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An Investigation of the Length of Observation Necessary to Obtain a Representative Sample of Clinician-Client Interaction

Beverly A. Laird

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AN INVESTIGATION OF THE LENGTH OF OBSERVATION
NECESSARY TO OBTAIN A REPRESENTATIVE SAMPLE
OF CLINICIAN-CLIENT INTERACTION

by
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Bachelor of Arts, Brandon University, 1970

A Thesis
Submitted to the Faculty
of the
University of North Dakota
in partial fulfillment of the requirements
for the degree of
Master of Arts

Grand Forks, North Dakota

May
1973



This thesis submitted by Beverley A. Laird in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

Dean C. Egel

(Chairman)

George W. Schubert

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Permission

Title An Investigation of the Length of Observation Necessary
to Obtain a Representative Sample of Clinician-Client
Interaction

Department Speech Pathology and Audiology

Degree Master of Arts

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Date April 25, 1973

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ABSTRACT

The purpose of this study was to determine the length of time necessary to obtain a representative sample of clinician-client interaction during a therapy session when using the Analysis of Behaviors of Clinicians (ABC) System to record clinical behavior. Subjects used were ten children receiving articulation and/or language therapy and their student clinicians. All clients were seen on an individual basis. A total of ten fifteen-minute clinician-client sessions were studied.

It was concluded that a three-minute period was sufficient to obtain a representative sample of clinician-client interaction during an articulation and/or language therapy session involving student clinicians and children.

CHAPTER I

INTRODUCTION

The recent development of organized observational systems (Johnson, 1969; Diedrich, 1971; Prescott, 1970; Schubert and Miner, 1971; Boone and Prescott, 1972; and Schubert, Miner, and Prather, 1972) in the area of speech pathology have provided a means of recording clinical behavior which allows the behaviors to be quantified and analyzed. In order to make observational systems functional, researchers have been motivated to reduce the amount of time required for a representative analysis. The utility of an observational system is related to the time required to use it.

The purpose of this study was to determine the length of time necessary to obtain a representative sample of clinician-client interaction during a therapy session when using the Analysis of Behaviors of Clinicians (ABC) System to record clinical behavior.

Schubert and Miner, the authors of the ABC System, have selected twelve categories into which clinician-client interaction can be placed. The system was based upon research by Flanders (1970) and on two pilot studies conducted at the University of North Dakota and the University of Washington.

The first eight categories describe the actions of the clinician. They include the clinician's attempt to elicit a response from the

client (categories Two and Three), to utilize rewards (categories Four, Five, and Six), to modify his procedures in terms of client's response (Category One), to use authority (Category Eight) or to fail to attend to the therapy task (Category Seven).

The behavioral categories numbered Nine, Ten, and Eleven describe the action of the client as he responds correctly or incorrectly and his attempts to avoid responding by irrelevant statements. Category Twelve, silence, occurs when both the clinician and the client display no verbal or relevant motor behavior. The categories of clinical behavior, numbers, and definitions, are listed in Table 1.

When using the ABC System, raw data is collected by recording a number on the Raw Data Collection Sheet (Appendix A) every three seconds. This number corresponds with the clinician-client interaction occurring at the time of observation. The relative frequencies of occurrence of each of the categories permits an analysis of the interaction based upon this quantification of behaviors.

Boone and Prescott (1972) developed a slightly different observational system employing ten categories instead of the twelve in the ABC System. They reported that when a therapy session was studied, the first five minutes and the last five minutes of a half-hour therapy session were not representative of the whole session. These segments contained less stimulus-responses-reward data and more "rapport" related responses than did the rest of the session.

Investigations by Boone and Goldberg (1969) revealed that a random five-minute segment of the middle twenty minutes of a half-hour

TABLE 1

BEHAVIORAL CATEGORIES AND DESCRIPTIONS OF EACH
CATEGORY OF THE ABC SYSTEM

	1. OBSERVING AND MODIFYING LESSON APPROPRIATELY	Using response or action of the client to adjust goals and/or strategies
	2. INSTRUCTION AND DEMONSTRATION	Process of giving instruction or demonstrating the procedures to be used
	3. AUDITORY AND/OR VISUAL STIMULATION	Questions, cues, and models intended to elicit a response
Clinician Behavior	4. AUDITORY AND/OR VISUAL POSITIVE REINFORCEMENT OF CLIENT'S CORRECT RESPONSE	Process of giving any positive response to correct client response
	5. AUDITORY AND/OR VISUAL NEGATIVE REINFORCEMENT OF CLIENT'S INCORRECT RESPONSE	Process of giving any negative response to an incorrect client response
	6. AUDITORY AND/OR VISUAL POSITIVE REINFORCEMENT OF CLIENT'S INCORRECT RESPONSE	Process of giving any positive response to an incorrect client response
	7. CLINICIAN RELATING IRRELEVANT INFORMATION AND/OR ASKING IRRELEVANT QUESTIONS	Talking and/or responding in a manner unrelated to changing speech patterns
	8. USING AUTHORITY OR DEMONSTRATING DISAPPROVAL	Changing social behavior from unacceptable to acceptable behavior
	9. CLIENT RESPONDS CORRECTLY	Client responds appropriately, meets expected level
Client Behavior	10. CLIENT RESPONDS INCORRECTLY	Client apparently tries to respond appropriately but response is below expected level
	11. CLIENT RELATING IRRELEVANT INFORMATION AND/OR ASKING IRRELEVANT QUESTIONS	Talking and/or responding in a manner unrelated to changing speech patterns
	12. SILENCE	Absence of verbal and relevant motor behavior

therapy session offered as much information as scoring the total twenty-minute segment.

Olsen (1972) determined the relationship between a five- and ten-minute random segment of a therapy session and the entire therapy session as measured by the Prescott Nineteen Category Scoring System. The five- and ten-minute segments were compared in rank order to the entire sessions to determine if ten minutes would yield a more meaningful correlation than five minutes and to demonstrate the strength of the relationship these random segments to the whole. Three experienced clinicians each doing therapy with four different kinds of speech problems were used as subjects. Table 2 shows these correlations.

The high level of these correlations for the five-minute random samples to the entire therapy session and the minimal differences between five- and ten-minute correlations indicated that a random five-minute sample of therapy represented the types and percentages of interactions for the entire therapy session conducted by experienced clinicians.

Another example from the field of speech pathology where the size of sample necessary to be representative has been studied is in assessing children's language. Darley and Moll (1960) investigated how many utterances of children it was necessary to collect in order to obtain reasonably reliable scores representing the average length and the structural complexity of their linguistic productions. Each of one-hundred and fifty speech samples were divided into ten five-response segments and the mean length of response (MLR) and structural complexity

TABLE 2

RANK-ORDER CORRELATIONS BETWEEN SEGMENTS OF THERAPY AND THE
FULL THERAPY SESSION USING THE PRESCOTT SCORING SYSTEM

LANGUAGE		VOICE		PROSODY		ARTICULATION	
5 min.	10 min.	5 min.	10 min.	5 min.	10 min.	5 min.	10 min.
.91	.89	.85	.85	.86	.93	.96	.98
.96	.88	.97	.92	.84	.93	.94	.99
.96	.97	.88	.98	.90	.91	.90	.92

score (SCS) were calculated for each segment. Reliability estimates were obtained for the two language measures for varying numbers of response segments.

The results indicated that MLR scores based on fifty responses were of adequate reliability. The researchers concluded however that reliability of SCS values based on fifty responses was not adequate.

The clinical usefulness of the ABC System is limited by the expenditure of time required to record and analyze the clinical behaviors. The question arises as to what is the minimum length of time necessary to obtain a representative sample of clinician-client behavior during a therapy session.

This study was designed to answer the following question:

Is there a significant difference in behavioral patterns, (frequency of response per category) of clinician-client interaction when comparing three-minute, six-minute, nine-minute, twelve-minute, and fifteen-minute samples of recorded clinician-client interaction when therapy is being conducted by student clinicians?

CHAPTER II

PROCEDURE

Subjects

Because this is a study of clinician-client interaction, subjects were a group of ten children receiving articulation and language therapy and their student clinicians. The clinicians included nine undergraduate and one graduate student majoring in speech pathology at the University of North Dakota Speech and Hearing Clinic. The clients were drawn from the roster of children receiving articulation and language therapy at the University of North Dakota Speech and Hearing Clinic. The five male and five female clients were between four and seven years of age. The mean chronological age was 62.20 months.

A total of ten clinician-client sessions were studied. All clients were seen on an individual basis. Each session lasted approximately thirty-five minutes.

Equipment and Environment

Equipment consisted of an Ampex (Model VR 700) videotape recorder utilizing a television camera (Model CC-323). One inch Memorex videotape was used. For seven sessions an Electro-Voice microphone (Model 729SR) was used in conjunction with the videotape recorder. An Electro-Voice microphone (Model 664) was used in the final three

sessions. A Setchell-Carson Monitor 23 inch receiver (Model 2100-SD) was used for playback. Two rooms were used. The experimental room was outfitted with a table and two small chairs. On the wall of the experimenter's room adjacent to the experimental room was a one-way mirror which allowed the television camera to "shoot" its pictures without interfering with clinician or client. The videotape recorder was located in the experimenter's room.

Testing Procedures

A videotape recording was made of a fifteen-minute segment of each therapy session. The videotape recording was begun approximately ten minutes after clinician and client entered the experimental room. The experimenter viewed these ten videotaped samples. Every three seconds the experimenter placed a number on the raw data collection sheet (Appendix A). This number corresponded with the ABC System category of clinician-client interaction occurring at the time of the observation.

Reliability

Intra-reliability for the experimenter was determined by transcribing three hundred of the observed behaviors of one fifteen-minute segment of therapy. Two weeks later the experimenter viewed and transcribed the same segment a second time. The percentage of agreement for intra-reliability was ninety-two percent.

Inter-reliability was established by having a second person transcribe the observed behaviors of the same fifteen-minute segment.

This individual was a certified speech pathologist having considerable experience with the ABC System. It was possible to establish reliability by comparing the three hundred transcribed observations registered by the second individual with those of the experimenter and by comparing the experimenters two observations with each other. The percentage of agreement for inter-reliability was ninety-five percent.

Statistical Treatment

A polynomial regression was conducted on the data within the twelve categories of the ABC System to reveal whether or not there were significant differences between the time segments and hence the length of time necessary to obtain a representative sample of clinical behavior.

CHAPTER III

RESULTS AND DISCUSSION

Correlation

The computed correlation indicated the degree of relationship between each of the five three-minute periods for each of the twelve behavioral categories of the ABC System (Appendix B). The mean correlation coefficients for each category are presented in Table 3.

Within each category a very small number of responses was recorded for categories One, Six, and Eight. The correlation coefficients for these categories were near zero due to the limited number of responses. The low correlation coefficients indicated that a three-minute segment was not adequate to establish reliability for behavioral categories One, Six, and Eight.

The mean correlation coefficients of Category Five (Auditory and/or Visual Negative Reinforcement-Incorrect Response) and Category Ten (Client Responds Incorrectly) indicated low correlations between the five three-minute periods. For categories Two, Four, Seven, Eleven, and Twelve, the mean correlation coefficient of each category revealed moderate correlations between the different three-minute segments.

Within the categories, the highest correlations were found between time periods which were adjacent to each other. The lowest correlations were found between non-adjacent time periods.

TABLE 3

THE MEAN CORRELATION COEFFICIENTS FOR EACH OF
THE TWELVE CATEGORIES OF THE ABC SYSTEM
FOR THE FIVE THREE-MINUTE PERIODS

Category	Mean Correlation Coefficient
One	.01
Two	.42
Three	.63
Four	.54
Five	.19
Six	-.04
Seven	.62
Eight	.07
Nine	.52
Ten	.32
Eleven	.61
Twelve	.55

The mean number of behaviors observed in each of the categories of the ABC System for the five three-minute periods are summarized in Table 4. The means of Category One indicated that responses occurred more frequently in time period one than in any other time segment. The largest difference in the behavioral patterns or frequency of responses within an individual category existed for Category Two. The difference between the mean responses of the second and fourth time period was 4.3. The means of Category Three revealed that responses occurred less

frequently in time periods four and five, than in time periods one, two, or three.

TABLE 4

MEAN NUMBER OF BEHAVIORS OBSERVED IN EACH OF THE
TWELVE CATEGORIES OF THE ABC SYSTEM FOR EACH
THREE-MINUTE SEGMENT

Category	1	2	3	4	5
One	.3	0	.1	0	0
Two	2.4	5.7	2.2	1.4	3.7
Three	18.1	18.6	17.1	16.3	15.1
Four	9.1	9.7	9.6	8.7	8.0
Five	1.6	1.2	1.1	1.2	1.4
Six	.1	.1	.0	.4	0
Seven	4.9	4.2	6.2	6.5	5.1
Eight	2.3	.7	.8	.4	1.4
Nine	9.2	9.6	11.8	11.5	10.2
Ten	4.4	4.0	4.3	4.7	4.7
Eleven	5.6	3.1	4.4	6.1	6.4
Twelve	3.0	3.0	2.4	2.8	4.0

Legend: 1 = 0-3 minutes 4 = 9-12 minutes
2 = 3-6 minutes 5 = 12-15 minutes
3 = 6-9 minutes

The responses were least frequent during time segment five for Category Four. The means of Category Five showed that frequencies of responses were very similar throughout all five time periods. For Category Six the means indicated that responses were most frequent during

time period four. Responses occurred more frequently during time periods three and four, than in any of the other three-minute segments for Category Seven. The means of Category Eight indicated that responses occurred more frequently in first time period and last time period, than during each of the middle three time segments.

Responses occurred least frequently during the first three minutes for Category Nine. The means of Category Ten indicated that responses occurred slightly more frequently during the last two time periods than during the first three time periods. Behaviors of Category Eleven occurred more frequently during time periods one, four, and five, than during periods two and three. The means of Category Twelve indicated that frequencies of responses were very similar, through time periods one, two, and four. The least frequent occurrence of silence was evidenced in time period three. The most frequent occurrence of Category Twelve was recorded during time period five.

Analysis of Variance

Analysis of variance was performed to determine if there was a significant difference between the behavioral patterns of an individual category when comparing five three-minute segments (Appendix C). The F values for each category of the ABC System are presented in Table 5. For the behavioral patterns of each of the twelve categories, no significant difference was found between any of the three-minute periods. This meant that the behavioral patterns, of any three-minute period or the combination of any three-minute segments, were not

significantly different from the behavioral patterns of any other three-minute period or combination of three-minute periods.

TABLE 5
F VALUES FOR EACH CATEGORY

Category	F Value
One	.8500
Two	1.1600
Three	.2377
Four	.2783
Five	.1465
Six	1.1912
Seven	.2079
Eight	2.1513
Nine	.6091
Ten	.0814
Eleven	.6585
Twelve	.3608

An F ratio of 2.58 was necessary for significance at .05 level. No F value of the twelve categories reach significance.

The mean number of responses for each of the twelve categories for the five cumulative time periods are presented in Table 6.

The largest difference in the behavioral patterns for a single category existed for Category Seven between six cumulative minutes and twelve cumulative minutes. The difference between the two means was 2.90.

TABLE 6

CUMULATIVE MEANS FOR EACH BEHAVIORAL CATEGORY

Category	1	2	3	4	5
One	.30	.15	.13	.10	.08
Two	2.40	4.05	3.43	2.68	3.08
Three	17.20	17.90	17.63	17.30	16.86
Four	9.10	9.40	9.47	9.28	9.02
Five	1.60	1.40	1.30	1.28	1.30
Six	.10	.10	.07	.15	.12
Seven	4.90	2.55	5.10	5.45	5.38
Eight	2.30	1.50	1.27	1.05	1.12
Nine	9.20	9.40	10.20	10.53	10.46
Ten	4.40	4.20	4.23	4.35	4.42
Eleven	5.60	4.35	4.37	4.80	5.12
Twelve	3.00	3.00	2.80	2.80	30.04

Legend: 1 = First Three Minutes 4 = First Twelve Minutes
 2 = First Six Minutes 5 = Total Fifteen Minutes
 3 = First Nine Minutes

Inspection of the means of each cumulative time period indicated that the behavioral patterns within seven of the twelve categories stabilized during the first three-minute period. These categories included (1) Category Three: Auditory and/or Visual Stimulation, (2) Category Four: Auditory and/or Visual Positive Reinforcement, (3) Category Five: Auditory and/or Visual Negative Reinforcement-Incorrect Response, (4) Category Six: Auditory and/or Visual Positive

Reinforcement-Incorrect Response, (5) Category Nine: Client Responds Correctly, (6) Category Ten: Client Responds Incorrectly, and (7) Category Twelve: Silence.

The behavioral pattern of Category One, (Observing and Modifying Lesson); Category Eight, (Authority); and Category Eleven, (Client Relating Irrelevant Information) did not stabilize until the second time period. The responses within each of these three categories occurred most frequently during the first three minutes of the fifteen-minute sample.

The frequency of response with Category Seven, (Clinician Relating Irrelevant Information) fluctuated between the first two cumulative time periods but became stable during the third cumulative time period. The behavioral pattern of Category Two, (Instruction and Demonstration) did not stabilize during the entire five cumulative time periods.

Trend analysis was performed to see if any trend (linear, quadratic, or third degree) was present anywhere within the data. Only in the case of Category Eight, (Authority) was any significant trend found. No significant linear trend existed, but the second degree trend showed significance. Table 7 summarizes this information.

Because of the significant second degree trend, the data for Category Eight (Authority) was graphed. See Figure 1.

TABLE 7

SUMMARY TABLE FOR THE TREND ANALYSIS FOR
CATEGORY EIGHT: AUTHORITY

Source of Variation	Degrees of Freedom	Sum of Squares	Mean of Squares	F
Trend	(4)	(22.68)		
Linear	1	4.40	4.40	1.67
Second	1	16.08	16.79	6.36
Third	1	.08	.08	.03
Deviation from Trend	1	2.04	2.40	.91
Within	45	2.64		

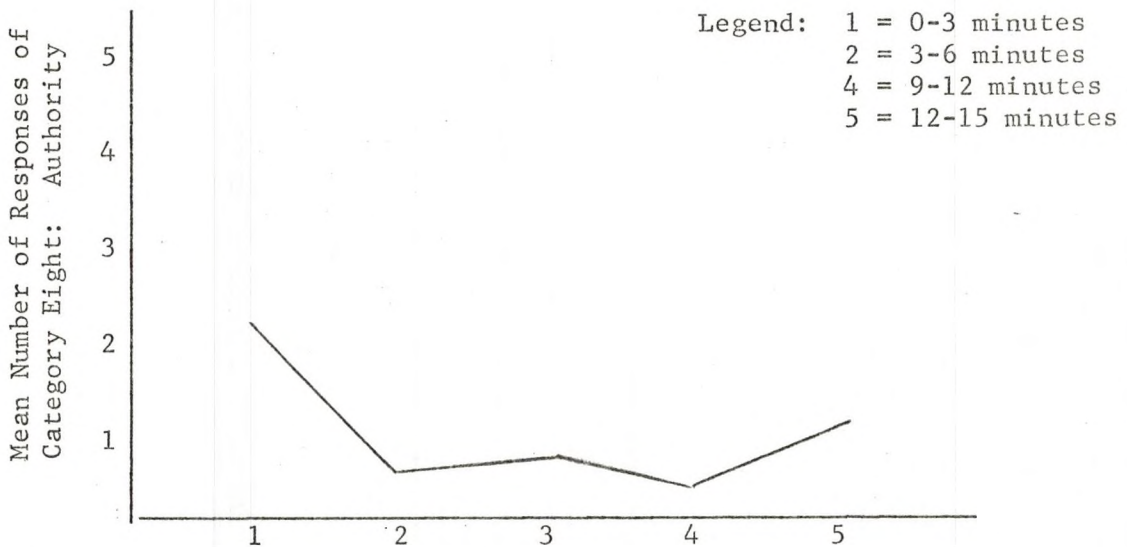


Fig. 1--Second degree trend of Category Eight: Authority.

Discussion

The correlations between the various three-minute segments were low for the categories which had small response frequencies. The correlation coefficients were low due to the limited number of responses. Thus a three-minute period was not adequate to establish reliability for categories One, Five, Six, Eight, and Ten.

For the categories in which behaviors occurred more frequently, a three-minute period was sufficient to establish reliability. The behaviors for an individual category which occur on the average more than 4.50 times every three minutes tend to be reliable. Although the mean response frequency was small (3.20) for Category Twelve (Silence), a three-minute segment of therapy was found to be reliable.

The correlation coefficients were highest for adjacent time periods and lowest for non-adjacent time periods. An analyzed cumulative time sample of therapy revealed less variation in the behavioral patterns of clinical behaviors that did a non-cumulative sample of the same size.

Inspection of the means of the twelve categories for five three-minute time periods revealed Category Two to contain the largest difference (4.30) between means for a single category. The largest difference (2.90) between cumulative time means of an individual category existed in Category Seven. The difference between means of single three-minute time periods was the larger. Thus, it appeared that by analyzing five three-minute segments separately more sensitive

changes in behavioral patterns became visible than when a cumulative sample of the same size was analyzed.

The analysis of variance measure computed for all twelve categories of the ABC System indicated that for each category there were no significant differences at the .05 level of confidence between any of the five three-minute periods. The behavioral patterns for each of the twelve categories were not significantly different throughout the five three-minute segments. Thus any three-minute period or any combination of any of the three-minute segments used in this study will reveal similar behavioral patterns.

By inspection of the means for each behavioral category of each cumulative time period, it was found that for ten of the twelve categories the non-significant differences in the behavioral patterns stabilized within the first six-minute segment. Thus, it would appear that for all but Category Two (Instruction and Demonstration) and Category Seven (Clinician Relating Irrelevant Information) six minutes reveal the behavioral patterns, taking into consideration even non-significant differences between patterns, to be found within a fifteen-minute segment of therapy.

Trend analysis measures indicated that in eleven of the twelve behavioral categories no significant trends were present in the behavioral patterns throughout the five three-minute periods. In Category Eight (Authority), a significant second degree trend developed. This trend indicated that clinicians tend to use authority or

demonstrate disapproval of client's behavior more during the first three minutes and during the last three minutes of the fifteen-minute period analyzed in this study.

CHAPTER IV

SUMMARY AND CONCLUSION

Experimenters, clinical supervisors, and clinicians spend a great deal of time attempting to analyze the clinical behaviors of a therapy session. The purpose of this study was to determine the length of time necessary to obtain a representative sample of clinician-client interaction during a therapy session when using the ABC System to record clinical behavior.

To accomplish the above stated purpose, the middle fifteen minutes of ten clinician-client therapy sessions were videotaped. Recording was done by studying the fifteen-minute videotape replay of each session. Every three seconds a number was recorded which corresponded to the clinical behavior occurring at that time. This meant that a total of 3,000 observed clinical behaviors were recorded. Clinicians were graduate and undergraduate students conducting articulation and/or language therapy. The clients were children between four and seven years of age receiving speech therapy at the University of North Dakota Speech and Hearing Clinic.

Correlation coefficients were computed between the five three-minute segments of therapy for each behavioral category of the ABC System. Due to lack of variability in the categories in which frequency of occurrence was small, the data indicated a low relationship

between time periods for these categories. For the categories in which behaviors occurred more frequently, the results indicated that three minutes was sufficient to establish reliability. The data were also analyzed by analysis of variance. The results of these analyses indicated that no significant differences existed between the behavioral patterns of clinician-client interaction when comparing five three-minute segments of recorded clinician-client interaction.

Conclusion

The conclusions stated pertain only to articulation and language therapy conducted by student clinicians. References made to any random time period include only the middle fifteen minutes of a thirty-five-minute therapy session.

When using the ABC System to record clinical behaviors, it was determined that a three-minute period was sufficient to obtain a representative sample of clinician-client interaction during a therapy session. This means that experimenters, clinical supervisors, and clinicians could use data from three minutes of therapy for evaluation and be confident that they have a representative sample of clinician-client interaction during that therapy session.

Suggestions for Further Research

1. What is the length of time necessary to obtain a representative sample of clinician-client interaction during speech therapy for disorders other than those investigated in this study?

2. Can more useful information be obtained through modification of the ABC System by deleting some of the seldom used categories, and adding new categories?

APPENDIX A

TABLE 8

CORRELATION COEFFICIENTS FOR THE TWELVE CATEGORIES
OF THE ABC SYSTEM FOR EACH THREE-MINUTE PERIOD

	1	2	3	4	5
Category One: Observing and Modifying Lesson					
1		0	-.11	0	0
2			0	0	0
3				0	0
4					0
Mean Correlation	.01				
Category Two: Instruction and Demonstration					
1		.73	.75	.21	.08
2			.91	.66	.03
3				.64	.15
4					.03
Mean Correlation	.42				
Category Three: Auditory and/or Visual Stimulation					
1		.66	.56	.58	.55
2			.82	.70	.32
3				.83	.55
4					.73
Mean Correlation	.63				
Category Four: Auditory and/or Visual Positive Reinforcement					
1		.22	.38	.60	.81
2			.69	.69	.34
3				.50	.36
4					.80
Mean Correlation	.54				
Category Five: Auditory and/or Visual Negative Reinforcement-Incorrect Response					
1		.66	.22	.19	.18
2			.43	.25	-.25
3				-.34	-.33
4					.92
Mean Correlation	.19				
Category Six: Auditory and/or Visual Positive Reinforcement-Incorrect Response					
1		-.11	0	-.15	0
2			0	-.15	0
3				0	0
4					0
Mean Correlation	-.04				

TABLE 9

SUMMARY OF THE ANALYSIS OF VARIANCE
FOR EACH OF THE TWELVE CATEGORIES

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Category One: Observing and Modifying Lesson				
Attribute to Regression	4	0.68	0.17	.8500*
Deviation from Regression	45	9.00	0.20	
Total	49	9.68		
Category Two: Instruction and Demonstration				
Attribute to Regression	4	113.08	28.27	1.1600*
Deviation from Regression	45	1092.60	24.30	
Total	49	1205.67		
Category Three: Auditory and/or Visual Stimulation				
Attribute to Regression	4	66.11830	16.52957	0.2377*
Deviation from Regression	45	3129.89673	69.55325	
Total	49	3196.01489		
Category Four: Auditory and/or Visual Positive Reinforcement				
Attribute to Regression	4	19.47975	4.86994	0.2783*
Deviation from Regression	45	787.49512	17.49988	
Total	49	806.97485		
Category Five: Auditory and/or Visual Negative Reinforcement-Incorrect Response				
Attribute to Regression	4	1.59999	0.40000	0.1465*
Deviation from Regression	45	122.89972	2.73110	
Total	49	124.49971		
Category Six: Auditory and/or Visual Positive Reinforcement-Incorrect Response				
Attribute to Regression	4	1.08000	0.2700	1.1912*
Deviation from Regression	45	10.19998	0.22667	
Total	49	11.27998		
Category Seven: Clinician Relating Irrelevant Information				
Attribute to Regression	4	36.27995	9.06999	0.2079*
Deviation from Regression	45	1963.49536	43.63322	
Total	49	1999.77515		

TABLE 9--Continued

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Category Eight: Authority				
Attribute to Regression	4	22.67989	5.66997	2.1513*
Deviation from Regression	45	118.59972	2.63555	
Total	49	141.27960		
Category Nine: Client Responds Correctly				
Attribute to Regression	4	52.71980	13.17995	0.6091*
Deviation from Regression	45	973.69995	21.63777	
Total	49	1026.41968		
Category Ten: Client Responds Incorrectly				
Attribute to Regression	4	3.47993	0.86998	0.0814*
Deviation from Regression	45	480.69775	10.68217	
Total	49	484.17749		
Category Eleven: Client Relating Irrelevant Information				
Attribute to Regression	4	74.27896	18.56973	0.6585*
Deviation from Regression	45	1268.99609	28.19991	
Total	49	1343.27490		
Category Twelve: Silence				
Attribute to Regression	4	13.91972	3.47993	.3608*
Deviation from Regression	45	433.99609	9.64436	
Total	49	447.91577		

*Not significant at the .05 level.

REFERENCES

- Boone, Daniel R., and Goldberg, Alvin A. An experimental study of the clinical acquisition of behavioral principles by videotape self-confrontation. Final Report, Project No. 4071, Grant No. OEG-9-071318-28414, University of Denver, 1969.
- Boone, Daniel R., and Prescott, Thomas E. Content and sequency analysis of speech and hearing. ASHA, 14, 2, 58-62, 1972.
- Boone, Daniel R. Personal Communication, 1973.
- Darley, Fredric L., and Moll, Kenneth L. Reliability of language measures and size of language sample. J. Speech Hearing Res., 3, 2, 166-173, 1960.
- Diedrich, William M. Procedures for counting and charting a target phoneme. Language, Speech, and Hearing Services in the Schools, 2, 5, 18-32, 1971.
- Edwards, Allen L. Statistical Analysis. New York: Holt, Rinehart, and Winston, Inc., 1969.
- Flanders, Ned A. Analyzing Teaching Behavior. Reading, Massachusetts: Addison-Wesley Publishing Co., 1970.
- Johnson, Thomas S. The development of a multidimensional scoring system for observing in the clinical process in speech pathology. Unpublished Ph.D. dissertation, University of Kansas, 1969.
- Olsen, Bruce D. Comparisons of sequential interaction patterns in therapy of experienced and inexperienced clinicians in the parameters of articulation, delayed language, prosody, and voice disorders. Unpublished Ph.D. dissertation, University of Denver, 1972.
- Prescott, Thomas E. The development of a methodology for describing speech therapy. Unpublished Ph.D. dissertation, University of Denver, 1970.
- Schubert, George W., and Miner, Adah. Modification of the Flanders' interaction analysis categories for observation in speech therapy. ASHA Convention Presentation, Chicago, Illinois, 1971.
- Schubert, George W.; Miner, Adah; and Prather, Elizabeth A. A comparison of student clinicians' behaviors as measured by the analysis of behaviors of clinicians (ABC) system. ASHA Convention Presentation, San Francisco, California, 1972.