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A STUDY OF PRECEPTOR TRAINING
OF CLASSROOM TEACHERS
IN READING DIAGNOSIS

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A STUDY OF PRECEPTOR TRAINING OF CLASSROOM TEACHERS IN READING DIAGNOSIS¹

Ruth M. Polin²

Clinician agreement on diagnosis, presumed necessary for effective remediation of children's reading difficulties, has been the focus of in-depth investigation by the IRT's Clinical Studies Project for a number of years. The theoretical base for the project is a theory of clinical problem-solving behavior by Elstein and Shulman (Elstein, Shulman, & Sprafka, 1978), which was reformulated for education by Vinsonhaler and Wagner (Vinsonhaler, Wagner, & Elstein, 1977). This theory postulates that problem-solving behavior is a function of clinicians' memories and strategies, which influence the decision-making process as clinicians diagnose cases. Memories and strategies are determined largely by the training clinicians or teachers receive. Clinical decision making in reading has been investigated with several classifications of professionals (reading clinicians, classroom teachers, learning disabilities specialists, and school psychologists) in a series of observational studies from 1977 to 1980, and the results of these studies have been presented by Weinshank (Note 1). There was low diagnostic agreement among all professional groups except school

¹ A comprehensive paper on all the training studies will be available at a later date.

² Ruth Polin is data-processing coordinator for the Clinical Studies Project.

The author acknowledges the contribution of the following members of the Clinical Studies Project and consultants who assisted in the planning, development of computer systems for data analysis, and operation of the study: John F. Vinsonhaler, Christian Wagner, Annette Weinshank, George Sherman, Gloria Blatt, Doron Gil, Deborah Cureton, Linda Vavrus, and Gwyneth Stewart.

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psychologists, whose training and experience differs markedly from that of the others mentioned..

To explore the Instructional Corollary to this Inquiry Theory, which states that clinical performances (e.g., reading diagnosis agreement) can be improved by improvements in clinical memory and strategy, a series of training (application) studies were undertaken. Simply stated, what a clinician retains from his/her educational background about how a child learns to read and what procedures should be followed in assessing the child's mastery of the fundamental elements of reading constitute the clinician's memory and strategy. More intensive, organized training and clinical experience should thus improve the diagnostic decision making of these clinicians and, ultimately, the remediation of a child's reading disability.

The first of these application studies was conducted in 1977 with the students of the graduate reading diagnosis course at Michigan State University (Sherman, Weinshank, & Brown, Note 2). In 1979, another study was conducted in the same setting, but with the additional use of a model of reading for instruction and of decision aids (diagnostic write-up forms and checklists). Simulated cases developed by the Clinical Studies Project were used in all studies. Simulated cases are simply collections of information about children with reading problems. They are based on real children in grades three through nine who attended the Michigan State University Reading Clinic and whose reading problems were considered to be representative of those frequently noted in public schools. A detailed description of these cases is presented by Weinshank (Note 1). The 1979 study showed the efficacy of using diagnostic decision aids in channeling a clinician's thinking along specified, orderly lines; this resulted in superior inter-clinician

agreement (Gil, Polin, Vinsonhaler, & VanRoekel, Note 3).

That result prompted further investigation of the effect of training on diagnostic agreement. In 1980, the study reported here was conducted. In this study, I and my colleagues on the Clinical Studies Project investigated the effect of differing types of small group instruction on the diagnostic performance of classroom teachers who were inexperienced in reading diagnosis.

Objectives

The objectives of this application study were to attempt to answer the following questions.

1. Since the 1979 application study showed the positive effect of systematized training in reading diagnosis, would different content and training methods also have a positive effect?
2. Does practice with simulated cases have a greater effect on diagnostic performance than the necessarily limited practice with real children?
3. If limited training results in higher diagnostic agreement, can even higher agreement be expected with more extensive training?

Methods

Subjects

Ten classroom teachers with little or no training or experience in reading diagnosis, drawn from elementary schools of the Lansing, Michigan school district, and five students enrolled in the Michigan State University graduate-level course in reading diagnosis, also with minimal experience in reading diagnosis, participated in the study. The students were divided into three preceptor training groups, each with a different instructor (preceptor). Each instructor had a somewhat different approach to teaching reading diagnosis. However, all groups

were instructed for a minimum of 30 hours plus 10 hours of extra practice time with (1) the Model of Reading and Learning to Read (MORAL), a systematized cause and effect approach to reading difficulty diagnosis (Sherman, Note 4); (2) either simulated cases, real cases, or both, with instructor feedback; and (3) decision aids, which guided the interaction of those using the simulated cases. Progress was monitored by means of pre-, mid-, and posttests on a simulated case, and an additional posttest on a case not previously diagnosed. Five simulated cases were used; one subject from each preceptor training group was tested on each case.

Instructional Design

The vital signs of reading are the basis for group instruction in diagnosis of cases of reading difficulty. These vital signs indicate the reader's "health," much like medical vital signs indicate a patient's health. They are as follows:

1. *Instant Word Recognition*--the ability to recognize words without hesitation. It is measured by size of sight word vocabulary, relative to a child's grade placement in school.
2. *Decoded Word Recognition*--the ability to recognize unfamiliar words through use of graphemic similarities.
3. *Meaning Vocabulary*--the scope of words that denote meaningful relationships to the reader.
4. *Oral Reading*--the ability to read aloud with fluency and inflection.
5. *Reading Comprehension*--the ability to understand and put into meaningful perspective material that is read.
6. *Listening Comprehension*--the ability to understand and put into meaningful perspective material that is heard.
7. *Attention/Motivation*--the ability to activate and maintain concentration on the task at hand.

The preceptor for Group 1 used four vital signs. He merged Vital Signs 3 and 4, calling them Fluent Text Segmentation, and 5 and

6, calling them Retentive Comprehension. He considered Vital Sign 7 a learning effecting factor, rather than a vital sign, (A learning effecting factor is something that directly influences learning.) Group 1 stressed diagnosis according to performance level on the four vital signs; the other two groups used all seven as separate vital signs.

Classroom Instruction

For Groups 2 and 3, the formal classroom instruction in reading diagnosis was conducted in three-hour blocks weekly with an additional 1½ hours per week spent in diagnosing computer-based simulated cases (as opposed to the manually-based ones used for the test sessions).

Computer-based simulated cases contained the same information as the manual simulated cases but were used in conjunction with a computer terminal, which had test information stored on disks. This information could be readily retrieved for instant display without the use of the cumbersome file box (manual). Any material that could not be stored on the disks (e.g., audio recordings, actual test booklets) were contained in a loose-leaf study guide. After interacting with a simulated case, students filled out the decision-aid diagnosis sheets. Each student then translated his/her diagnosis to a standardized checklist, indicating whether the case showed adequacies or inadequacies in the seven vital signs and their effecting factors as postulated by the Model of Reading and Learning to Read. (This procedure is described in detail in the next section of this paper.) Students in Group 1, who used real cases rather than the simulated ones, did not use the checklist for their cases. Instead, the preceptor analyzed in class the real cases diagnosed by each student, and this in-class analysis provided practice comparable to that of

the other two groups. Some of the instructional differences across the three training groups are summarized in Table 1.

The diagnosis and remediation chart used in Groups 2 and 3 is shown, for one vital sign, in Figure 1. The same format was used for each of the seven vital signs. Group 1's flowchart also outlined steps to be followed in diagnosing cases of reading difficulty according to vital signs and effecting factors.

Test Sessions

At each test session, subjects were presented with a manually-based simulated case. The students received written and oral instructions on how to find the information and how to complete the test session (see Appendix A).

After receiving instructions, subjects observed the initial contact information about the case, which included a short summary about the child's reading performance. The subjects were then given 45 minutes to collect as many cues (items of information) about the case as they wished. These cues were later recorded as part of their data for the test.

At the end of 45 minutes, each student was asked to write a diagnosis of the case, using the decision aid, a sample of which is shown in Figure 2, based on the child's adequacies or inadequacies on the seven vital signs. The students were given 30 minutes to do this.

After completing their diagnostic write-ups, students were required to match their written diagnoses with the diagnostic categories listed on a checklist. This transfer, made after the students wrote their diagnoses, was used to establish a standardized vocabulary for analysis. The students did not see the checklist while they were writing their diagnoses.

Table 1

Differences and Similarities Across Preceptor Groups

Features	Group		
	1	2	3
Out of class practice on simulated cases	no	yes	yes
Practice with real children	yes	yes	yes
Use of Informal Reading Inventory in diagnosis	no	yes	no
Use of weekly logs for feedback	yes	no	yes
Number of vital signs studied	4	7	7
Decision aids used	flowchart ^a	diagnosis and remediation charts ^b	diagnosis and remediation charts ^b
Text used (for outside reading)	Ekwall ^c	Pearson & Johnson ^d MORAL for preceptors ^e	Pearson & Johnson ^d MORAL for preceptors ^e

^aDeveloped by George Sherman.

^bDeveloped by Deborah Cureton, Linda Patriarca, and Gwyneth Stewart.

^cEkwall, E. Diagnosis and remediation of the disabled reader.
Boston, Mass.: Allyn & Bacon, 1976.

^dTwo texts:
Pearson, P.D., & Johnson, D.D. Teaching reading comprehension.
New York: Holt, Rinehart & Winston, 1978.

Johnson, D.D., & Pearson, P.D. Teaching reading vocabulary.
New York: Holt, Rinehart & Winston, 1978.

^eVinsonhaler, Weinshank, Cureton, & Blatt (Note 5).

Instant Word Recognition

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<u>How to measure the process?</u>	<u>What is the process being measured?</u>	<u>Factors That Effect the Process</u>	<u>Possible Problems</u>
(performance on)	(state of)	A. Visual Discrimination of Words	A. Confusion of look-alike words
Sight Word List	Instant Word Recognition	B. Visual Memory of Words	B. Inability to remember words encountered in print
Oral Reading error analysis	def. the ability to see and say a word accurately if asked to do so quickly; often referred to as sight vocabulary sight words	C. Semantic representations (meanings) of words	C. Word meanings Lacking
		D. Association of graphemic with phonologic representation of words	D. Inability to pronounce a written word
		E. Association of graphemic with semantic representation of words	E. Inability to attach meaning to written word

Learning Process

Learning: change in one's semantic net induced by effective practice

Learning Process Effecting Factors

Amount and conditions of effective practice

- A. Attention of the Learner
 1. motivation to read
 - a. internal
 - b. external
 2. reader's self-concept
 3. match between interest/abilities and materials
- B. Relevance (transferability) of the practice task to the learning task
- C. Learner's correct perception of the task
 1. visual acuity
 2. auditory acuity
 3. clarity of the learning objective
 4. clarity of the criteria for success

D. Corrective feedback

1. attention/feedback loop
2. dependence of feedback on performance

Possible Problems

Defective practice

- A. Learner's attention unfocused
 1. Lack of motivation
 - a. no interest to read
 - b. environment not conducive to reading
 2. poor self-concept
 3. poor match between interest materials and readiness skills
- B. Irrelevant task
- C. Incorrect perception of the task
 1. poor vision
 2. poor hearing
 3. objectives unclear
 4. criteria unclear
- D. Defective feedback
 1. negative feedback loop
 2. feedback inappropriate for the task

Figure 1. Diagnostic/Remedial chart for first vital sign of reading.

Case Name _____
Your Name _____
Date _____

Does the student have a problem with INSTANT WORD RECOGNITION?

(Circle One) Yes No

On what basis was this decision made?

If no, then continue with the next problem area on page 3.

If yes, describe the important factors that have contributed to this problem. For each factor, suggest remedial procedures for its improvement. Continue on the next page if required.

1. Describe one factor contributing to the problem with Instant Word Recognition.

Suggest remedial procedures for alleviating this factor.

2. Describe another factor contributing to the problem with Instant Word Recognition.

Suggest remedial procedures for alleviating this factor.

3. Describe another factor contributing to the problem with Instant Word Recognition.

Suggest remedial procedures for alleviating this factor.

Figure 2. Decision aid used by students in diagnosing cases.

The checklist listed the seven vital signs as major categories, requiring a decision as to adequate or inadequate performance for each. Subsets under each vital sign included specifics important to the sign and decisions as to whether those performances were adequate or inadequate. Under each vital sign, an "other" category was listed to accommodate those diagnostic statements on the student's diagnoses that could not be translated into existing categories. In addition, some learning effecting factors were listed separately at the end of the checklist. (The complete checklist is contained in Appendix B.)

At the end of the session, the written diagnosis, record form for cues, and checklist of each student were collected and filed. Each student was assigned a subject number using a random-order table selection, and all data were processed.

The first test session was held prior to any group meetings (pre-test). Identical procedures were followed for the midtest (approximately five weeks later) and the posttest (at the end of the 10-week session). In all these tests, students diagnosed the same case, thus enabling a progress profile to be established. A week after the posttest (Posttest 1), another posttest was given (Posttest 2). In this test, students diagnosed a different simulated case, one which they had never seen, and, in addition, were allowed to use the written diagnosis and remediation charts and flowcharts, which were part of their in-class training and practice on cases. In the previous test sessions, the charts were not available; thus, the students had to internalize the material on the charts as a guide to writing their diagnoses.

Results

Phi correlation and Porter statistic were calculated to find the inter-student agreement, the student-preceptor agreement, and the inter-preceptor agreement. The latter indicated the agreement of experts on each case and served as a standard against which student performance could be measured. (For a discussion of these statistics, see Appendix C.)

A member of the Clinical Studies Project checked that all transfers from the written diagnosis to the checklist were accurate, being careful not to tamper with intent. Such errors as marking an item as both adequate and inadequate and omitting vital signs indicated as problem areas on the written diagnosis were found in both student and preceptor checklists and were corrected. All analysis was then made on these amended diagnoses.

Total Diagnosis

The results of the total diagnosis, which includes both vital signs and effecting factors, are presented in Table 2. The table contains the agreement of each student with his/her preceptor for all three groups on all five cases. There were 128 categories of statements--64 each of adequacies and inadequacies.

Vital Signs and Effecting Factors

Because every diagnosis consists of two components, vital signs

Table 2
Agreement of Student With His/Her Preceptor on Complete, Corrected Diagnosis

Key
PTG = Preceptor Training Group
Ø = Phi Coefficient
P = Porter Statistic

Case	Pretest			Midtest			Posttest 1			Posttest 2		
	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P
1	.62 .46	.23 .19	.38 .29	.64 .46	.49 .41	.46 .36	.49 .34	.58 .50	.41 .32	.14 .14	.17 .20	.29 .24
2	.30 .26	.38 .33	.26 .21	.34 .29	.50 .44	.39 .31	.39 .32	.59 .55	.43 .32	.30 .26	.56 .55	.29 .24
3	.34 .28	.46 .36	.46 .33	.19 .19	.48 .39	.21 .18	.14 .16	.44 .39	.36 .28	.44 .35	.37 .35	.12 .13
4	.50 .35	.38 .26	.41 .32	.71 .59	.33 .29	.50 .40	.50 .40	.36 .31	.53 .43	.31 .26	.44 .39	.32 .26
5	.34 .27	.27 .22	.34 .26	.52 .41	.35 .27	.31 .26	.64 .52	.35 .30	.35 .28	.36 .28	.35 .31	.21 .19
Grand Mean	.42 .32	.34 .27	.37 .28	.48 .39	.43 .36	.37 .31	.43 .35	.46 .41	.42 .33	.31 .26	.38 .36	.25 .22
St. Dev.	.14 .08	.09 .07	.08 .05	.24 .15	.08 .08	.12 .09	.19 .13	.12 .11	.07 .06	.11 .08	.14 .13	.08 .05
Mean of Groups	Ø = .38 P = .29			Ø = .43 P = .35			Ø = .44 P = .36			Ø = .31 P = .28		

and effecting factors, the diagnoses were analyzed for each component part. Table 3 contains results on vital signs only (domain = 14), and Table 4 presents effecting-factors results (domain = 112). Table 5 presents inter-student agreement for the three types of diagnoses.

Inter-Preceptor Agreement

Table 6 presents the inter-preceptor agreement under all three conditions (total diagnosis, vital signs only, and effecting factors only). The highest agreement appears to be between the preceptor of Group 1 and the preceptor of Group 3; the lowest agreement was between Preceptors 1 and 2. Preceptors 1 and 3 were trained and practice at Michigan State University. Preceptor 2 trained at both Michigan State University and other universities and is currently on the staff at another university. The results may also show the presence of a ceiling effect, that is, a limit under present analytical treatment to which agreement can be obtained.

Cues

In Table 7, the student-preceptor agreement on cues selected is presented. Agreement appears to be lower than that on diagnostic statements. Likewise, agreement among preceptors on which cues to select was also lower than their diagnostic agreement (Table 8) and again, the best agreement was between Preceptors 1 and 3. In addition, these two preceptors agreed more closely on the number of cues to

Table 3

Agreement of Student with his/her Preceptor on Vital Signs

Key

PTG = Preceptor Training Group

Ø = Phi Coefficient

P = Porter Statistic

Case	Pretest			Midtest			Posttest 1			Posttest 2		
	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P
1.	.71 .75	.71 .75	.43 .56	1.00 1.00	.71 .75	1.00 1.00	.71 .75	.43 .56	.43 .56	.29 .44	.43 .56	.43 .56
2	.43 .56	.71 .75	.71 .75	.43 .56	.43 .56	.71 .75	.14 .40	1.00 1.00	.71 .75	.14 .40	1.00 1.00	.14 .40
3	.71 .75	.71 .75	.14 .40	.14 .27	.43 .56	.43 .56	.14 .27	.43 .56	.14 .40	.43 .56	.43 .56	.14 .27
4	.43 .56	.43 .56	.71 .75	.71 .75	.43 .56	.71 .75	.43 .56	.43 .56	.71 .75	.43 .56	.43 .56	.43 .56
5	.43 .56	.71 .75	.14 .27	.71 .75	.71 .75	.43 .56	.71 .75	.71 .75	.43 .56	1.00 1.00	.71 .75	.43 .56
Grand Mean	.54 .64	.65 .71	.37 .55	.54 .67	.54 .64	.66 .72	.37 .55	.60 .69	.48 .60	.46 .59	.60 .69	.26 .47
Std. Dev.	.15 .10	.13 .08	.37 .21	.43 .27	.15 .10	.24 .18	.37 .21	.25 .19	.24 .15	.33 .24	.25 .19	.26 .13
Mean of Groups	Ø = .52 P = .63			Ø = .58 P = .68			Ø = .48 P = .61			Ø = .44 P = .58		

Table 4

Agreement of Student with his/her Preceptor on Effecting Factors

Key

PTG = Preceptor Training Group

Ø = Phi Coefficient

P = Porter Statistic

Case	Pretest			Midtest			Posttest 1			Posttest 2		
	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P	PTG 1 Ø P	PTG 2 Ø P	PTG 3 Ø P
1	.39 .22	.00 .04	.12 .09	.45 .24	.37 .29	.14 .11	.31 .16	.56 .46	.31 .21	.08 .07	.02 .09	.12 .13
2	.19 .16	.22 .19	.01 .05	.29 .22	.48 .40	.19 .15	.40 .27	.48 .44	.39 .26	.18 .15	.51 .46	.20 .16
3	.16 .14	.27 .19	.27 .14	.18 .14	.42 .32	.08 .00	.16 .13	.34 .29	.22 .15	.25 .19	.30 .26	.03 .05
4	.03 .00	.29 .14	.17 .13	.70 .53	.29 .23	.38 .26	.40 .29	.32 .26	.30 .21	.20 .16	.24 .17	.27 .17
5	.16 .13	.24 .18	.28 .18	.17 .13	.42 .29	.14 .12	.43 .31	.40 .32	.17 .14	.24 .17	.26 .24	.05 .08
Grand Mean	.17 .13	.20 .15	.17 .12	.36 .25	.40 .29	.15 .13	.34 .23	.42 .35	.28 .19	.19 .15	.27 .24	.14 .12
Std. Dev.	.45 .08	.12 .06	.11 .05	.22 .16	.07 .07	.16 .09	.11 .08	.10 .09	.09 .05	.07 .05	.17 .14	.10 .05
Mean of Groups	Ø = .18 P = .13			Ø = .30 P = .22			Ø = .35 P = .26			Ø = .20 P = .17		

Inter-Student Correlation

Key

Ø = Phi Correlation
P = Porter Statistic

Total Diagnosis

Simulated Case	Pretest		Midtest		Posttest1		Posttest2	
	Ø	P	Ø	P	Ø	P	Ø	P
1	.26	.21	.30	.26	.37	.33	.41	.37
2	.29	.25	.34	.31	.45	.45	.41	.34
3	.37	.25	.31	.27	.40	.34	.38	.31
4	.46	.35	.50	.42	.43	.35	.35	.32
5	.31	.25	.35	.29	.47	.39	.48	.42
\bar{X}	.34	.26	.36	.31	.42	.37	.41	.35
S.D.	.08	.05	.08	.06	.04	.05	.05	.04

Vital Signs Only

Simulated Case	Pre test		Mid test		Posttest1		Posttest2	
	Ø	P	Ø	P	Ø	P	Ø	P
1	.24	.46	.43	.57	.62	.69	.72	.74
2	.81	.83	.43	.57	1.00	1.00	.62	.71
3	.24	.46	.42	.56	.62	.69	.62	.70
4	.43	.57	1.00	1.00	.43	.57	.43	.57
5	.24	.45	.62	.69	.62	.69	.81	.83
\bar{X}	.39	.55	.58	.68	.66	.73	.64	.71
S.D.	.24	.16	.25	.19	.21	.16	.14	.09

Effecting Factors

Simulated Case	Pretest		Midtest		Posttest1		Posttest2	
	Ø	P	Ø	P	Ø	P	Ø	P
1	-.04	.02	.21	.18	.26	.23	.32	.29
2	.11	.11	.27	.24	.42	.39	.31	.24
3	.13	.07	.25	.20	.22	.20	.29	.21
4	.14	.10	.36	.28	.37	.27	.27	.24
5	.08	.08	.18	.16	.26	.21	.32	.28
\bar{X}	.08	.08	.25	.21	.31	.26	.30	.25
S.D.	.07	.04	.07	.05	.08	.08	.02	.03

Table 6

Preceptor/Preceptor Agreement on Diagnosis

 ϕ = Phi Coefficient

P = Porter Statistic

P1 = Group 1 Preceptor

P2 = Group 2 Preceptor

P3 = Group 3 Preceptor

Case	Total Dx			Vital Signs			Effecting Factors											
	P1 vs. P2		P1 vs. P3	P2 vs. P3		P1 vs. P2	P1 vs. P3	P2 vs. P3	P1 vs. P2	P1 vs. P3	P2 vs. P3							
	\emptyset	P	\emptyset	P	\emptyset	P	\emptyset	P	\emptyset	P	\emptyset	P						
1	.29	.23	.68	.56	.37	.29	.43	.56	.71	.75	.71	.75	.14	.10	.48	.33	.19	.14
2	.26	.24	.51	.40	.42	.32	.14	.40	.43	.56	.71	.75	.28	.21	.45	.33	.34	.22
3	.55	.43	.82	.72	.51	.38	.43	.56	1.00	1.00	.43	.56	.52	.37	.51	.36	.45	.28
4	.33	.28	.57	.46	.57	.45	.14	.40	.43	.56	.71	.75	.29	.21	.56	.42	.41	.27
5	.34	.24	.38	.29	.32	.26	1.00	1.00	.43	.56	.43	.56	.23	.16	.06	.07	.23	.16
Grand Mean	.35	.28	.59	.49	.44	.34	.43	.58	.60	.69	.60	.67	.29	.21	.41	.30	.32	.21
Std. Dev.	.11	.08	.17	.16	.10	.08	.35	.25	.25	.19	.15	.10	.14	.10	.20	.13	.11	.06
Mean Across Preceptors	\emptyset = .46 P = .37			\emptyset = .54 P = .64			\emptyset = .34 P = .24											

Table 7

Agreement of Student With His/Her Preceptor on Cues Collected

Key

PTG = Preceptor Training Group

 ϕ = Phi Coefficient

P = Porter Statistic

Case	Pretest			Midtest			Posttest 1			Posttest 2		
	PTG 1	PTG 2	PTG 3	PTG 1	PTG 2	PTG 3	PTG 1	PTG 2	PTG 3	PTG 1	PTG 2	PTG 3
	ϕ	P	ϕ	ϕ	P	ϕ	ϕ	P	ϕ	ϕ	P	ϕ
1	.00	.09	.30	.35	.08	.13	.27	.21	.08	.20	.08	.13
2	.02	.10	.19	.28	-.02	.09	.19	.21	.04	.14	.18	.18
3	.11	.14	.11	.21	-.16	.02	.70	.58	.09	.21	.20	.17
4	-.18	0	.06	.17	-.02	.07	.28	.24	.12	.31	.10	.12
5	.09	.18	-.14	.12	.13	.13	.02	.09	-.04	.18	.17	.16
Grand Mean	.01	.10	.10	.23	.00	.09	.29	.27	.06	.21	.15	.15
St. Dev.	.11	.07	.16	.09	.11	.05	.25	.18	.06	.06	.05	.03
Mean of Groups	ϕ = .04 P = .14			ϕ = .17 P = .21			ϕ = .16 P = .20			ϕ = .23 P = .20		

Table 8

Inter-Preceptor Agreement on Cues Collected

Case	P1 vs. P2 ϕ P		P1 vs. P3 ϕ P		P2 vs. P3 ϕ P	
1	.08	.12	.30	.24	.22	.21
2	.22	.22	.50	.39	.30	.24
3	.02	.09	.28	.21	.07	.10
4	.09	.16	.27	.21	.26	.18
5	.20	.23	.34	.27	.36	.27
Grand Mean	.12	.16	.34	.26	.24	.20
Std. Dev.	.08	.06	.09	.07	.11	.07
Mean Across Preceptors			$\phi = .23$ P = .21			

Key

ϕ = Phi Coefficient
 P = Porter Statistic
 P1 = Group 1 Preceptor
 P2 = Group 2 Preceptor
 P3 = Group 3 Preceptor

collect in order to diagnose a case. Preceptor 1 collected 14 cues, Preceptor 2 collected 20 cues, and Preceptor 3 collected only 11.

Changes in Diagnostic Agreement

Figures 3 - 6 show the changes in diagnostic agreement for all students, regardless of group attendance (N=15), as they progressed through the course. The pre- to posttest changes primarily show growth in both student-preceptor and inter-student agreement.

However, for the second posttest, when students were faced with a new case, student-preceptor agreement fell off sharply, whereas inter-student agreement remained constant.

Discussion

Differences in performance among students of the three groups could not be related solely to their presence in different training groups (i.e., the differences involved in their training). There were only five students in each group, each student tested on a different simulated case. Differences in simulated-case difficulty and in student ability and background were among the factors that could have influenced performance on diagnosis more than the details of preceptor training. Therefore, conclusions need to be drawn on mean statistics across all three groups (15 subjects) rather than on the limited sample of single preceptor training groups.

Certain statements can be made about the efficacy of training. Results similar to that of the previous study (Gil, Polin, Vinsonh ler, & VanRoekel, Note 3), show that agreement among students and with preceptors was aided by the use of decision aids in diagnoses in all four test sessions. Earlier observational studies (Weinshank, Note 1) involving even experienced reading clinicians in which no such decision

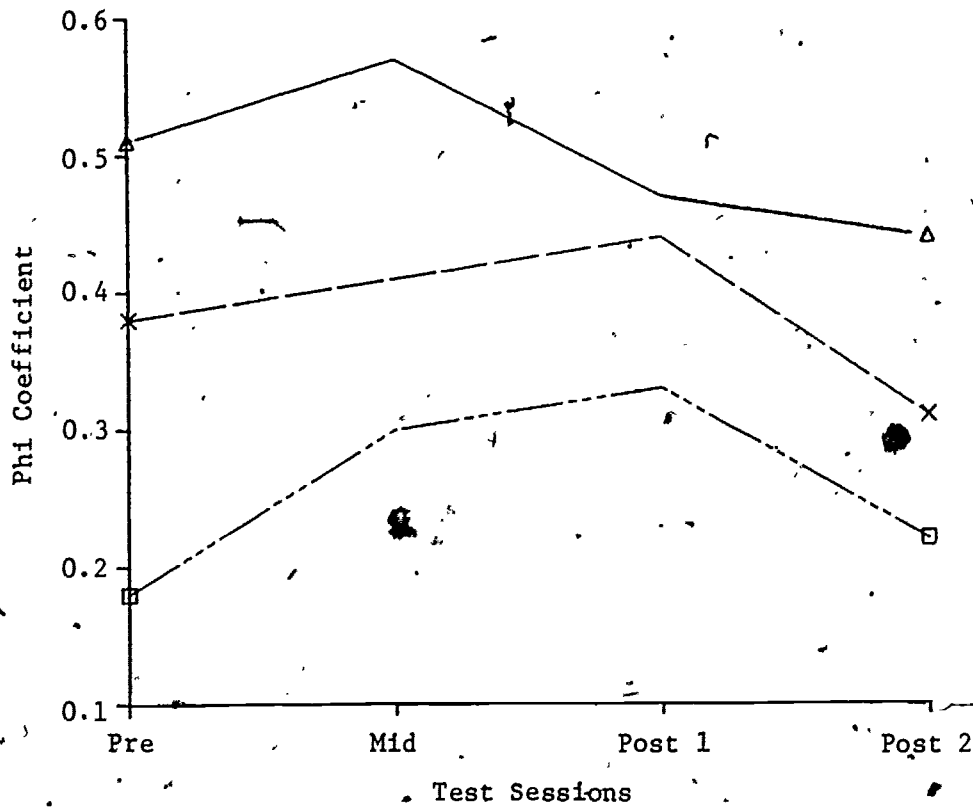


Figure 3. Changes in mean student/preceptor agreement across all four testing sessions (Phi Coefficient).

Legend

- Δ Vital Signs
- X Total Dx
- \square Effecting Factors

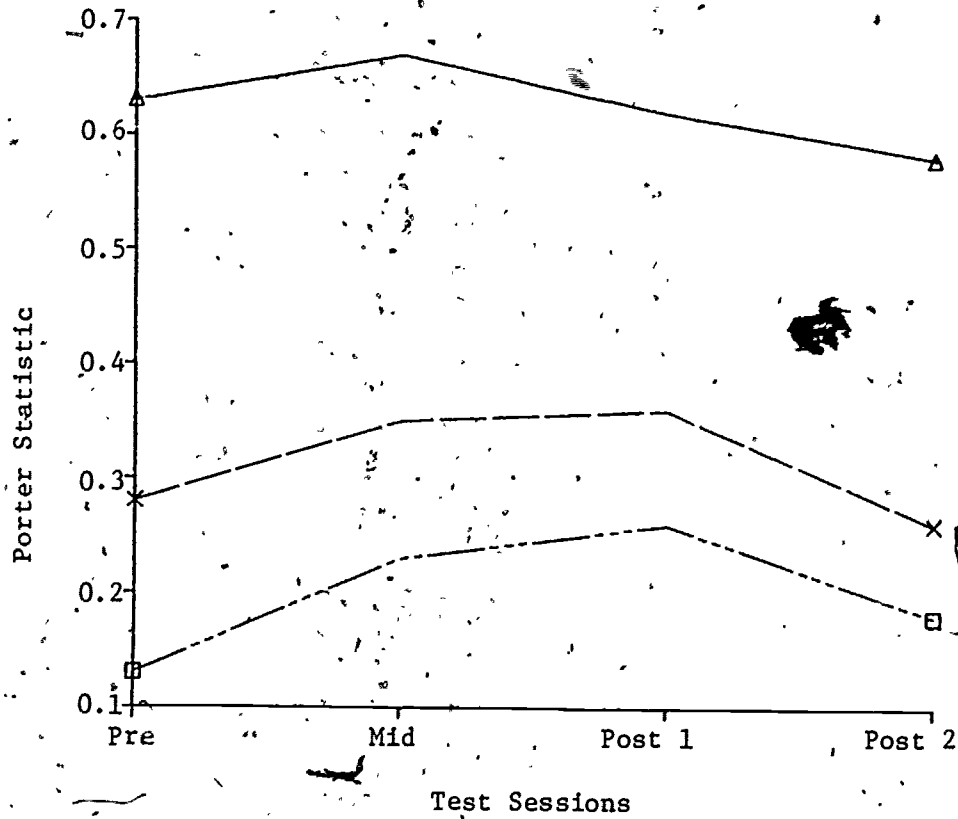


Figure 4. Changes in mean student/preceptor agreement across all 4 testing sessions (Porter Statistic).

Legend

- Δ Vital Signs
- X Total Dx
- Effecting Factors

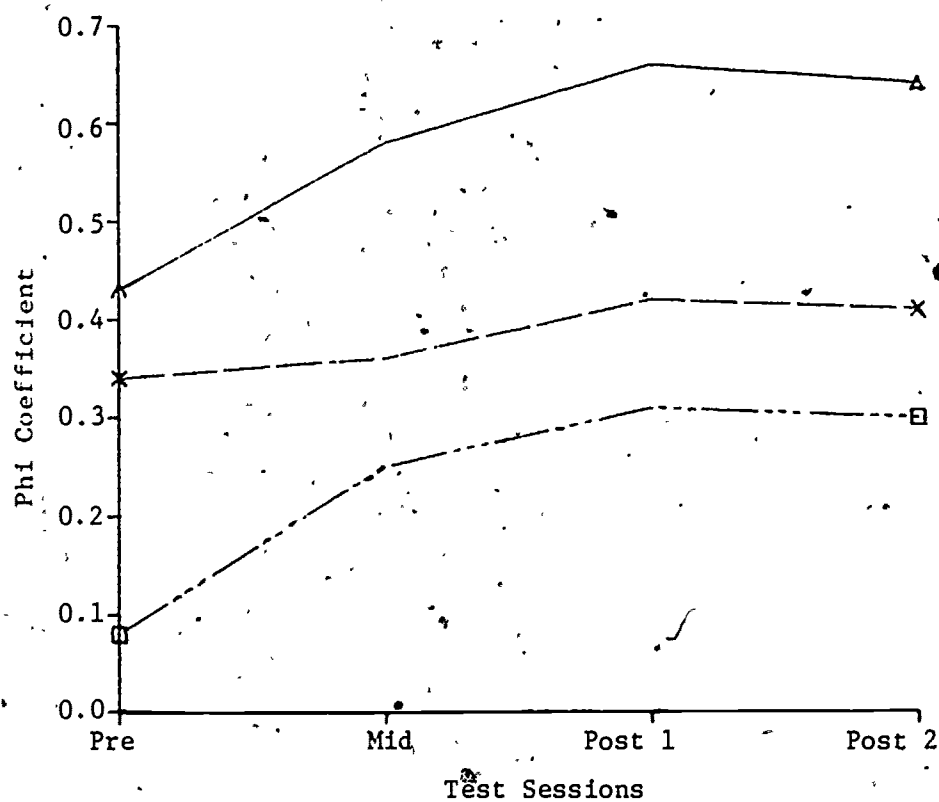


Figure 5. Changes in mean student/student agreement across all four testing sessions (Phi Coefficient).

Legend

△ Vital Signs

X Total Dx

□ Effecting Factors

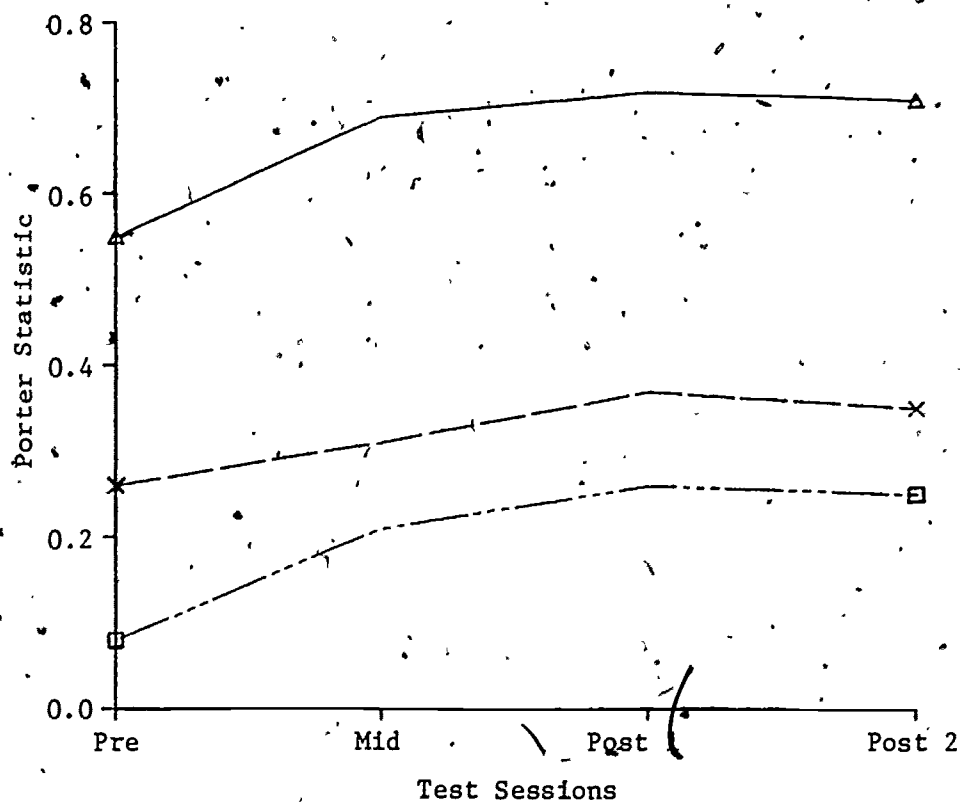


Figure 6. Changes in mean student/student agreement across all four testing sessions (Porter Statistic).

Legend

- △ Vital Signs
- X Total Dx
- Effecting Factors

aids were used resulted in considerably lower diagnostic agreement. Two conclusions confirming those of the previous training study are (1) that the use of decision aids appears to be of value in obtaining higher diagnostic agreement, and (2) that student performance does improve with training. It would appear that perhaps additional practice with simulated cases would sharpen students' diagnostic skills. However, the limited inter-preceptor agreement seems to indicate that, at least under the present testing conditions, further increases in diagnostic agreement may not be attainable. For example, the preceptors diagnosed the cases only once and this diagnosis was used for comparison with all three student diagnostic sessions. Thus, there is no data on intra-preceptor agreement--how closely preceptors agree with themselves when diagnosing a case a second or third time.

Student-preceptor agreement was not maintained when the students were given a new case to diagnose (Posttest 2). However, the inter-student agreement remained at the same level. This may mean that somehow the students were using strategies not taught or intended by the preceptors. This poses the question of whether the skills obtained during training can be maintained and generalized. Will classroom teachers continue to use the organization and model in their classrooms? Interviews with students at the end of the study elicited very favorable response to the training and a desire on their part to incorporate their new knowledge into their classroom operations. For example, analysis of the logs kept by the students in Group 3 showed students developing increasing confidence in their ability to diagnose reading difficulties cases. However, if we use

student-preceptor agreement as the criterion, the results of Posttest 2 do not appear to warrant such confidence.

In summary, students do appear to gain confidence as well as precision with training on a model, use of diagnostic aids, and practice with feedback. The latter is most practically accomplished with simulated cases both in terms of time required and control of feedback. The goal of reaching and maintaining a high level of precision (and accuracy if agreement with preceptors is an indicator) poses a need for more than the current 10 - 14 weeks of training now in use by most teacher education institutions, and, more importantly, more exposure to a variety of cases for practice. In addition, it would be valuable to follow students' performance to see if gains made can be maintained and translated into meaningful performance in the classroom.

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Appendix A

Subject Instructions for Observational Sessions

AS80/SPRING 1980 3/15/80

Subject Instructions for Observational Sessions

The purpose of the Diagnostic Performance Session is both to instruct you and to evaluate your progress as a diagnostician of reading disabilities. The Diagnostic Performance Session requires you to diagnose a simulated case (SIMCASE) of reading disability. Our SIMCASES are "simulated" only in the sense that the real child is not present. The data in the SIMCASE was obtained from real children with real reading disabilities.

MATERIALS The materials you need for this diagnostic performance session are as follows:

(1) The SIMCASE including:

- The List of Available Information
- The Referral Information (Initial contact Folder)
- The Box of Materials

(2) The Diagnostic / Remedial Record

(3) An Audio Tape Cassette Player

- If you do not have any of these items signal your instructor.

PROCEDURES

To review, the procedures for the observational session will be as follows: followings:

- (1) Read the initial contact (referral) information. Look at the sketch of the child and listen to the taped interview;
- (2) Diagnose the SIMCASE by collecting whatever further data you wish;
- (3) Write up your diagnosis and remediation using the Diagnostic / Remedial Record

This has been a general description of the Diagnostic Performance Session. If you have any questions, signal your instructor.

HOW TO USE THE DIAGNOSTIC FORM Pick up the Diagnostic / Remedial Record and look it over for a few minutes.

The form provides a guide for writing your diagnostic/remedial judgments. As you complete each page, write the case name, your name and the date in the spaces provided. The form is divided into seven parts corresponding to important reading activities. For each part, state your diagnostic decision by circling YES if the reading activity is problematic and NO otherwise. Then describe the basis on which the decision was made. Finally, if the area is problematic, describe any factors that have contributed to the problem by 1) writing down the factor, and 2) providing remedial suggestions for the factor.

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Subject Instructions for Observational Sessions

HOW TO USE A SIMCASE

Let's now consider the specifics of how to use a SIMCASE. The case consists of the following items:

- (1) The Initial Contact (Referral) Information
- (2) The List of Available Information
- (3) The Box of Materials

The Initial Contact Information provides some basic introductory information about the child. It includes a referral statement, a sketch of the child, and a taped interview.

The Information Inventory is the list of materials collected about the case. Each item of information is described by a KEYWORD that refers to its title and location in the box (e.g., keyword for Durrell Oral Reading test booklet is DUR3).

Now open the SIMCASE Box.

Note the KEYWORDS on the folders. These keywords correspond to those in the Information Inventory. To find information in the SIMCASE--locate the proper KEYWORD in the Inventory. Use this KEYWORD to find the proper folder in the box.

As in the case of DUR3, find the large folder entitled DURRELL. Within that folder are smaller colored folders in which will be found the specific item DUR3. Only remove the desired information; not the colored folder in which it is located.

Now that you have practiced, you can begin to diagnose and remediate your SIMCASE.

Begin by opening the Initial Contact folder. Examine the picture and the information, and listen to the tape.

When you have finished with the Initial Contact material, signal your instructor. After he or she responds you may begin collecting information to diagnose your case. You will have .45 minutes in which to collect information. The proctor will tell you when your time is up.

You will have an additional 30 minutes in which to fill out the Diagnostic / Remedial Record and 15 minutes to transfer the diagnosis to a Diagnostic Checklist described later.

Please do not return any of the materials to the box. Leave them on the table.

If you have questions or problems at any time, signal your instructor. Relax. There are no grades to be given in this Study.

Appendix B

Diagnostic Checklist

Application Study 1980 Diagnostic Checklist

Case Name _____
 Your Name _____
 Date _____

The purpose of the Diagnostic checklist is to translate your diagnosis as written on the Diagnostic/Remedial Record into a standard vocabulary. To that end, please be sure to include only those categories that you have WRITTEN down on the Diagnostic/Remedial Record. Even if you know the student's status on every statement in the checklist, we are only interested in having a translation of the ones you included in your written diagnosis.

Examine your written diagnosis as recorded on the Diagnostic/Remedial Record. For each factor on the Record that describes a FACTOR contributing to a problem, do the following:

- 1) Circle the factor on the Diagnostic/Remedial Record
- 2) Number the factor, starting at 1 for the first one and going up from there for each successive factor
- 3) Locate the statement on this checklist that most accurately characterizes the factor.
- 4) Place the factor number next to the statement on the checklist.
- 5) Continue for all factors on your Diagnostic/Remedial Record.

An example of this process is given below.

The Diagnostic / Remedial Record is:

1. Describe one factor contributing to the problem with Instant Word Recognition. Poor word recognition

Suggest remedial procedures for alleviating this factor.

Flash card practice

2. Describe another factor contributing to the problem with Instant Word Recognition. Can't discriminate letters

Suggest remedial procedures for alleviating this factor.

discrimination through graded cursive training
 etc.

And the Diagnostic Checklist is:

1. _____ Instant Word Recognition Adequate
2. _____ Instant Word Recognition Inadequate
3. _____ Basic Sight Words Adequate
4. ✓ Basic Sight Words Inadequate
10. 2 Visual Discrimination Inadequate

etc.

Application Study 1980 Diagnostic Checklist

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Case Name _____
Your Name _____
Date _____

- 1 Instant Word Recognition Adequate
- 2 Instant Word Recognition Inadequate
- 3 Basic Sight Words Adequate
- 4 Basic Sight Words Inadequate
- 5 Sight Words Learned Via Decoding Adequate
- 6 Sight Words Learned Via Decoding Inadequate
- 7 Experiential Sight Words Adequate
- 8 Experiential Sight Words Inadequate
- 9 Visual Discrimination Adequate
- 10 Visual Discrimination Inadequate
- 11 Visual Memory Adequate
- 12 Visual Memory Inadequate
- 13 Print-Meaning Association Adequate
- 14 Print-Meaning Association Inadequate
- 15 Print-Sound Association Adequate
- 16 Print-Sound Association Inadequate
- 17 Other Adequate
- 18 Other Inadequate
- 19 Decoded Word Recognition Adequate
- 20 Decoded Word Recognition Inadequate
- 21 Sound-Symbol Association - Consonants Adequate
- 22 Sound-Symbol Association - Consonants Inadequate
- 23 Sound-Symbol Association - Blends/Diagraphs Adequate
- 24 Sound-Symbol Association - Blends/Diagraphs Inadequate
- 25 Sound-Symbol Association - Vowels/Vowel Patterns Adequate
- 26 Sound-Symbol Association - Vowels/Vowel Patterns Inadequate
- 27 Visual Segmentation into Syllables Adequate
- 28 Visual Segmentation into Syllables Inadequate
- 29 Auditory Segmentation into Syllables Adequate
- 30 Auditory Segmentation into Syllables Inadequate
- 31 Blending of Sounds Adequate
- 32 Blending of Sounds Inadequate
- 33 Adjustment of Blended Sounds to Language Adequate
- 34 Adjustment of Blended Sounds to Language Inadequate
- 35 Use of Root Word Adequate
- 36 Use of Root Word Inadequate
- 37 Use of Prefixes Adequate
- 38 Use of Prefixes Inadequate
- 39 Use of Suffixes Adequate
- 40 Use of Suffixes Inadequate
- 41 Auditory Memory Adequate
- 42 Auditory Memory Inadequate
- 43 Auditory Discrimination Adequate
- 44 Auditory Discrimination Inadequate
- 45 Visual Memory Adequate
- 46 Visual Memory Inadequate
- 47 Visual Discrimination Adequate
- 48 Visual Discrimination Inadequate
- 49 Other Adequate
- 50 Other Inadequate
- 51 Meaning Vocabulary Adequate
- 52 Meaning Vocabulary Inadequate
- 53 Number of words Adequate
- 54 Number of words Inadequate
- 55 Accuracy and Breadth of Definitions Adequate
- 56 Accuracy and Breadth of Definitions Inadequate
- 57 Other Adequate
- 58 Other Inadequate

Application Study 1980 Diagnostic Checklist

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3.

Case Name _____
Your Name _____
Date _____

- 59 _____ Oral Reading Adequate
- 60 _____ Oral Reading Inadequate
- 61 _____ Instant Word Recognition Adequate
- 62 _____ Instant Word Recognition Inadequate
- 63 _____ Decoded Word Recognition Adequate
- 64 _____ Decoded Word Recognition Inadequate
- 65 _____ Rate Adequate
- 66 _____ Rate Inadequate
- 67 _____ Phrasing Adequate
- 68 _____ Phrasing Inadequate
- 69 _____ Intonation Adequate
- 70 _____ Intonation Inadequate
- 71 _____ Use of Syntax Adequate
- 72 _____ Use of Syntax Inadequate
- 73 _____ Use of Semantics Adequate
- 74 _____ Use of Semantics Inadequate
- 75 _____ Other Adequate
- 76 _____ Other Inadequate
- 77 _____ Reading Comprehension Adequate
- 78 _____ Reading Comprehension Inadequate
- 79 _____ Main idea Adequate
- 80 _____ Main idea Inadequate
- 81 _____ Paraphrasing Adequate
- 82 _____ Paraphrasing Inadequate
- 83 _____ Sequence Adequate
- 84 _____ Sequence Inadequate
- 85 _____ Cause-Effect Reasoning Adequate
- 86 _____ Cause-Effect Reasoning Inadequate
- 87 _____ Recall of Facts and Details Adequate
- 88 _____ Recall of Facts and Details Inadequate
- 89 _____ Other Adequate
- 90 _____ Other Inadequate
- 91 _____ Listening Comprehension Adequate
- 92 _____ Listening Comprehension Inadequate
- 93 _____ Main idea Adequate
- 94 _____ Main idea Inadequate
- 95 _____ Paraphrasing Adequate
- 96 _____ Paraphrasing Inadequate
- 97 _____ Sequence Adequate
- 98 _____ Sequence Inadequate
- 99 _____ Cause-Effect Reasoning Adequate
- 100 _____ Cause-Effect Reasoning Inadequate
- 101 _____ Recall of Facts and Details Adequate
- 102 _____ Recall of Facts and Details Inadequate
- 103 _____ Other Adequate
- 104 _____ Other Inadequate
- 105 _____ Attention/Motivation Adequate
- 106 _____ Attention/Motivation Inadequate
- 107 _____ Initiating Attention Adequate
- 108 _____ Initiating Attention Inadequate
- 109 _____ Maintaining Attention Adequate
- 110 _____ Maintaining Attention Inadequate
- 111 _____ Other Adequate
- 112 _____ Other Inadequate

Application Study 1980 Diagnostic Checklist

Case Name _____
 Your Name _____
 Date _____

- 113 ☒ Factors Effecting Learning Adequate
- 114 _____ Factors Effecting Learning Inadequate
- 115 _____ Amount of Practice Adequate
- 116 _____ Amount of Practice Inadequate
- 117 _____ Attention Adequate
- 118 _____ Attention Inadequate
- 119 _____ Motivation Adequate
- 120 _____ Motivation Inadequate
- 121 _____ Visual Acuity Adequate
- 122 _____ Visual Acuity Inadequate
- 123 _____ Auditory Acuity Adequate
- 124 _____ Auditory Acuity Inadequate
- 125 _____ Transfer of Isolated Skills to Contextual Materials Adequate
- 126 _____ Transfer of Isolated Skills to Contextual Materials Inadequate
- 127 _____ Other Adequate
- 128 _____ Other Inadequate

Appendix C

Explanation of Phi Correlation and Porter Statistic

Inter-Clinician Correlation

Phi

Given a domain for diagnoses/remediations/or cues (DX/RX or CX) for a given case, the Phi correlation is a measure of inter-clinician agreement. One Phi correlation is computed for each pair of clinicians.

The DX/RX/CX categories mentioned by one clinician are compared with those mentioned by a second clinician for the same case. This comparison is summarized in the table below.

CLINICIAN A, SIMCASE Y

		PRESENT (+)	ABSENT (-)
CLINICIAN B, SIMCASE Y	P R E S E N T (+)	Frequency count of statements in the domain present in both clinicians' DX/RX or CX a	Frequency count of statements in the domain present in clinician B's session but not in clinician A's DX/RX/ or CX b
	A B S E N T (-)	Frequency count of statements in the domain present in clinician A's session but not in B's DX/RX or CX c	Frequency count of statements in the domain absent in both clinicians' DX/RX or CX d

The calculation of the Phi correlation is derived from the table as follows:

		Clinician A, Simcase Y		
		+	-	
Clinician B, Simcase Y	+	a(++)	b(+)	a+b
	-	c(-+)	d(--)	c+d
		a+c	b+d	N

$$\Phi = \frac{(axd - bxc)}{(a+c)x(b+d)x(c+d)x(a+b)}$$

The statistic is bounded by -1 (statements are in cells b and c only) and 1 (statements are in cells a and d only), only if the distribution in the marginals is equal. In all other cases the maximum and minimum values will be less than 1 and greater than -1.

An example of a completed table is as follows:

Statements of Clinician A, Simcase Y	Statements of Clinician B, Simcase Y	Domain of Statements
S1	S1	S1
S2	S2	S2
S3	S7	S3
		S4
		S5
		S6
		S7

