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ABSTRACT

This study investigated effects of the application of Enhanced Milieu Teaching (EMT) with four preschool children with developmental disabilities during interactions with three primary conversational partners. The study involved a multiple baseline (probe) across two children which was replicated across two additional children. Within that framework was nested a multiple baseline across three communication partners (trainer, teacher, and peer) for each child. An ethnographic description of the classroom before and after the intervention was also completed. The EMT intervention combined environmental arrangement, responsive interaction strategies, and selected uses of milieu teaching to facilitate child engagement. It also included context specific modeling of language and limited incidental teaching to teach specific language targets. The study found: (1) the effects of the intervention on children's use of target language were consistent across children and conversational partners; (2) there was very little generalization from the trainer-implemented intervention to the teacher-child baseline; and (3) there was evidence of generalization of target language use to interactions with peers for only one child. However, introduction of EMT by a second adult partner quickly produced changes in children's communication in the second training context. Tables and graphs detail study methodology and findings. (DB)

Enhanced Milieu Teaching: An Analysis of Applications by Interventionists and Classroom Teachers

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Running Head: ENHANCED MILIEU TEACHING

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Enhanced Milieu Teaching:

Applications by Interventionists and Classroom Teachers

Introduction

The challenges in intervening to improve the functional communication of young children with mental retardation are considerable. Effective intervention must consider not only what specific lexical and syntactic skills the child must learn, but the social contexts in which the child will need language and the communication partners with whom the child will interact.

Even a cursory examination of the empirical data on generalization from language interventions would suggest that relying on the child alone is not likely to lead to broad changes in children's communication performance. It is certainly the case that children do generalize across settings, people and time, but often the generalization is modest compared to the gains made in the primary treatment setting, variable across children and dependent on specific conversational strategies of their generalization setting partners. For example, Kaiser and Hester (in press) provide a detailed analysis of conversational partner influences on generalization to interaction in classrooms and homes.

In the current study, we approached the problem of promoting the generalized effects of intervention from a multiple partner perspective. Based on previous research, we assumed that improvements in children's social language would result from application of enhanced milieu teaching, but that substantive and consistent changes in children's language throughout

the school day would require interventions with multiple communication partners to support the child's use of new language skills.

Thus the purpose of this study was to investigate the effects of the application of Enhanced Milieu Teaching (EMT) (Kaiser, 1993) with preschool children during interactions with three primary conversational partners. The complete study we conducted was a year long intervention involving four children, two trainers, four teachers and four primary peers in complex set of combinations that allowed us to explore the parameters of generalization. In this presentation, I am going to focus on only two aspects of the study: the primary effects of training across partners on child use of targets and the generalization resulting from training.

Method

Participants

The child participants in this study were four preschool children enrolled in two adjacent multi-ability level preschool classrooms in a public school. The four boys ranged in age from 57 to 71 months at the beginning of the study. They scored at about 24 months on expressive skills and about 28 months on receptive skills based on the SICD (Hedrick, Prather, & Tobin, 1975). They had MLUs ranging from 1.23 to 1.69 and, typically, each used a small repertoire of one and two word utterances to communication.

Insert Table 1 about here

In addition to the children, two graduate student trainers, four classroom teachers, and four classroom peers with mild disabilities participated. The characteristics of the child participants are summarized in Table 1 and the characteristics of other participants are in Table 2.

Insert Table 2 about here

Design

The basic design of the study was a multiple baseline (probe) across two children replicated across two additional children. Within that basic framework was nested a multiple baseline across three communication partners (trainer, teacher, and peer) for each child. In addition to this design, an ethnographic description of the classroom and the children's communication across the day was completed before and after the intervention. Figure 1 shows the design.

Insert Figure 1 about here

Procedures

At the beginning of the study, each child was assessed on a battery of standardized language and communication scales. Based on these assessments and classroom observations of the children, early semantic targets were selected for teaching (targets for each child are in

Table 1). Multiple examples appropriate to the context and child's immediate interests of the targets were taught.

For each child, with each conversational partner, there were two primary conditions, baseline and intervention. The setting for interactions with each partner was a small play room adjacent to the classrooms with a selection of child-preferred toys. Each play-based session lasted 15 minutes and 10 minutes of each session was videotaped for later data collection. Generalization sessions occurred in the same playroom with untrained partners and in the children's classrooms.

The intervention was based on the Enhanced Milieu Teaching Model (shown in Table 3). Enhanced Milieu Teaching is a naturalistic intervention that combines environmental

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Insert Table 3 about here

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arrangement, responsive interaction strategies, and selected uses of milieu teaching. The combination, or hybrid, intervention is designed to facilitate child engagement to include context specific modeling of language, to provide support for social conversation, and to use limited incidental teaching to teach specific language targets (Kaiser, 1993 provides a complete description). The trainer and teacher implemented EMT in its original form. Teachers were taught the intervention in two 2-hour workshops after baseline. They received daily feedback on their performance and weekly reviews of teaching principles and child data. In the peer intervention, the trainer implemented the environmental arrangement, used

responsive interaction strategies with the targets child and his peer partner, modeled target level language for both peers, and used incidental teaching to prompt the peers to talk to one another. Peers were instructed in very basic responsive interaction strategies: responding to the target child, joining the child's activities, following the child's topic in conversation, and staying in the interaction. Peers did not actively teach language to their partners.

Treatment implementation was monitored by collecting observational data from videotapes of each session then reviewing the graphed data on a weekly basis. Treatment fidelity was high across children with all three partners once the partner learned the intervention (e.g., teachers required 5-10 sessions to reach criterion levels).

Reliability data for each measure reported were collected during 20% of the primary and generalization sessions. Reliability varied by measure, child, and condition, but in all instances, the average reliability for each measure exceeded 80%.

Results

Only child results will be presented. First, data on child use of target language will be presented across partners. Then, some data on child generalization of targets will be examined, and finally, effects on more global measures of the child's language performance will be considered.

Effects Across Conversational Partners

The next four figures present data for each child with the trainer, his primary teacher, and his peer partner. The data shown here represent the child's use of targets (prompted plus spontaneous, excluding imitations).

Insert Figures 2-5[1] about here

Three general trends in the data are worth noting. First, the effects of the intervention on children's use of targets are consistent across children and conversational partners. Second, there was very modest generalization (if any) from the trainer implemented intervention to the teacher-child baseline. Although the children had received from 10 to 30 intervention sessions before the teacher intervention began, this amount of intervention did not produce high levels of generalization to teachers. Teachers tended to prompt language (i.e., ask questions) much more during their baseline conditions than trainers, thus a slightly higher overall frequency of communication was observed with teachers than with trainers during baseline. But, even with this level of prompting, target use did not increase until teachers were effectively implementing the intervention. Third, there was evidence of generalization of target use to the interactions with peers by only one child (Child A). Neither were general increases in frequency of communication observed with peers.

Because teachers were the primary conversational partners in the classroom context, we examined teacher and child generalization across settings most carefully. First, we observed the teacher-child pairs in the context of a small group (3 children) play activity in

[1] Data are graphed by consecutive sessions for all children rather than days. More than one session could occur on a single day. Apparent gaps in data do not necessarily indicate long gaps in time.

the playroom. Second, we observed the child with another teacher (not his training conversational partner) in the same type of small group setting. Third, we observed teachers and children together at snack time in the classrooms. Two teachers and two target children were present with the remaining six children and the classroom assistant teacher during these observations.

Figure 6 shows the children's use of targets with their teachers partners (upper graphs) and with another trained teacher (lower graphs) during three generalization probes before and after the intervention. Each child used his targets with his teacher partner in the small group context after training (upper graphs), although the frequency of target use varied considerably across the four children. There is also some indication that the four children used their targets with the other classroom teacher more frequently after training.

Insert Figure 6 about here

Child use of targets in the classroom during snack time are shown in Figure 7. Three of the four children (A, B, C) did not use their targets prior to intervention more than once. After the intervention, two children (A and B) showed increased target use. Child D used targets before and after the intervention and Child C's data indicate only very small changes in target use.

Insert Figure 7 about here

It is important to place the generalization results in the context of generalization by the teachers. We examined teacher use of four aspects of EMT: responsive feedback, modeling the child's targets, expansions, and milieu teaching. All teachers had moderately high levels of responsive interaction before and after the intervention. Systematic increases in modeling, expansions, and correct milieu teaching were observed for teachers across the generalization settings and across children who were not their training partners. For example, Figure 8 shows generalization by teachers across three child partners in the group snack generalization setting. In sum, it appears that child generalization to the small group and classroom context was functionally related to the teachers generalized use of the components of EMT in these settings.

Insert Figure 8 about here

Finally, some comments about other measures of child communication. We examined the frequency of communication, lexical diversity, and MLU in each training session. In general, all four children showed systematic increases in these aspects of communication across the period of the intervention, although the increases were modest and incremental across sessions. Figure 9 shows diversity of vocabulary for each child; Figure 10 shows

MLU during baseline and intervention. Table 4 summarizes these changes. Our pre/post standardized test measures showed some changes in rate of development during the intervention, but the changes are modest and variable across children (see Table 5).

Insert Figures 9 and 10 about here

Insert Tables 4 and 5 about here

Discussion

These results confirm that the implementation of EMT by conversational partners can have produced systematic changes in children's communication in the context of the intervention. In the short term (fewer than 20 sessions), implementation with a single partner did not produce generalized increases in target use with other conversational partners. Introduction of EMT by a second adult partner quickly produced changes in children's communication in the second training context. When these second adult partners generalized their use of EMT strategies to small group and classroom group settings, child use of targets increased. We do not know if children would have generalized to untrained adult partners in the classroom after training with multiple adult partners. Our primary interest was promoting generalization across partners in this study, but the question is an important one to explore in future studies.

Use of EMT by adults does not dependably result in increases in peer-directed social communication. Only when an adapted EMT intervention was implemented with the children and their peers did we see changes in communication with peers for three of the four children. Apparently, the skills required for communicating with peers include additional skills that are not routinely taught in adult-implemented EMT. Increasing peer-directed communication may require additional intervention tailored to a peer-peer context. Peer interactions are also greatly influenced by the play, social, and communication skills of the peer partners. Additional research focused on both language skills and social interaction in peer play contexts is needed how best to facilitate generalized changes in peer-directed communication.

In the course of this intervention, children received more than 80 15-minute intervention sessions with high levels of treatment fidelity across a period of about 5 months. This is an intensive treatment relative to most research studies and to most service delivery contexts. Even with this intensive treatment, changes in global language measures were modest and treatment effects across settings appeared to depend on partner's conversational strategies for supporting communication. These results could be interpreted in a variety of ways, but let us propose that they indicate the need for intense, long-term systematic intervention to produce even modest generalized gains in children's communication skill. And, let us suggest that supporting child communication by training multiple partners to be responsive communicators may be necessary to achieve generalized increases in communicative skill. Evidence in this study and in a previous study (Kaiser & Hester, in

press), indicates that observable generalization changes children's social communication depend on the support of their partners even when the child has received intensive intervention. The ethnographic data we collected at the beginning in this study and in two other studies strongly suggest that classrooms do not typically provide the level of support children with significant language delays need to be effective social communicators. Although the need for environmental support for children's language learning and use is not a new issue, it continues to be an area where both descriptive and intervention research are needed.

References

Hedrick, D. L., Prather, E. M., & Tobin, A. R. (1975). Sequenced Inventory of Communication Development. Seattle, WA: University of Washington Press.

Kaiser, A. P. (1993). Parent-implemented language intervention: An environmental system perspective. In A. P. Kaiser & D. B. Gray (Eds.), Enhancing children's communication: Research foundations for intervention (Vol. 2, pp. 63-84). Baltimore: Paul H. Brookes.

Kaiser, A. P., & Hester, P. P. (in press). The generalized effects of enhanced milieu teaching. Journal of Speech and Hearing Research.

Wechsler, D. (1967). Wechsler Preschool and Primary Scale of Intelligence. New York: Psychological Corp.

Table 1

Child Characteristics

Child	Age	Handicapping Condition	IQ[1]	Language Age of Child			Language Targets
				MLU[2]	SICD[3]		
					EXP	REC	
Child A	57 mos.	Speech and Language Delay; Articulation Disorder	61	1.34	24 mos.	28 mos.	Action verbs (e.g., drive, pour, run) Attribute + entity (e.g., little car, white horse)
Child B	71 mos.	Speech and Language Delay; Spina Bifida; General Developmental Delay	44	1.47	24 mos.	28 mos.	Agent + action verb (e.g., man drive, mom cook, you ride) Action + object (e.g., roll ball, bite cookie, push stroller)
Child C	60 mos.	Speech and Language Delay; Behavior Problem	47	1.69	24 mos.	28 mos.	Agent + action verb (e.g., girl sleeps, we play) Action verb + object (e.g., push car, roll playdoh)
Child D	61 mos.	Speech and Language Delay; Cerebral Palsy	51	1.23	24 mos.	28 mos.	Action verbs (e.g., play, ride, drive) Two-word requests (e.g., want dog, my turn, more juice)

1) IQ measures based on the Wechsler Preschool and Primary Scale of Intelligence, Revised (Wechsler, 1967).
2) MLU measures calculated from two 30-minute language samples prior to baseline
3) Expressive and receptive scores from Sequenced Inventory of Communication Development

Table 6

Trainer, Teacher, and Peer Characteristics

	Education	Teaching Experience with Children with Disabilities	Coursework in Language Development	Practicum in Language Intervention	Child/Children Trainer
Trainer Characteristics					
Trainer 1	Doctoral Student Special Education	5 years	yes - 1 course	yes - 2 semesters (EMT)	Child A Child B
Trainer 2	Doctoral Student Special Education	6 years	yes - 1 course	yes - 2 semesters (EMT)	Child C Child D
Teacher Characteristics					
Teacher A	B.S. in Special Education	14 years	yes - 1 course	no	Child A
Teacher B	Teacher Assistant	9 years	none	no	Child B
Teacher C	B.S. in Social Work	3 years	none	no	Child C
Teacher D	Currently working on undergraduate degree in Special Education	1 year	none	no	Child D

Child	Age	Handicapping Condition	Language Age of Child		
			MLU	SICD	
Peer Characteristics				Exp	Rec
Peer A	67 mos.	Speech & language delay; Articulation disorder	4.71	+48 mos.	+48 mos.
Peer B	65 mos.	Emotional/behavior problem; ADD	2.86	+48 mos.	+48 mos.
Peer C	65 mos.	Mild cerebral palsy; Emotional/behavior problem; Seizures	3.87	+48 mos.	+48 mos.
Peer D	57 mos.	Speech & language delay; Articulation disorder	3.92	+48 mos.	+48 mos.

Table 3

Components of Enhanced Milieu Teaching

I.	**Environmental Arrangement**[1]	
	Selecting materials of interest Arranging materials to promote requests Mediating the environment Engaging in activities with the child	Facilitates: (1) child interest in the environment; (2) sustained attention to the environment; (3) verbal and nonverbal communicative initiations including requests and comments; (4) engagement between the child and adult
II.	**Responsive Interaction Strategies**[2]	
	Following the child's lead Balancing turns Maintaining child's topic Modeling linguistically and topically appropriate language which maps adult and child actions Matching child's complexity level (talk at the target level) Expanding and repeating child utterances Responding communicatively to child verbal and nonverbal communication	Facilitates: (1) engagement between the child and adult; (2) turntaking; (3) sustained interactions; (4) topic continuation; (5) comprehension of spoken language; (6) spontaneous communicative imitations to the adult
III.	**Milieu Teaching Techniques**[3]	
	Child-cued modeling Mand-modeling Time delay Incidental teaching	Facilitates: (1) responsiveness to adult requests for communication; (2) generalized imitation skills; (3) requesting behavior; (4) production of elaborated lexical and syntactic skills (and targets); (5) turntaking skills; (6) topic continuation skills; (7) communicative initiations to the adult; (8) improved conversational skills

Table 4

Child Linguistic Measures

	Average MLU in Morphemes		Diversity of Vocabulary (Mean Number of Different Words)		New Words Found		Total Words	
Child	Baseline	Intervention*	Baseline	Intervention*	Baseline	Intervention*	Baseline	Intervention*
A	1.16	1.43	16	52	19	12	74	958
B	1.57	2.02	21	52	13	9	49	462
C	1.55	2.28	24	40	24	5	94	633
D	1.22	1.75	6	29	4	10	16	506

* Based on last five intervention sessions

Table 5

Developmental Quotient Ratios of the Post-developmental Quotient to the Pre-developmental Quotient for Each of the Pre and Post Testing Measures

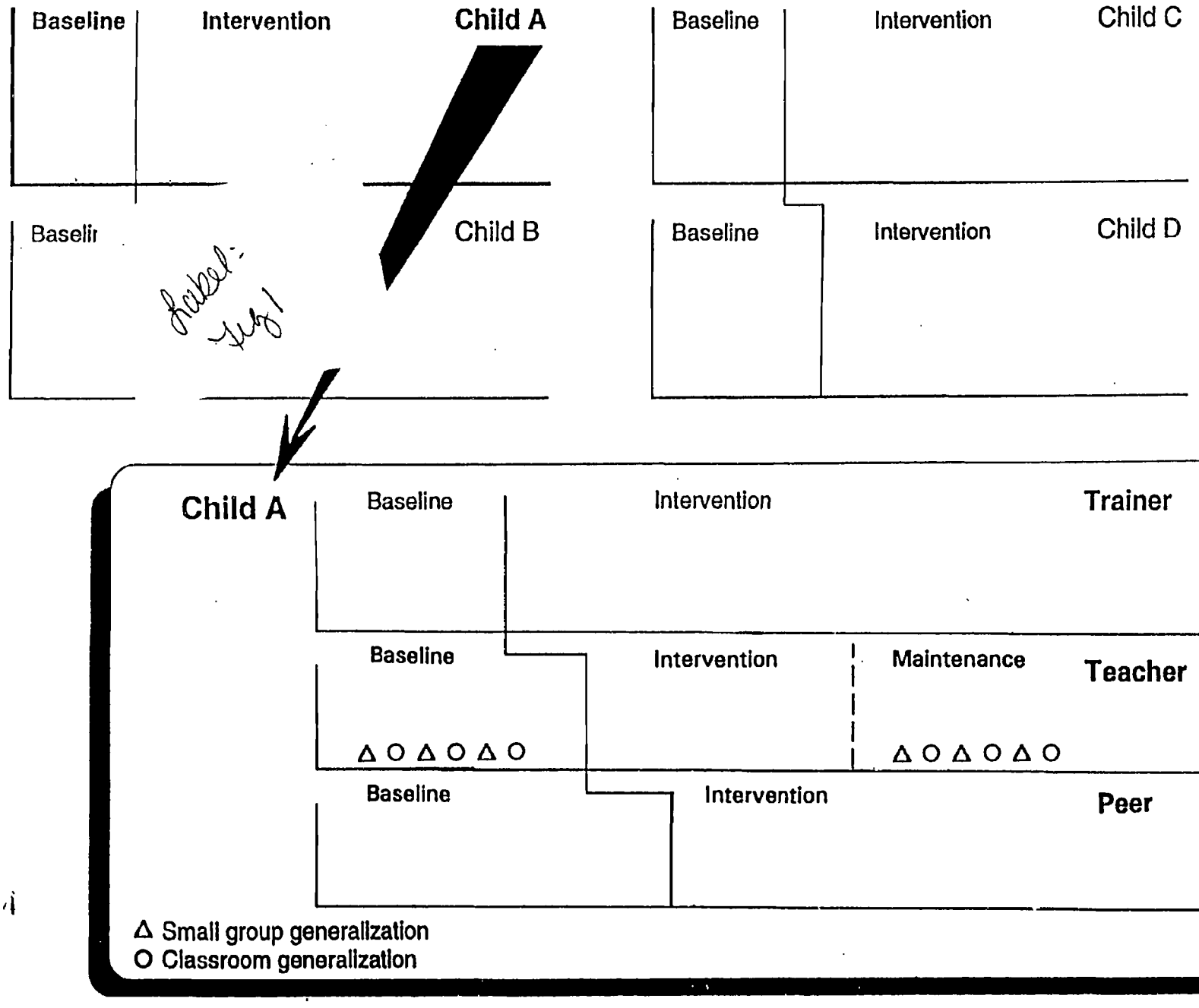
	SICD-E	SICD-R	PPVT	EOWPVT
Child A	1.0	1.0	1.4	1.2
Child B	0.9	1.1	1.0	1.6
Child C	1.0	1.0	1.1	1.3
Child D	1.2	1.3	1.3	1.4

Developmental Quotient Ratios of the Post-developmental Quotient to the Pre-developmental Quotient for Each of the Pre and Post Testing Measures

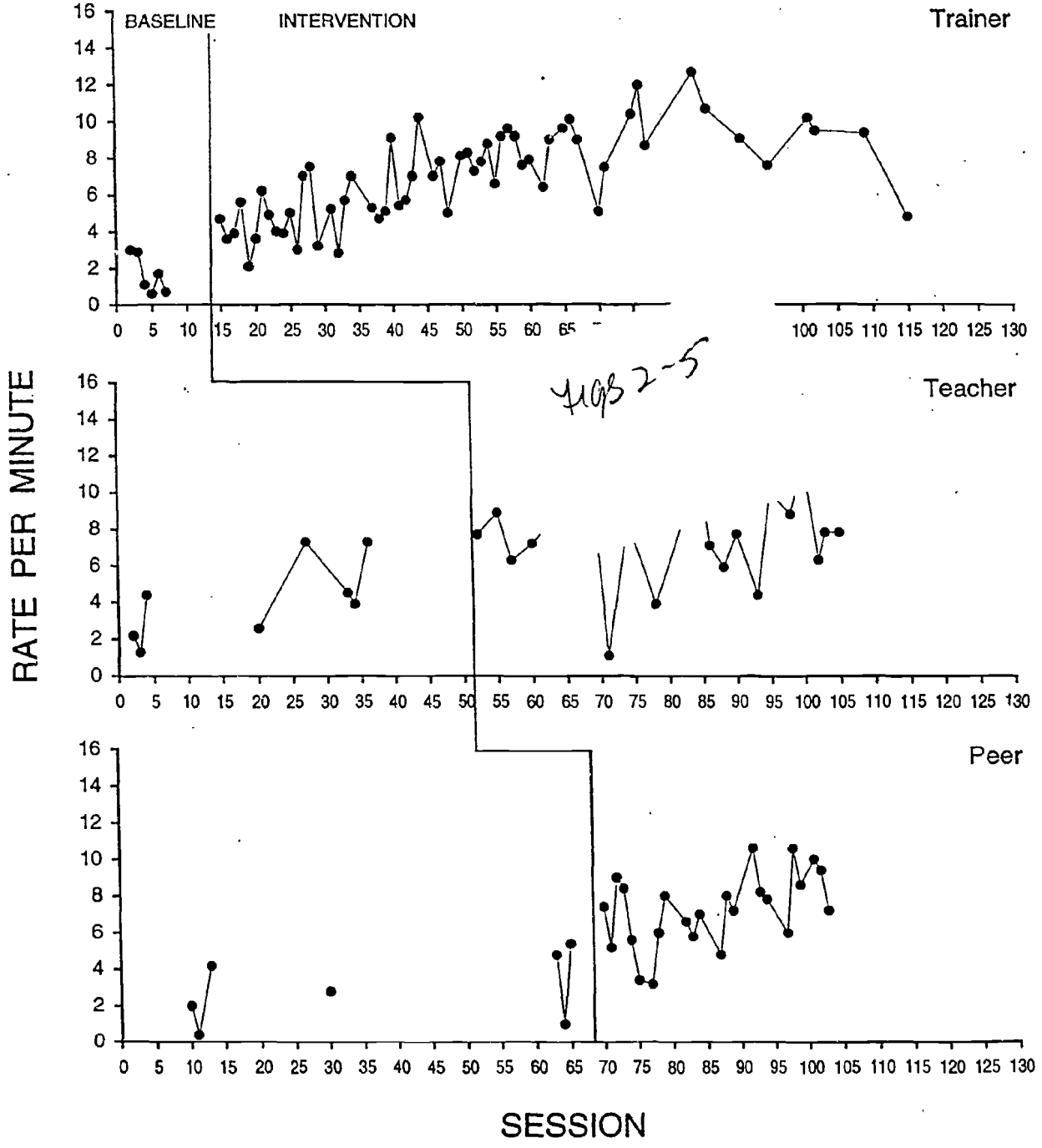
	SICD-E	SICD-R	PPVT	EOWPVT
Child A	1.0	1.0	1.4	1.2
Child B	0.9	1.1	1.0	1.6
Child C	1.0	1.0	1.1	1.3
Child D	1.2	1.3	1.3	1.4

Table 5

Experimental Design



SPONTANEOUS COMMUNICATIVE UTTERANCES
CHILD A



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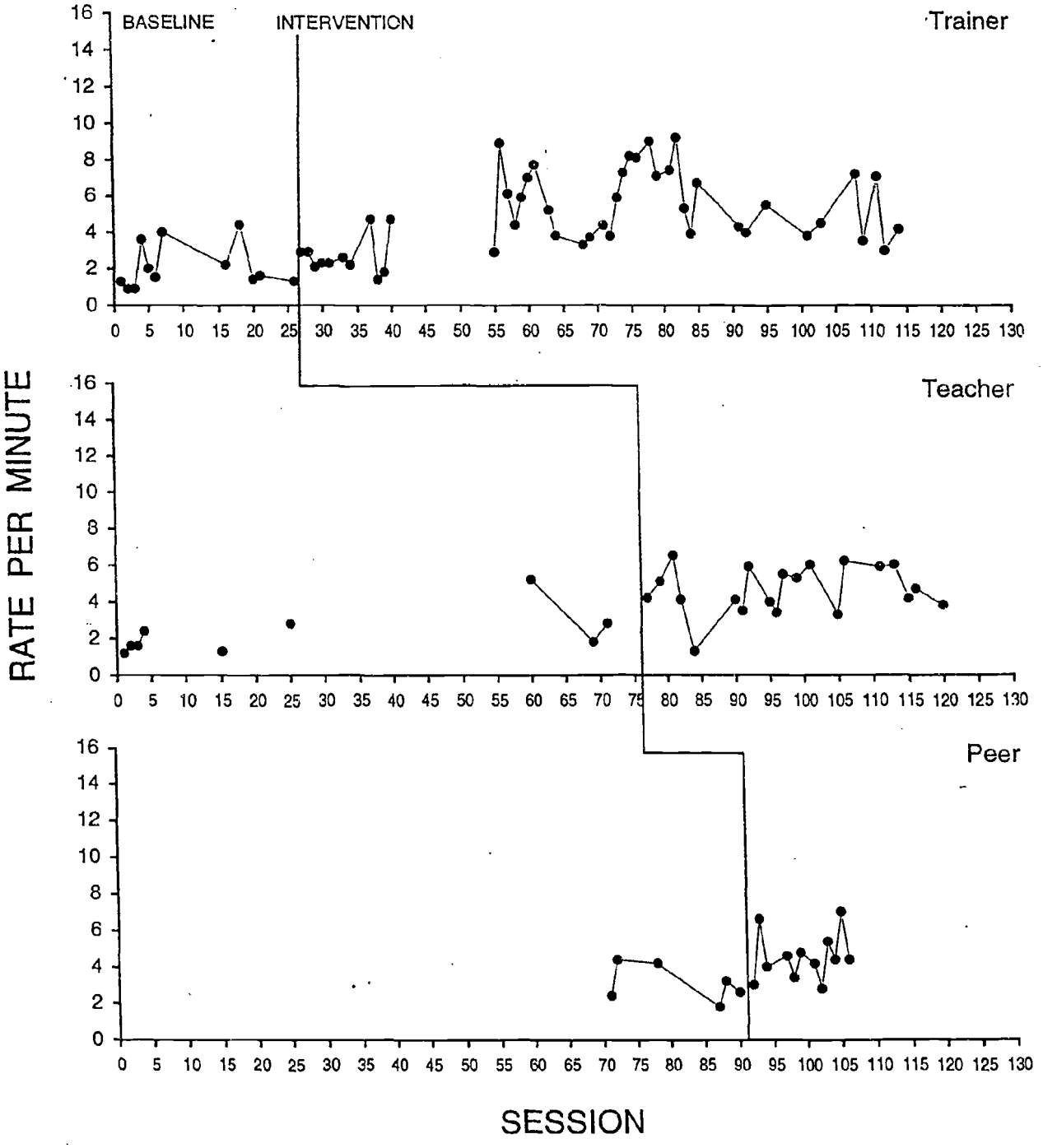
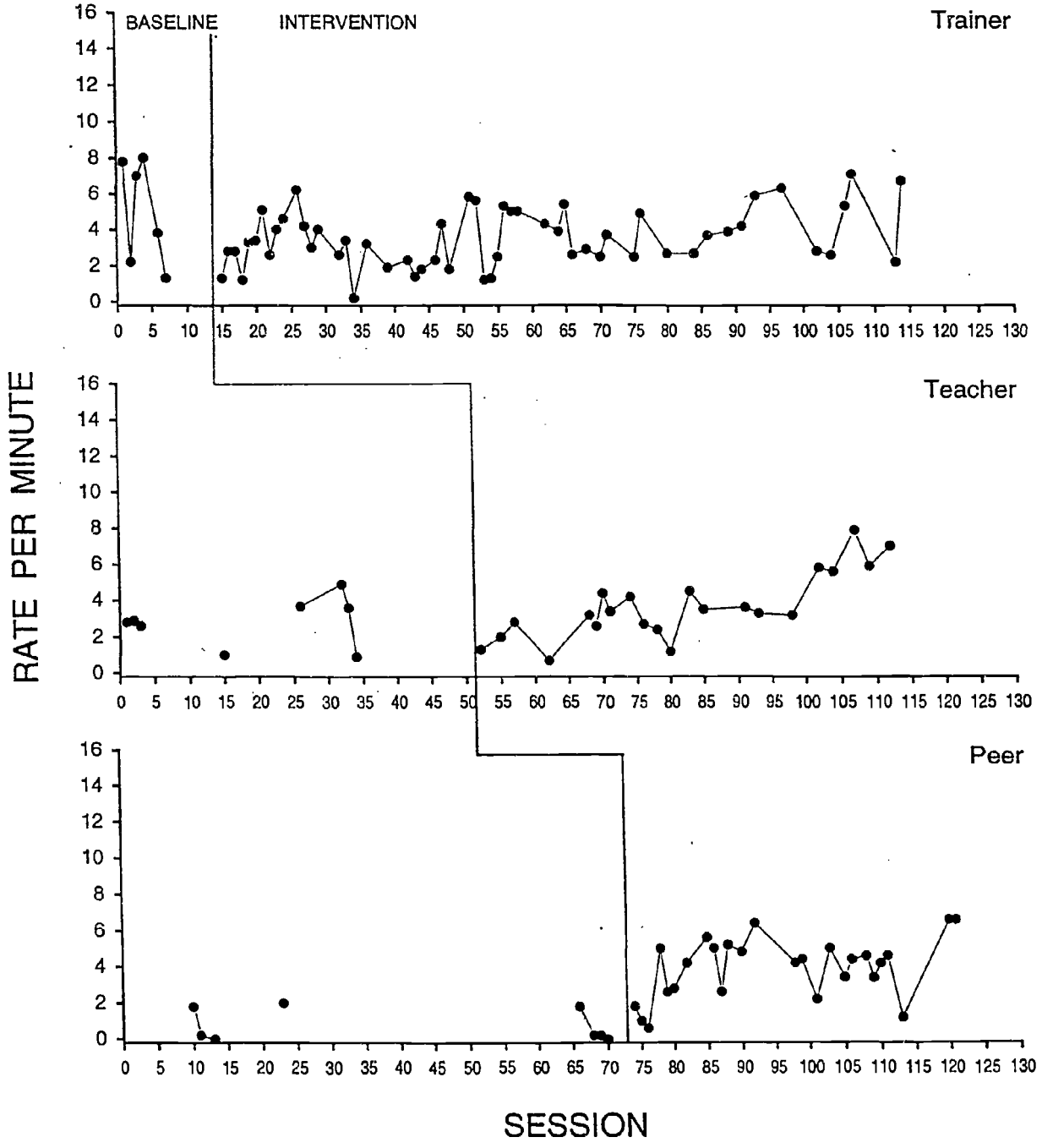
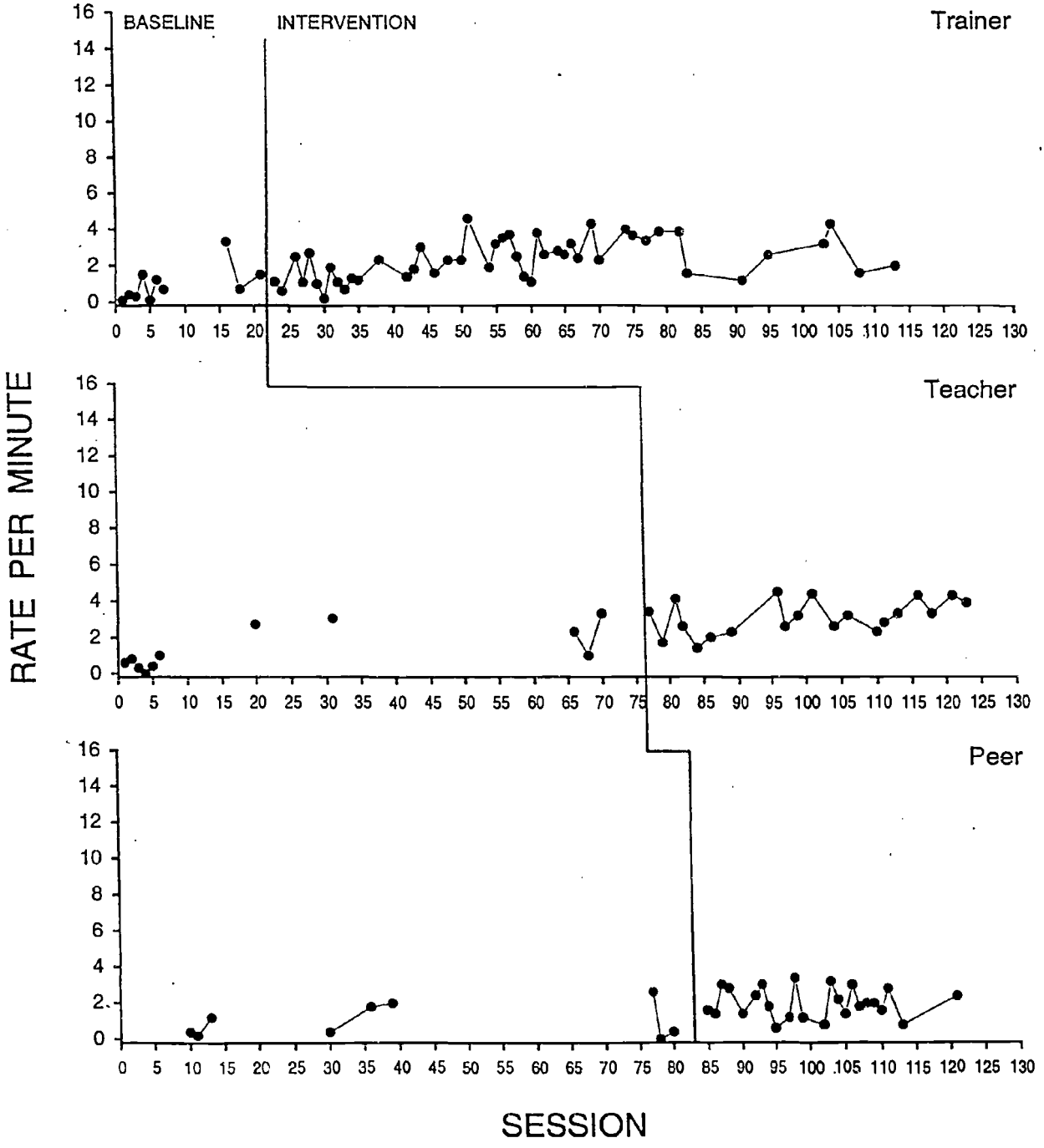


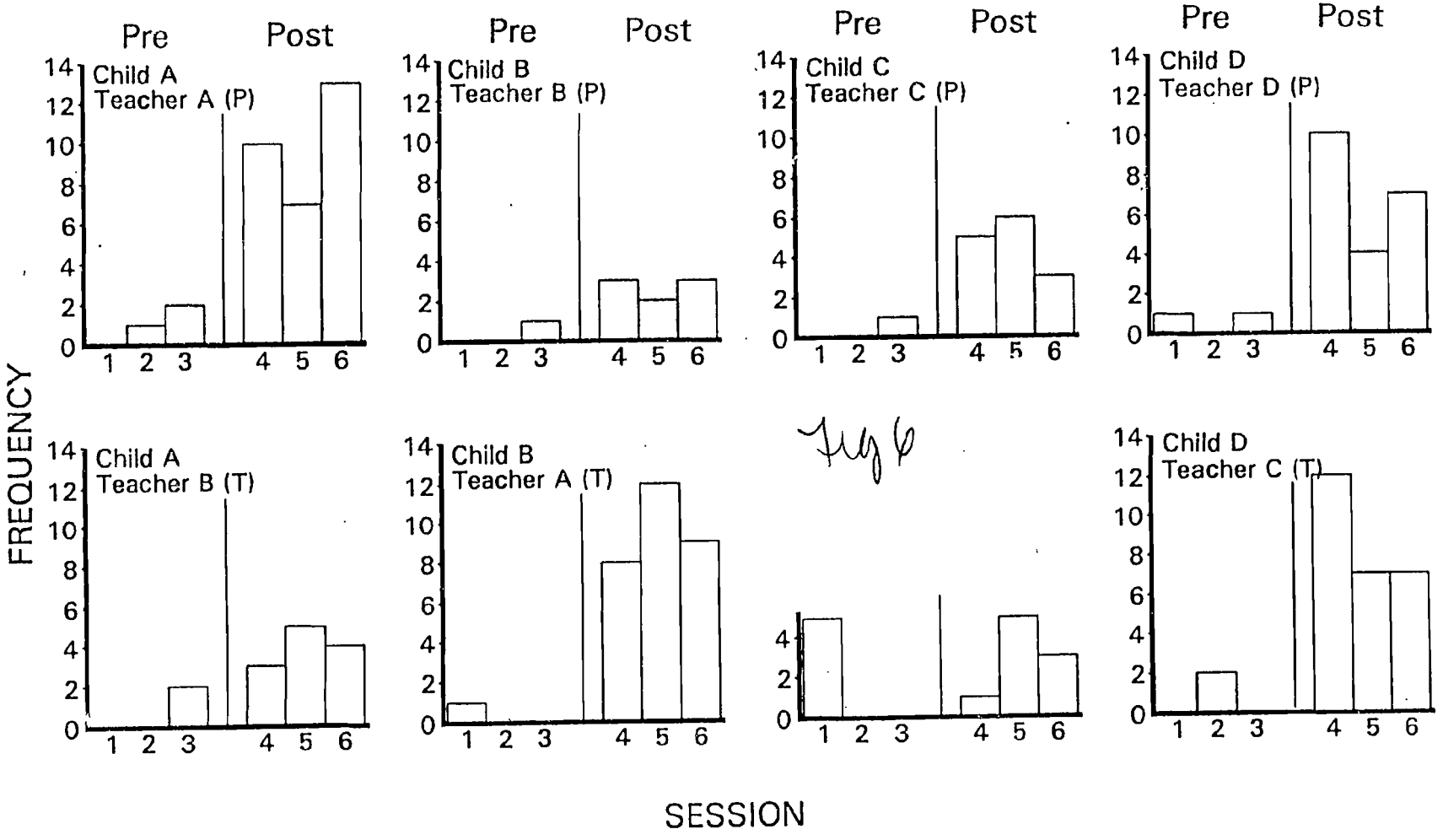
SPONTANEOUS COMMUNICATIVE UTTERANCES
CHILD C



SPONTANEOUS COMMUNICATIVE UTTERANCES
CHILD D

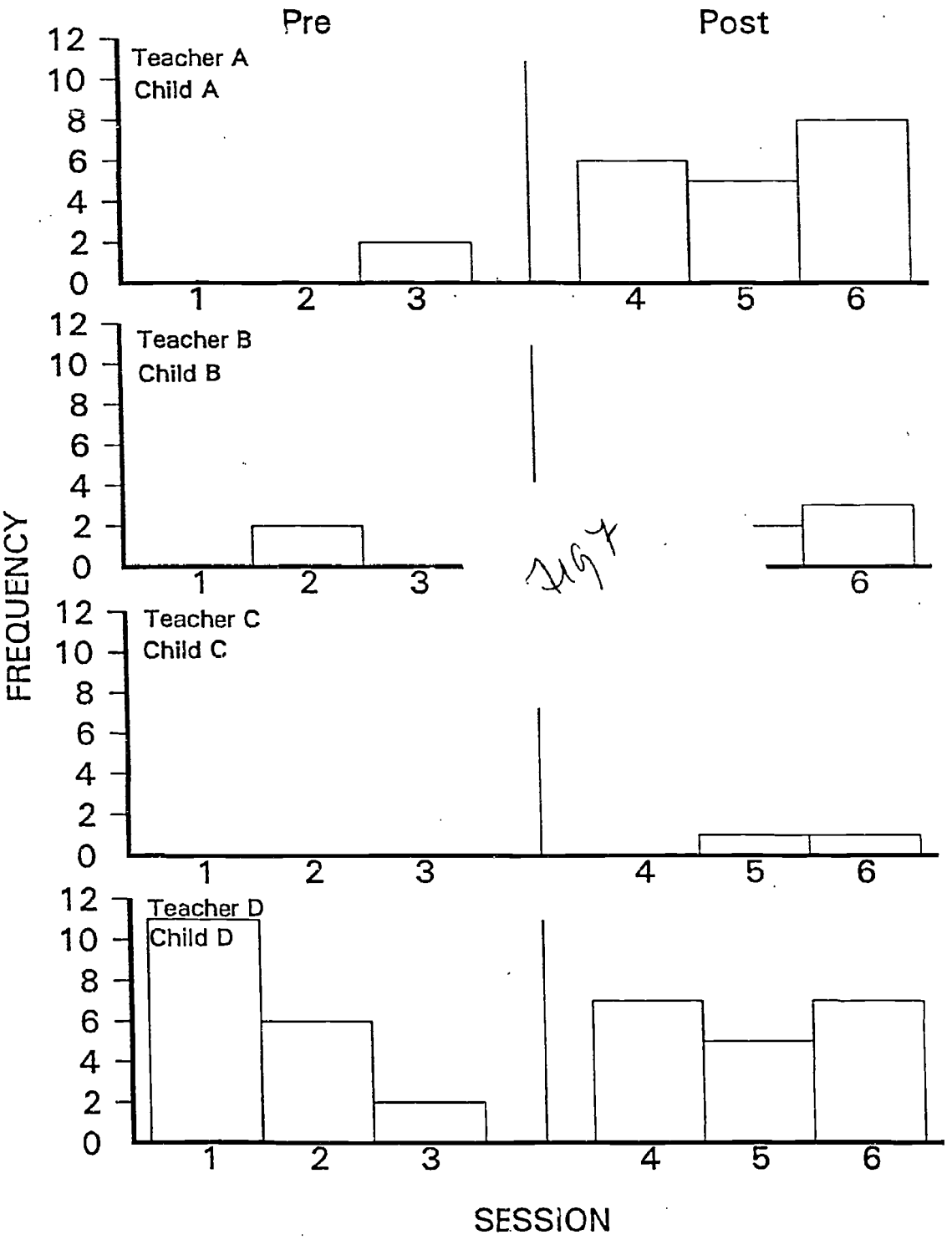


CHILD USE OF TARGETS
Small Group Generalization

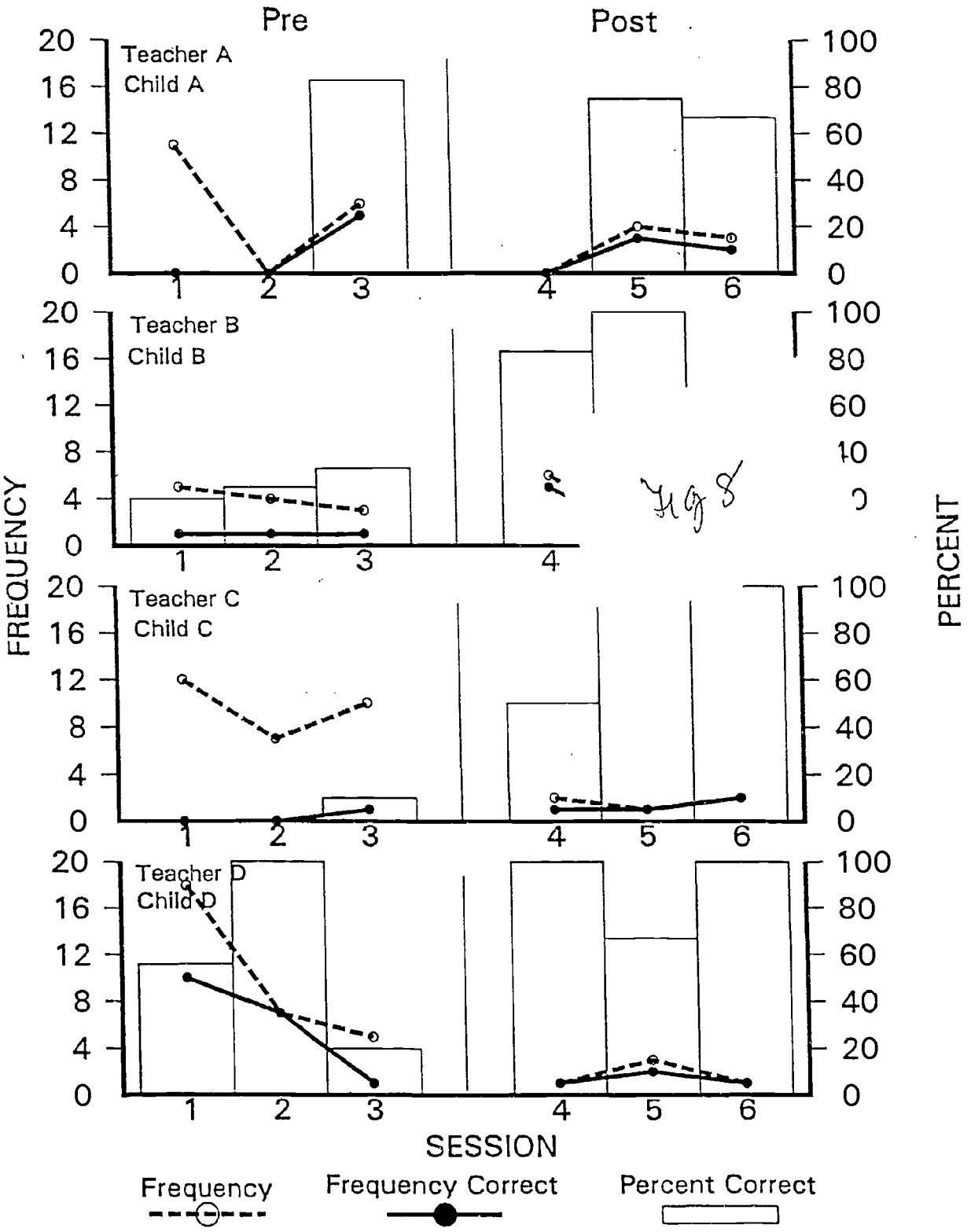


P = Partner
T = Trained Teacher from Class

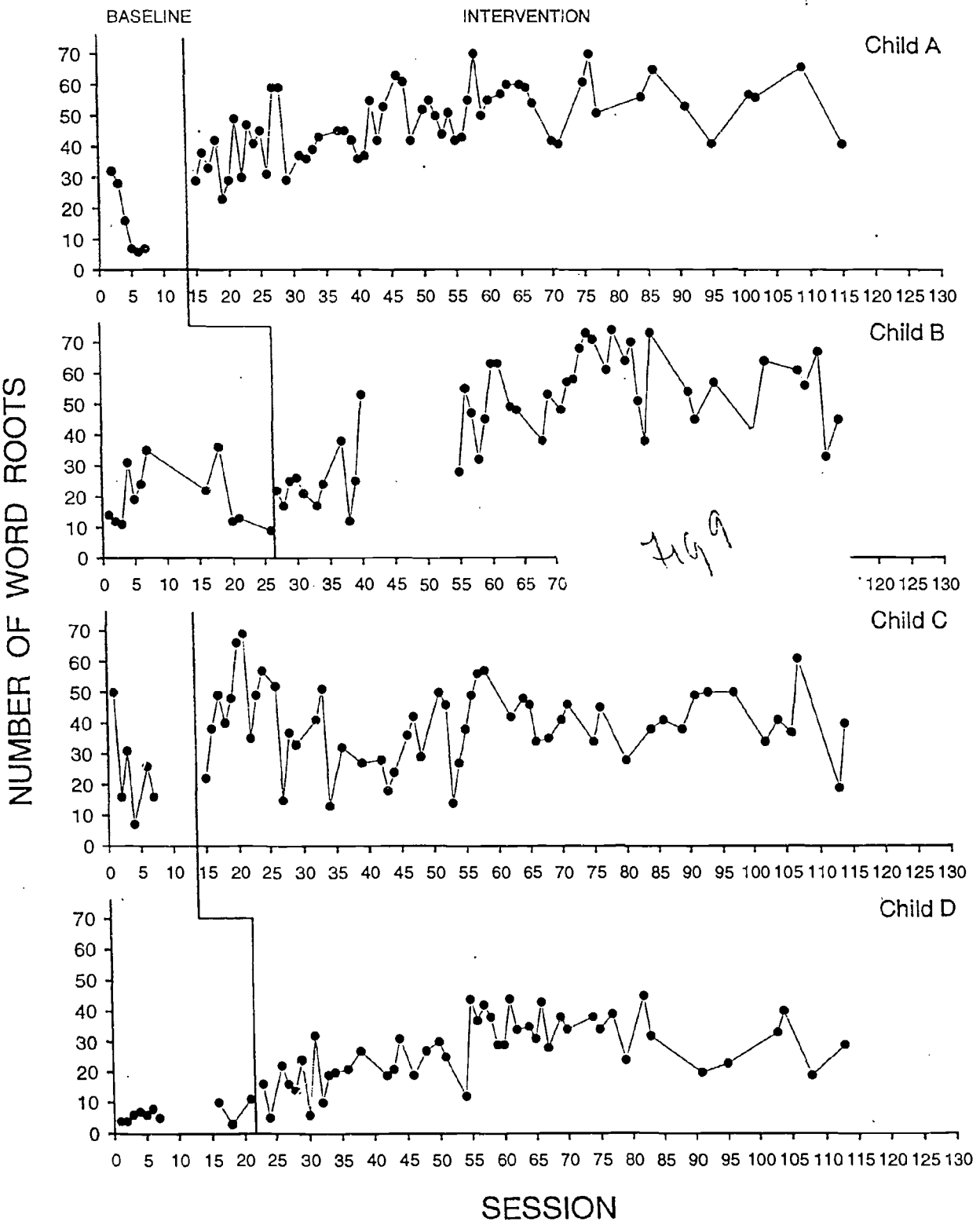
CHILD USE OF TARGETS
Classroom Generalization



FOUR PROCEDURES
Classroom Generalization



DIVERSITY OF VOCABULARY



MEAN LENGTH OF UTTERANCE