Focus Scoring System. Although the two remaining rationales in Table 2 did not fit under one of the three behavioral domains, they were deemed consistent with the focus construct.

Concurrent Validity

Rationale

Estimates of the concurrent validity of the Focus Scoring System were obtained during the predictive validity studies on the two prospective cohorts of children reported in Kwiatkowski and Shriberg (in submission). In each of the two studies clinicians' ratings of children's focus during administration of the Focus Task were compared with focus scores using the Focus Scoring System. Because clinicians routinely make judgements regarding their client's attention, effort, and motivation during teaching tasks, and make adjustments in their teaching to accommodate fluctuations in these areas, the judgments of experienced clinicians were presumed to comprise a valid standard for use in the assessment of concurrent validity. Focus classification assignments derived from the more quantitatively-sensitive instrument (the Focus Scoring System) were compared with focus classifications derived from dichotomized, subjective focus judgments or the extant instrument (the Focus Rating System). Two concurrent validity studies were completed.

First Cohort

Method. In the first of two studies of clinical cohorts, referred to as Study 2 in Kwiatkowski and Shriberg (in submission), subjects were 20 preschool children who were seen for assessment only, and were being followed in a larger longitudinal study. All children had been referred for speech delay of unknown origin by personnel in the Madison Metropolitan School District. Assessment information indicated that children had normal cognitive function, with some having associated delays in language production. Descriptively, these

children's demographic, risk factor, and speech-language profiles are similar to profiles reported for other children with speech delay of unknown origin from the same geographic population (cf. Shriberg & Kwiatkowski, 1994).

Dichotomized focus judgments and focus scores (i.e., high focus, low focus) were obtained for all 20 children based on their performance during an administration of the original Focus Task (see above). All focus judgments and focus scores were completed by author JK. Due to the length of time needed to develop the Focus Scoring System there was a period of approximately 1½ years between the videotaped administration of the Focus Task and completion of the scoring task. Interjudge and intrajudge reliability data for coding on the Focus Scoring System are provided in a later section.

Results. Point-to-point agreement between classification of children's focus status derived from the dichotomous subjective ratings and the Focus Scoring System was 85% (20 Children X 2 Targets: 34/40 agreements). Each of the six disagreements was associated with the same two problems. First, as unlimited trials were permitted for each condition in the original Focus Task, Condition V had been administered for 12 to 23 trials per child. The extended number of trials in some cases suggested that the examiner had difficulty determining the child's participation level. Second, indecision about the child's level of participation typically was associated with lower focus scores on the later trials. The obtained percentage of agreement between measures (85%) was considered support for the concurrent validity of the Focus Scoring System, including the criteria used to convert focus scores to two ordinal-level focus classifications (low, high).

Second Cohort

Method. Subjects were 9 of 24 children being seen in a treatment cohort at a university phonology clinic (see Kwiatkowski & Shriberg, in submission, Study 3). The demographic, risk factor, and speech-language characteristics of these children were similar to those described for the first cohort above, and were also consistent with the profiles of preschool children with speech delay summarized in Shriberg and Kwiatkowski (1994). Each child was videotaped during administration of the current version of the Focus Task (see above) by the child's student clinician at the beginning of the treatment period.

Focus ratings using the Focus Rating System were obtained from eight trained judges. Each judge was a graduate student clinician in the first year of graduate study who had administered the Focus Task to at least one of the nine children following the procedures described in Appendix A1. Additional training on the Focus Rating System was provided using videotapes of two children. Training included discussions of ratings made by each judge to clarify procedures and to ascertain that judges were comfortable with the rating process.

Each judge then independently rated three of a total of eight children, and all judges rated the ninth child. Randomized sampling without replacement insured equal number of ratings for all eight children. The judges rated all five focus conditions (i.e., Condition V through I as shown in Appendix A1) for a single target. They were instructed to observe the child's behavior during all teaching trials under a single condition, stop the videotape after each condition, and circle the percentage of time they judged the child to be focused. The procedure yielded a total of 160 completed ratings. Children whose ratings indicated they were focused for 100% of the time for a condition were classified as high focus on that condition of the Focus Task. All ratings were compared to focus scores obtained from the Focus Scoring System completed on all nine children by author JK. Because the score for each condition was calculated independently, high focus was assigned to those conditions for which a child obtained a focus score of 4.6 or higher. All other scores were classified as low focus.

Results. Intermeasure agreement between focus ratings and focus scores was 82%, again suggesting adequate concurrent validity for the Focus Scoring System. Subsequent analyses of the lower-level data were undertaken to determine the source of both agreements and disagreements, with the goal of improving the Focus Scoring System. These analyses suggested that a certain subjectivity in judging children's perceived engagement remains, even with the addition of the behavioral descriptors and scoring system described in Appendix A2. The conclusion from these analyses was that such difficulties are inherent in all behavioral coding systems, and that the Focus Scoring System had probably reached the maximum level of objectivity possible for coding the postural, verbal, and facial behaviors associated with the focus construct.

RELIABILITY STUDIES OF THE FOCUS SCORING SYSTEM

Interjudge and Intrajudge Reliability

Method. To estimate the interjudge and intrajudge reliability of focus scores using the Focus Scoring System, a clinically-experienced research assistant was trained in the use of the coding system. All training exemplars were of children not included in the reliability study or in preliminary studies for pilot reliability assessment. Samples for interjudge and intrajudge reliability studies were selected so that codes for each of the behavioral domains (postural, verbal, and facial) were amply represented. To accomplish this, samples were randomly selected only from those that included one or more of each of the codes (2-1-0) in each domain. A final master videotape consisted of 17 administrations of the Focus Task under one of the five conditions, including seven administrations of Condition V. The number of trials per condition ranged from 4 to 10. Although the current version of the Focus Task specifies a maximum of six trials per condition, in one case the number of trials was 10 due to examiner error. The resulting reliability sample required a total of 318 judgments with 106 judgements per behavioral domain. For the intrajudge reliability estimate, the examiner who had originally coded the samples (author JK) recoded them from the master videotape 1 year later.

Results. Table 3 is a summary of the interjudge and intrajudge reliability findings. Across the three behavioral domains, interjudge agreement averaged 87% and intrajudge agreement averaged 91%. Mean agreement levels for both interjudge and intrajudge

Table 3
Interjudge and Intrajudge Reliability for Coding in the Three Focus Domains Using the Focus Scoring System

	Percentage of Agreement									Mean All Domains
	Postural			Verbal			Facial			
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range	
All Conditions										
Interjudge agreement	77	17	43–100	98	5	83–100	85	16	50–100	87
Intrajudge agreement	83	18	33–100	99	4	83–100	90	12	67–100	91
Condition V only										
Intrajudge agreement	78	26	33–100	100	—	—	89	12	67–100	89

agreement were highest for verbal behaviors and lowest for postural behaviors. As shown in Table 3, the same trends were obtained for agreements calculated only on Condition V, which are the central data used in the predictive studies reported in Kwiatkowski and Shriberg (in submission).

Stability of the Focus Score

Two estimates of the stability of focus scores on the Focus Task were obtained. One question under inspection was whether focus scores might be influenced by a child's capability status.

First study. The first study compared the stability of focus scores when based alternatively on stimulable versus nonstimulable speech targets. Focus scores for stimulable and nonstimulable target sounds were inspected for all 20 children referenced as Cohort 1 in the validity studies described above. Results suggest that stimulability status was not associated with focus scores. A total of 16 of the 20 children were similarly focused or not focused under Condition V for both targets using the criteria described earlier for determining high focus. For the remaining four children, three were high focus only for the stimulable target and one child had high focus only for the nonstimulable target.

Second study. To assess the retest stability of focus scores on the Focus Task, the Task was readministered approximately 1 week after the initial administration to the same nine children selected for the concurrent validity studies. The second administration used the same two target sounds as in the original administration, but different reinforcers in Conditions IV through I. Coding of Condition V using the Focus Scoring System was completed by author JK. To obviate a likely memory bias in scoring, second administrations were coded approximately 1 year after the original administration. In both test and retest administrations, dichotomous assignment of focus status (low, high) was obtained using the Focus Scoring System. The test-retest stability of focus status classifications using these methods was 100%.

SUMMARY AND CONCLUSIONS

The goal of this technical report was to make available to interested readers procedural information on the Focus Task, the Focus Scoring System, and the Focus Rating System, and

validity and reliability data on the Focus Scoring System. Together with the predictive validity findings reported in Kwiatkowski and Shriberg (in submission), findings from these studies are viewed as support for the measurement approach. Limitations in the these measures and possible strategies to develop more sensitive instruments are discussed in Kwiatkowski and Shriberg (in submission).

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APPENDIX A1

THE FOCUS TASK

A. Instrumentation and Materials

1. Videocassette recording unit
2. One chart, white, with 6 spaces (only 4 spaces will be filled)
3. 6 blue chips
4. 6 animal stickers in a cup (child will earn only 4)

B. Administration Guidelines

1. *Stimuli.* First administer the Stimulability Task. Two sounds that meet specific stimulability and stage of development requirements will be selected for the Focus Task.
2. *Selection of target sounds.* Refer to the Stimulability Task results. To assure approximate difficulty level of both sounds selected for targets for the Focus Task, use the following guidelines:

- a. If there are several stimuable sounds, select two sounds that are stimuable with an auditory model only—at least at the sound level and no higher than the syllable level—and that are within the earliest and same sound class, using reference data on the Early-8, Middle-8, and Late-8 consonant sounds from Shriberg (1993). However, if there are not two stimuable sounds within the same sound class, choose the two sounds that are in closest proximity to each other across two sound classes.

Early-8 Consonants	Middle-8 Consonants	Late-8 Consonants
m b j n w d p h	t ŋ k g f v tʃ ɖ	ʃ θ s z ð l r ʒ

- b. If there is only one stimuable sound with an auditory model only—at least at the sound level and no higher than the syllable level—select the second target from among the child’s error sounds so that it is within the same sound class and in closest proximity to the stimuable sound. However, if there are no other error sounds within the same sound class, select an error sound that is in another sound grouping but in closest proximity to the stimuable sound.
 - c. If there are no stimuable sounds, select two sounds from among the child’s errors that are in the earliest and same sound class, and/or are in closest proximity to each other.
3. *Sequencing of target sounds.* Select the less difficult sound for which all five focus conditions will be administered in the following way:

- a. If both target sounds are stimulable or no sound is stimulable, select the sound that is leftmost within the Early-8, Middle-8, and Late-8 sound classes.
- b. If only one target sound is stimulable, select that sound.

C. General Teaching Procedures

Begin by administering only Condition V for one of the sounds selected from the Stimulability Task results. Immediately afterward, administer Conditions V through I for the other selected sound.

1. *The teaching objective for the task and task sequence.* Within the six trials under *each* focus condition, the objective is to evoke word-level production in imitation. The stimulus for the first trial of each focus condition should always be the sound level. Move to the syllable level for the second trial. For the remaining four trials move up and down across linguistic levels (sound, syllable, word) as necessary to shape word-level production.
2. *What to do immediately prior to presenting a stimulus.* Cue the child that a stimulus will be presented (e.g., “Say [stimulus],” “Now say [stimulus],” “Tell me [stimulus],” “Let me hear [stimulus]”). In addition to verbal models, provide other cues as necessary.
3. *What to do immediately after the child responds.* Provide verbal feedback for each response that tells the child when s/he is correct (e.g., “That’s it,” “Right,” “You got it”) and that encourages her/him when s/he is not correct (e.g., “You almost have it,” “You’re getting the idea,” “Almost”).
4. *Duration of teaching at each focus condition.* Administer each focus condition for a maximum of six trials and a minimum of three trials. Change to the next focus condition at any point after the minimum of three trials if the child displays extremely unfocused behavior (e.g., leaves the work area, refuses to respond). When you change conditions without completing the maximum of six trials, do not give the child the reinforcer for the aborted condition, and always begin the next condition with the first of the six trials and with production at the sound level.

D. Procedure and Instructions

Condition Procedures

- | | |
|---|---|
| V | Present the stimulus and provide appropriate evaluative feedback (KR+). Because the objective is to shape correct production, use whatever cues are needed to evoke the desired response. |
|---|---|

First sound: Condition V only target.

Instructions: Tell the child **“We’re going to play a copy game in different ways. Let’s start. Listen. Try to say what I say.”** Present the first stimulus at the sound level. Try to move to the syllable and then to the word level.

Second sound: Five condition target.

Instructions: Tell the child “**Let’s play a new copy game. Let’s start our new game. Listen. Try to say what I say.**” Present the first stimulus at the sound level. Try to move to the syllable and then to the word level.

- IV Place the six chips on the table to mark each of six trials and to demonstrate progress through the task. KR+ will be provided as in Condition V. In addition, every time the child attempts to produce the stimulus, a token (an animal sticker) moves one block. When the token reaches the end of the six block grid, the child gets the token to place on the chart.

Five-condition target.

Instructions: Place the six chips in a row extending from the examiner who is at one side of the table to the child who is at the other side. Say “**Let’s play our copy game a new way.**” Place the white chart in front of the child. Show the child the animal stickers in the cup. Place one sticker on the first chip. Say “**Every time you try to say what I say the sticker will move (demonstrate).**” **When it gets to the end you can put it in a box on your paper** (place the animal sticker in the box to demonstrate).” “**Let’s see how many boxes you can fill with stickers. Listen. Try to say what I say.**” Present the first stimulus at the sound level. Try to move to the syllable and then to the word level.

- III Same as Condition IV, but now the child gets to keep the stickers.

Five-condition target.

Instructions: Tell child “**Let’s play our copy game a new way. You can take home all the stickers you get.**” Point to the stickers already on the chart. Tell the child “**You can take these stickers home. Let’s get more stickers to take home. Listen. Try to say what I say.**” Present the first stimulus at the sound level. Try to move to the syllable and then to the word level.

- II Same as Condition III, but now the sticker only moves when the child is showing behaviors that the examiner interprets as “really trying to produce the target.”

Five-condition target.

Instructions: Tell the child “**Let’s play our game a new way. Now the sticker will move only when you really try to say what I say. Listen. Try to say what I say.**” Present the first stimulus at the sound level. Try to move to the syllable and then to the word level. Provide specific feedback on why the sticker did or did not move for the first three responses to be sure the child understands the task contingencies. After each of the first three responses tell the child “**You really tried to say it like me; the sticker gets to move**” when the child tries to produce the target and “**You didn’t really try to say it like me; the sticker can’t move**” when the child does not try to produce the target.

- I Same as Condition II, but now the sticker moves backward when the child is “not really trying.”

Five-condition target.

Instructions: Tell the child **“Let’s play our game a new way. Now the sticker will move back when you don’t really try to say what I say. Listen. Try to say what I say.”** Present the first stimulus at the sound level. Try to move to the syllable and then to the word level. Provide specific feedback on why the sticker moved forward or backward for the first three responses to be sure the child understands the task contingencies. Tell the child **“You really tried to say it like me; the sticker gets to move”** when the child really tries to produce the target and **“You didn’t really try to say it like me; the sticker has to move back”** when the child does not really try to produce the target.

APPENDIX A2

THE FOCUS RATING SYSTEM

A. Materials

1. Focus Task directions and materials
2. This scoring form

B. Administration Guidelines

Administer the Focus Task according to the directions provided. During the administration of each focus condition, judge the child's focus during the stimulus-response period only. Following administration of each focus condition, circle the percentage of time you judged the child to be focused. When making your judgments ignore all behaviors that you do not think interfere with the child's focus state. If you judged the child as focused less than 100% of the time, briefly describe why on the provided lines. Consider postural, verbal, and facial behaviors. If you administered fewer than the maximum of six trials in the focus condition put a check before the statement "fewer than six trials administered."

C. Scoring Form

First Sound: _____

Condition V

100%	90	80	70	60	50%	40	30	20	10	0%
-------------	----	----	----	----	------------	----	----	----	----	-----------

___ fewer than six trials administered

Second Sound: _____

Condition V

100%	90	80	70	60	50%	40	30	20	10	0%
-------------	----	----	----	----	------------	----	----	----	----	-----------

___ fewer than six trials administered

Condition IV

100%	90	80	70	60	50%	40	30	20	10	0%
-------------	----	----	----	----	------------	----	----	----	----	-----------

___ fewer than six trials administered

Condition III

100%	90	80	70	60	50%	40	30	20	10	0%
-------------	----	----	----	----	------------	----	----	----	----	-----------

___ fewer than six trials administered

Condition II

100%	90	80	70	60	50%	40	30	20	10	0%
-------------	----	----	----	----	------------	----	----	----	----	-----------

___ fewer than six trials administered

Condition I

100%	90	80	70	60	50%	40	30	20	10	0%
-------------	----	----	----	----	------------	----	----	----	----	-----------

___ fewer than six trials administered

APPENDIX A3

THE FOCUS SCORING SYSTEM***Overview***

The Focus Task is an evocation-phase teaching procedure administered under five different motivational conditions. Each condition may include up to six teaching trials. Thus, each administration of the Focus Task can include up to 30 individual teaching trials.

This booklet describes a procedure to code a child's degree of focus during each teaching trial in each of the five motivational conditions. The procedure is termed the Focus Scoring System. The following sections teach you how to code a child's postural movements, verbal behaviors, and facial expressions during a Focus Task trial. The procedure requires you to select one of three codes to indicate whether a child's behaviors suggest *acceptable focus* (2), *questionable focus* (1), or *reduced focus* (0) for each domain during each component of each teaching trial.

The Focus Scoring System requires thorough familiarity with the three sequential components of a teaching trial. These components are defined within the *antecedent events - response - subsequent events* (AE-R-SE) framework described next.

***The Antecedent Events - Response - Subsequent Events
(AE-R-SE) Framework***

Each trial of a Focus Task is divided into three components, or temporal *periods*, termed the *antecedent events* (AE) period, the *response* (R) period, and the *subsequent events* (SE) period. Valid and reliable use of the Focus Scoring System requires that you know which period you are coding.

The antecedent events period. The antecedent events (AE) period includes all examiner and child behaviors that precede the child's attempt to say a target sound correctly (i.e., the response period).

1. The AE period usually *begins* with the *first word of the examiner's prompt or cue*.
 - a. *Prompts* are utterances (e.g., "Say," "Now try") that notify the child that the examiner will present an auditory model of the speech target for imitation. Thus, for example, the first word of the AE period is often the word "Say" or "Now."
 - b. *Cues* are utterances that direct the child to position the articulators (e.g., "Close your teeth"), refine the production (e.g., "Make it more hissy"), or reduce exaggerated articulation (e.g., "Say it gently").
 - c. Note that cues can serve the same function as prompts, each evoking a response from the child. The AE period may contain one or more prompt(s) and/or cue(s).

2. The AE period *ends* with the examiner's *auditory model* of the speech target for the child to imitate. The auditory model may be a sound in isolation, a sound within a syllable, or a sound within a word. Sometimes, when the examiner does not present a cue or a prompt, the auditory model is the only component of the AE period. Thus, for example, the examiner's auditory model of the syllable "[si]" might mark the *beginning and the end* of the AE period.

The response (R) period. The response (R) period includes all examiner and child behaviors that occur after the antecedent event and before the subsequent event period.

1. The response period *begins* immediately after the examiner's auditory model of the speech target to imitate.
2. The response period *ends* immediately after the child's successful or unsuccessful attempt to imitate the speech target.

The subsequent events (SE) period. With the one exception listed second below, the period of subsequent events (SE) includes all examiner and child behaviors that occur after a child's attempt to imitate the target sound (i.e., the response period).

1. The SE period *begins* immediately after the child's attempt to imitate the speech target.
2. If the child does not attempt to imitate the speech target, the SE period *begins* immediately after the examiner's auditory model of the speech target.
3. The SE period includes, but may not always be limited to, the examiner's verbal feedback and reinforcement.
4. For all but the last teaching trial under a Focus Task condition, the SE period *ends* when the AE period for the next trial begins. For the last teaching trial, the SE period ends when the examiner finishes providing verbal feedback/reinforcement for the child's response.

Problem AE-R-SE sequences. The above description of the AE-R-SE framework will account for most Focus Task trials. The guidelines below provide rules for defining the AE-R-SE periods for two problem trial sequences.

Problem: *The child's response occurs before the examiner has presented an auditory model for the target response.*

Every teaching trial must include an auditory model during the AE period. Occasionally the examiner's prompt "Say it again" during the AE period may result in an attempted response before the examiner has a chance to present an auditory model. Or a child may spontaneously attempt a response any time before the auditory model.

Rule: The solution is to code all behaviors that occur without an auditory model as part of the preceding teaching trial in which there was an auditory model. Specifically, code all behaviors occurring during the AE period as part of the prior AE period, all behaviors occurring during the R period as part of the prior R period, and all behaviors occurring during the SE period as part of the prior SE period.

Problem: *Child's behavior(s) persists across two teaching trials*

A behavior in one or more of the three domains might begin during one teaching trial and persist into one or more periods of the following teaching trial.

Rule: If a behavior in any of the three behavioral domains begins during one trial and persists into *at least the entire AE period of the next trial*, code the behavior in the appropriate periods for the new teaching trial. However, if the behavior persists for only a portion of the AE period of the new teaching trial, do not code it as occurring during the AE period of the new teaching trial.

Coding Criteria for the Focus Scoring System

The Postural Domain

Code Criteria

- 2* *Acceptable focus* behaviors for the postural domain meet *one* criterion:
1. Focused postures/movements would *not* be identified by a clinician as posing a real or potential problem in a clinical teaching situation. Thus, a child's posture(s) and movement(s) may be perceived as being subtle or unintentional, or interpreted to reflect (a) a response to a cue provided by the examiner, (b) an articulatory preplanning gesture, (c) enthusiasm for the task, or (d) a response to success on the task.
- 1* *Questionable focus* for the postural domain meets *one* criterion:
1. Questionable focus postures/movements are those that would be identified by a clinician as posing a *potential* problem, but have not yet become a problem in a clinical teaching situation.
- 0* *Reduced focus:* Postural behaviors do not meet coding criteria for *2* or *1*.

The Verbal Domain

2 *Acceptable focus* behaviors for the verbal domain meet *two* criteria:

1. The child attempts to produce the speech target within 2 seconds of the examiner's auditory model of the speech target. Nonresponses or delays beyond 2 seconds are allowed if associated with an automatic response (e.g., sneeze, cough) or an articulatory preplanning gesture.

and

2. There are *no* other verbal comments.

1 *Questionable focus* behaviors for the verbal domain meet either of *two* sets of criteria:

1. The child does not respond within 2 seconds to the examiner's model of the speech target and the delay is not due to an automatic response or articulatory preplanning gesture.

and

2. There are *no* other verbal comments.

OR

1. There is one nonnegative verbal comment. Nonnegative comments include all comments except those that suggest the child wants to be elsewhere and/or doing something else.

and

2. There are no examiner prompts for the child to respond or signals that the child has failed to respond *after* the stimulus was presented and *prior* to the child's response.

0 *Reduced focus*: Verbal behaviors do not meet criteria for 2 or 1.

The Facial Domain

2 *Acceptable focus* for the facial domain meets *three* criteria:

1. While the examiner presents an auditory model the child looks at her/him for *at least* part of the time.

and

2. While the examiner is engaged in any other activity the child looks at either the examiner or the grid/reinforcers.

and

3. If the child looks elsewhere at any time, it must be so brief that the child does not appear to be looking at something specific.

1 *Questionable focus* for the facial domain meet either of *two* sets of criteria:

1. While the examiner presents an auditory model the child looks at her/him for *at least* part of the time.

and

2. The child looks elsewhere for a long enough time period that the child appears to be looking at something specific.

OR

1. During the entire time that the examiner presents an auditory model the child looks at the grid/reinforcer.

and

2. If the child looks elsewhere at any time, it must be so brief that the child does not appear to be looking at something specific.

0 *Reduced focus*: Facial behaviors do not meet criteria for 2 or 1.

APPENDIX B

THE STIMULABILITY TASK

A. Instrumentation and Materials

1. Audiocassette recorder and matching external microphone
2. This scoring form
3. A puzzle board with multiple single pieces

B. Procedure and Instructions

1. Position microphone 15 cm (6 inches) from child's lips.
2. Use Standard Procedure to adjust audio levels for child's speech.
3. During the administration of the Photo Articulation Test, circle the sounds, by position, that were not produced correctly. Test stimulability for all circled sounds. Use only an auditory model. Evoke responses both in immediate (I) and delayed (D) imitation. Begin with the sound level and proceed to the next linguistic level(s) only if the child is successful. If the child fails at the syllable or word level for the first set of stimuli, present the second. In all cases the stimuli appear in bold typeface. Note that the syllable is a portion of the word. After each correct production in immediate imitation, direct the child to produce the stimulus "again" for the delayed imitation trial.
4. Place the pieces of the puzzle in front of you and the puzzle board in front of the child. Hold up five fingers and tell the child, "**Let's play a copy game. Every time you try to say what I say I'll put down one of my fingers. When all my fingers are down you get a piece to put in the puzzle board.**"
5. After each response, record + for correct and - for incorrect in the appropriate column.

C. Stimuli

Sound	Position	Sound			Syllable			Word	
		I	D		I	D		I	D
/s/	I	—	—	sun	—	—	sun	—	—
		—	—	sock	—	—	sock	—	—
	F			bus	—	—	bus	—	—
/sp/	I			miss	—	—	miss	—	—
				spin	—	—	spin	—	—
				skin	—	—	skin	—	—
/sk/	I	—	—	stop	—	—	stop	—	—
/st/	I	—	—						
/z/	I	—	—	zip	—	—	zip	—	—
		—	—	zoom	—	—	zoom	—	—
	F			buzz	—	—	buzz	—	—
				nose	—	—	nose	—	—

/ʃ/	I	___	___	ship	___	___	ship	___	___
	F	___	___	shop	___	___	shop	___	___
/tʃ/				push	___	___	push	___	___
	I	___	___	wish	___	___	wish	___	___
	F	___	___	chip	___	___	chip	___	___
/dʒ/				chop	___	___	chop	___	___
	I	___	___	touch	___	___	touch	___	___
	F	___	___	bunch	___	___	bunch	___	___
				Jim	___	___	Jim	___	___
/t/	I	___	___	jam	___	___	jam	___	___
	F	___	___	fudge	___	___	fudge	___	___
				badge	___	___	badge	___	___
/d/	I	___	___	top	___	___	top	___	___
	F	___	___	tip	___	___	tip	___	___
				pot	___	___	pot	___	___
/n/	I	___	___	boat	___	___	boat	___	___
	F	___	___	deep	___	___	deep	___	___
				dip	___	___	dip	___	___
				nod	___	___	nod	___	___
/l/				hide	___	___	hide	___	___
	I	___	___	knot	___	___	knot	___	___
	F	___	___	nut	___	___	nut	___	___
				bun	___	___	bun	___	___
/b/				ten	___	___	ten	___	___
	I	___	___	lot	___	___	lot	___	___
/k/				loop	___	___	loop	___	___
	I	___	___	black	___	___	black	___	___
/f/				clap	___	___	clap	___	___
	I	___	___	flop	___	___	flop	___	___
/θ/	I	___	___	think	___	___	think	___	___
	F	___	___	thought	___	___	thought	___	___
				both	___	___	both	___	___
/r/				path	___	___	path	___	___
	I	___	___	run	___	___	run	___	___
	F	___	___	wrap	___	___	wrap	___	___
				her	___	___	her	___	___
/br/				car	___	___	car	___	___
	I	___	___	bread	___	___	bread	___	___
/kr/				crumb	___	___	crumb	___	___
	I	___	___	trip	___	___	trip	___	___

/k/	I	___	___	cup	___	___	cup	___	___	
	F	___	___	comb	___	___	comb	___	___	
/g/	I	___	___	neck	___	___	neck	___	___	
				pick	___	___	pick	___	___	
	F	___	___	gum	___	___	gum	___	___	
				got	___	___	got	___	___	
/f/	I	___	___	bug	___	___	bug	___	___	
				big	___	___	big	___	___	
/v/	I	___	___	fun	___	___	fun	___	___	
				fine	___	___	fine	___	___	
	F	___	___	tough	___	___	tough	___	___	
				cough	___	___	cough	___	___	
/p/	I	___	___	vase	___	___	vase	___	___	
				vine	___	___	vine	___	___	
	F	___	___	love	___	___	love	___	___	
				give	___	___	give	___	___	
/b/	I	___	___	pin	___	___	pin	___	___	
				pot	___	___	pot	___	___	
	F	___	___	nap	___	___	nap	___	___	
				tip	___	___	tip	___	___	
/m/	I	___	___	pin	___	___	pin	___	___	
				boat	___	___	boat	___	___	
	F	___	___	tub	___	___	tub	___	___	
				knob	___	___	knob	___	___	
/w/	I	___	___	mop	___	___	mop	___	___	
				moon	___	___	moon	___	___	
	F	___	___	come	___	___	come	___	___	
				Tom	___	___	Tom	___	___	
/ð/	I	___	___	one	___	___	one	___	___	
				walk	___	___	walk	___	___	
	/h/	I	___	___	them	___	___	them	___	___
					those	___	___	those	___	___
/ŋ/	I	___	___	hop	___	___	hop	___	___	
				hat	___	___	hat	___	___	
	F	___	___	tongue	___	___	tongue	___	___	
				hang	___	___	hang	___	___	
/j/	I	___	___	yes	___	___	yes	___	___	
				yam	___	___	yam	___	___	

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