DOCUMENT RESUME

ED 292 270 EC 202 052

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TITLE Language Intervention to a Retarded Child through Cognitive Training and Pretend Play.
INSTITUTION Tokyo Gakugei Univ. (Japan). Research Inst. for the Education of Exceptional Children.
PUB DATE 87
NOTE 12p.
PUB TYPE Journal Articles (080) -- Reports - Evaluative/Feasibility (142)
JOURNAL CIT RIEEC Report; v36 p99-109 1987

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Case Studies; *Cognitive Development; Foreign Countries; *Intervention; *Language Acquisition; Males; *Mental Retardation; *Pretend Play; Young Children
IDENTIFIERS Japan

ABSTRACT

The study evaluated a language intervention program with a mentally retarded Japanese boy over a 2-year period from age 3 years 9 months to age 5 years 6 months. Intervention consisted of the therapist and mother engaging the child in cognitive training activities, physical games, and pretend play activities designed to elicit language behaviors. Cognitive training stressed such skills as distinguishing between the signified and signifier in daily experiences, language training in the names and functions of familiar objects, and pretend playing in the imitative use of objects, with and without the objects present. The subject demonstrated an increase in spontaneous vocal utterances and acquisition of a few meaningful words. In his play behavior he showed a developmental sequence similar to that of non-retarded subjects. The article is followed by an abstract written in Japanese. (DB)

特殊教育研究施設報告
1987, 36, 99–110

LANGUAGE INTERVENTION TO A RETARDED CHILD THROUGH COGNITIVE TRAINING AND PRETEND PLAY

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Key words: language intervention, pretend play, cognitive training, retarded child

Language intervention program has been a subject of interests by speech pathologists (Miller, Yoder, & Shiefelbusch, 1983). The application of its program can vary from verbal (Olswang, & Coggins, 1984) to non-verbal level (Wilcox, 1982).

Non-verbal development is closely related to development of symbolic play. In early infancy, there is no genuine representation. Gradually, the child becomes capable of representation and then be ready for symbolic use of words (Anisfeld, 1984).

It is reported that tool use, imitation, and symbolic play are very poorly developed in all the higher primates but man (Parker, 1977). In Piagetian theory, substitutional behavior reflects the development of representational thoughts (Piaget, 1945/62).

In Soviet school, imitative acts are not only manifestation of symbolic function, but also reflect children's experiences of interpersonal relations. As symbolic play is socialized, condensation of play activity occurs (Ito, et al, 1979).

Studies of language and cognitive development have offered active controversy. Severeal researchers have used a Piagetian framework to examine the relation between pretend play and transition from sensorimotor to representational thought. (Bates, 1979; Elder & Pederson, 1978; Overton & Jackson, 1973). In a comprehensive review on pretend play in childhood, Fein (1981) summarizes that studies of the relation between play and language have stressed language production as reflected in communicative, imitative, or referential speech. However, this stress might be a function of personal style rather than symbolic maturity. Fein continues to point out that studies of language meaning (e.g. comprehension or mediation) might have more theoretical significance than studies of language production (Fein, 1979). Martin, et al (1984) also suggests that intervention program around play for the mentally handicapped should foster his understanding of his world by helping him to organize and create relationship for himself.

Studies on symbolic play of the retarded show positive effects upon language development. Close relation was reported by Lovell, et al (1968) between the amount of time spent in symbolic play and the MLU. Kanda, et al (1981) showed syntactical gain in the retarded through symbolic play. Strong relationship was reported between meaningful expressive language and Stage 6 functioning (Kahn, 1975). When examined closely, Jeffree and McConkey (1974) found that modelled doll play of the retarded increased the frequency and duration of imaginative play, though its effects were specific to the modelling period while with the non-retarded its effects lasted until the post modelling performance. They have also found that development of symbolic play in the retarded is closely related to MA or DA rather than CA. Wing, et al (1977) supports this finding. She further adds that if language comprehension level of the retarded does not reach the level of beyond 20 months, no imitative use of toys could be found. In short, a need for better intervention program is very much needed. One approach is to take in symbolic play for stimulating cognitive develop-

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ment. The limitation and effectiveness of such an approach should be examined. There also is a need to include cognitive training in addition to play.

It is the purpose of this study to evaluate a language intervention program for the retarded through cognitive training and eliciting pretend play. For this purpose a longitudinal study was conducted.

METHOD

1. Subject

Subject was a boy of chronological age 3 years 9 months when first referred by a pediatric neurologist to our clinic. The developmental history revealed no special event during pregnancy and birth, though slight delay was observed by having his head sit at fifth month. He was reported to be a very quiet baby, sleeping most of the time except when he was hungry or wet. Since his mother was occupied by taking care of his older brother just one year apart, she did not feel at all strange about his being "too good." The mother could not recall any babbling heard since sixth month. This may be true inspite of her inattentiveness to the baby, as even his grandmother commented his being too quiet upon her visit to this family. The delay of his development including that of language was first told by the doctor who had the regular third year check up at the local center of public health. The child was given various examinations at the pediatric department of a hospital with no clear indication of organic disorder except the possibility of mental retardation possibly due to extremely poor environmental stimulation. Upon his initial visit, he was seen to be rather floppy, showing unsteady gate. He had a blank look but did see the eyes of the examiner after being called. During observational period of free play with his mother in a room with various toys, sand box, and water, he hardly touched any toy nor made any vocalization. He could indicate his wants by touching the object or the person. No pointing was observed.

The developmental profile based on the questionaire revealed that the child was at the 36th month in motor development, at 2 year level in cognitive and toilet skill, and at 1 year level for language and social development as well as eating and dressing skill (See

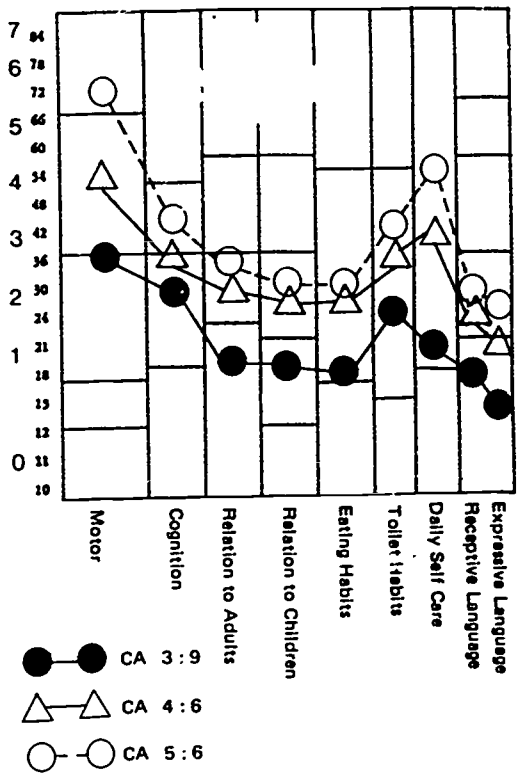

Fig. 1. Developmental Profile based on the Developmental Questionnaire (Tsumori, 1961)

Fig. 1). No standardized test of intelligence and language could be administered.

2. Intervention Program

For the first six months, he had play activities one hour each week with the therapist and his mother. They participated in physical games and also in sand and water play. The child became alert and vocal, but did not seem to gain any meaningful word.

Next year, the intervention program was conducted which consisted of 20 minutes cognitive training with 40 minutes play activities.

1) Cognitive Training:

Various familiar objects were introduced at first for him to handle one at a time. Names and their functions were being taught. Caution was taken so that there were several objects representing the same name and function. For an example, a spoon can be stainless steel, silver, or plastic of different size. Regardless of material, size, or color, a spoon is something

to eat with and to stir up. Next, picture cards were introduced to match with the appropriate object. Provisions were also made so that there were several different pictures to represent one object. After the child acquired a vocabulary of over 50, concept of "big" and "little" was introduced. The mother was aked to observe his training behind the one-way mirror. She was explained the purpose of that training and was given advise to practice his new learning at home.

2) Play activities:

Various miniature toys were provided for the child to play with the therapist. The child was introduced to use various toys first according to their intended functions. The therapist pretended to be a member of a family and demonstrated in gestures such as cooking, and taking care of household chores. The child was encouraged to play with the therapist, assuming a similar role. He was encouraged to use the toys according to their intended function at first. Then eventually, the therapist put away some of the toys and replaced other objects which forms somewhat resembled the original ones. For an example, the therapist asked him to cut "sand cake" with a knife. The toy knife was already put away. The child tried to use a ruler as the substitution. The therapist also had placed some toys on a high shelf ahead of time. The child, then,

Table 1. Communicative Behavior of the Child during Training Period

Classification	Setting / Period*	Mether-Child I	Mether-Child II	Mether-Child III	Therapist-Child I	Therapist-Child II	Therapist-Child III
Responding Behavior	No response	83	24	25	18	3	7
	Refusal	0	0	1	28	0	0
	Attentive look	12	25	5	14	33	11
	Approach	1	6	0	2	3	0
	Imitation – Gesture	0	0	2	1	6	12
	G. + Voice	0	0	0	0	2	11
	Voice	0	0	0	0	0	8
	Parts of speech	0	3	6	0	1	11
	Pointing	0	2	1	0	0	0
	Response – Gesture	0	1	2	4	47	88
	G. + Voice	4	14	14	0	3	6
	Voice	0	0	3	0	1	8
	Meaningful utterance	0	0	2	0	0	1
	Sharing emotions	0	0	0	0	0	2
Initiating Behavior	Request – Gesture	0	0	0	0	0	0
	G. + Voice	0	0	0	0	0	0
	Voice	0	0	0	0	2	0
	Meaningful utterance	0	0	0	0	0	0
	Showing – Gesture	0	1	2	0	1	4
	G. + Voice	0	0	3	0	0	3
Self-directed Behavior	Gesture	45	63	17	23	10	1
	G. + Voice	10	0	0	1	1	0

* Evaluation Period: I (CA 4 : 7) II (CA 4 : 10) III (CA 5 : 3)

Note: Analyses were based on 15 minutes videotaped records. The initial tape (CA 3·9) was not included due to the difference in recording.

Table 2. Observed Frequency on Pretend and Communicative Behavior

Training session		6	10	11	13	14	15	16	17	19	20	21	23	24	26	27	28	Total
Elicited Pretend Behavior	On imitation	3	0	0	3	1	2	0	0	0	0	0	0	0	3	0	1	13
	On verbal cue	0	0	0	0	1	1	1	1	0	0	0	0	0	0	1	0	5
Communicative Behavior	Pointing for request	1	1	1	1	0	0	1	1	3	2	2	1	0	0	1	0	15
	Pointing for report	0	0	0	0	0	0	0	1*	2	0	0	0	1*	0	0	0	4

* Pointing with vocalization

Table 3. Vocal Activities

CA	3 : 10	4 : 10	5 : 3	5 : 6
Reporting	0	1	4	10
Request	0	0	1	2
Calling for attention	0	0	0	3
Not understandable	3	0	0	0
Laughing	0	0	6	5
Meaningful word	0	0	0	0

had to ask the therapist to get the object by pointing it.

Of course, they had fun together playing ball and other physical activities.

3. Assessments

Assessment was made four times along with the training sessions. Language development as well as symbolic development in pretend play were evaluated.

1) Language development:

The communicative behavior were analyzed, using 15 minute videotapes taken during free play together with detailed clinical notes. In addition, videotapes on the mother-child interaction in free play and evaluation for pretend play were also analyzed. Functional analyses of communicative behavior were made by using the classification by Iitaka (1979). The Picture Vocabulary Test could be administered near the end of these training sessions. In addition the Picture Block Test was also given.

2) Development in pretend play:

Measurement of pretend behavior was obtained by following Shimada's evaluation procedure (1979, 1981). Shimada used three sets of miniature toys as well as twigs and crumpled pieces of white papers. The child and mother were introduced by an examiner who also stayed in the testing room throughout the session. Each set of toys were presented at random to let the child play for 5 minutes each. The mother was instructed neither to initiate nor to teach pretend behavior. She was, however, encouraged to play with her child, limiting her responses within her child's play repertory. The examiner took notes when there was difficulty in interpreting the child's pretend actions. After each session, the examiner asked the mother to clarify about that actions.

The videotapes were transcribed in a given form which indicated actions, utterances, and additional interpretation separately in every 5 seconds. The type of object use and number of different referents in sub-

stitute object use was noted. In addition, contents of acts such as simple vs. multischemes or elaborated acts were also evaluated. Since the present results were intended to compare with those of the non-retarded reported by Shimada (1979, 1981), care was taken so that scoring procedure was in agreement.

3) Overall development.

In order to see the overall developmental profile, the developmental questionaire by Tsumori (1961) was used at each assessment.

RESULTS

1. Language development

1) Cognitive training

The child first learned to correctly distinguish the object among those whose functions and forms were quite different (ex. scissor vs. cup). Later on he could differentiate those objects whose functions and forms were somewhat alike (ex. chopsticks vs. spoon). At the end of the 28 sessions, he was able to recognize more than 50 objects. He could correctly choose the named object out of 3 referents by 4 groups. As for the concept of "big" vs. "small" he was able to consistently choose bigger objects in contrast to smaller ones. However, his response to "small" was unstable depending on the sets of objects. For an example, he tended to select the bigger sweater of his father even when stimuli was given as "small" in place of a smaller sweater of a baby. Therefore, his responses were still object bound which indicated that he still had not acquired that concept. His understanding vocabulary had increased and his learning set improved. Thus he was able to respond to a nonverbal vocabulary test and reached the level of 2 years.

He still was nonverbal for most of the situation. He could imitate initial or final syllables of words. Even though he had no organic anomaly nor disorders, his vocal utterances remained rather nasal and unintelligible. Frequency of vocal utterances did increase as shown in Table 3.

2) Functional analyses on communicative behavior

Table 1 shows the child's communicative behavior observed in two types of play activities. Main changes are followings:

(1) The rapist-child interaction:

There were i) decrease in "no response" and increase in 'response" ii) increase in "imitation" iii) gradual increase in "request.' Examining daily clinical records revealed a slightly different tendency (Table 2). Out of 28 sessions, the child showed more request to the therapist by pointing. Pointing for report is also observed in a fewer frequency. A similar improvement is seen in Table 2 in theevaluation of pretend acts.

(2) Mother-child interaction:

There were i) decrease in "no response" and gradual increase in "response" ii) increase in "verbal imitation" iii) gradual increase in "showing" and iv) absence of "request" This mother had been shown a model in playing together with him on many occasions. She had been given individual guidance every week as to how to meet the needs of her child. Yet, it is still difficult for her to really enjoy playing with him and sharing emotional experiences.

3) Test results:

In addition to Picture Vocabulary Test which yield VA of 2 years, he scored the IQ of 70 on the Picture Block Test. Developmental profile indicated that motor development was about his age level. For the rest of the areas, he was delayed for about one to two years. Language development was the most delayed area, attaining 24 months on expression and 30 months on comprehension (Fig. 1).

2. Pretend behavior in the evaluation of symbolic play

1) Object use:

Table 4 shows a gradual development in use of objects from "non-relational" to "imitative," to "substitution (1)" and "substitution (2)." However, no pretend or gestural use was observed. All the substitute use was based on his real experiences. Besides, most of the signifier and the signified were similar in form and/or quality. In Shimada's report (1981) on the non-retarded, type 1 substitution emerged at 14 months of the median age (R = 12 – 22) and type 2 at 18 months (R = 14 – 24). It was at his age of 5 years 3 months, type 1 of substitution emerged and type 2 of substitution at his 5 years and 6 months (Table 4).

Table 4. Object Use

CA	3 : 10	4 : 10	5 : 3	5 : 6
Non-pretend	100% (37)	78% (55)	57% (16)	42% (31)
Imitative use	0	22/ (17)	36% (10)	46% (34)
Substitution (1)	0	0	7% (2)	4% (5)
Substitution (2)	0	0	0	5% (7)
Gestual use	0	0	0	0
Total	37	72	28	74

Table 5. Agent Use

	3 : 10			4 : 10			5 . 3			5 : 6		
Self	0			2			15			15		
	M*	E*	D*	M	E	D	M	E	D	M	E	D
Passive other	0	0	0	11	0	10	7	0	60	6	0	1
Active other	0	0	0	0	0	1	7	0	0	10	5	1

Note: M* means Mother, E* means Examiner, and D* means Doll

Table 6. Frequency and Number of Types of Elaborated Acts

CA	3 : 0	4 : 10		5 : 3		5 : 6	
		f	t	f	t	f	t
Single acts	0	19	9	18	12	9	4
Unodered multischeme combination	0	2	1	3	1	1	1
Ordered multischeme combination	0	0	0	6	2	2	1
Organized multischeme combination	0	0	0	0	0	0	0

Note: f (frequency) and t (type)

2) Agent use:

Table 5 shows developmental trend of "self" to "passive other" and on to "active other".

3) Types of elaborated acts

Table 6 summarizes observed types of elaborated acts. There is a steady growth from "single acts" to "unordered multischeme combination" on to "ordered multischeme combination." However, no organized multischeme was observed. In comparison to frequency of elaborated acts, number of different elaborated acts was very much limited. Fig. 2 and Fig. 3 show the comparison with those of the non-retarded (Shimada, 1981). Although delayed, he gradually showed an increase of elaborated acts in terms of frequency. However, he reached only the level of 20 month in terms of number of different elaborated acts (Fig. 3). Some of the examples of the ordered multischeme combination were as follows: the child pretends to pour the tea into a cup and offers his mother to drink. He repeatedly offers the tea in the

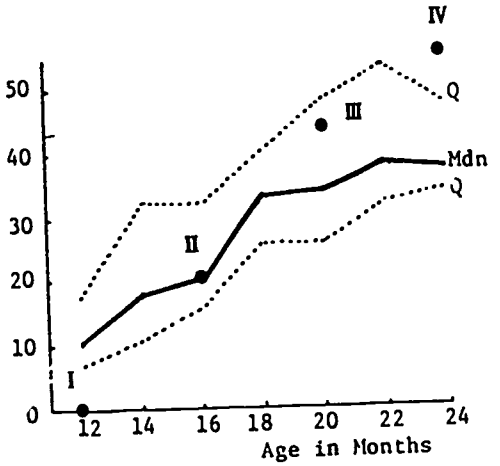

Fig. 2. Percent Occurrence of Symbolic Play

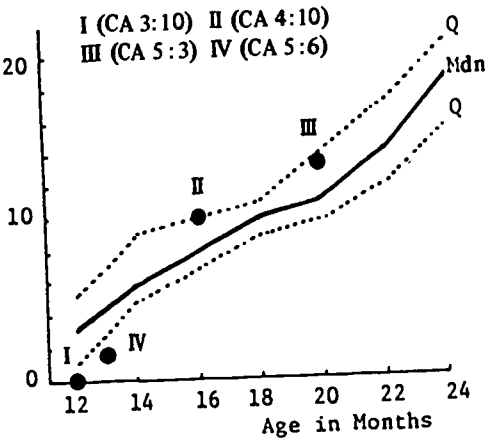

Fig. 3. Total Number of Different Acts

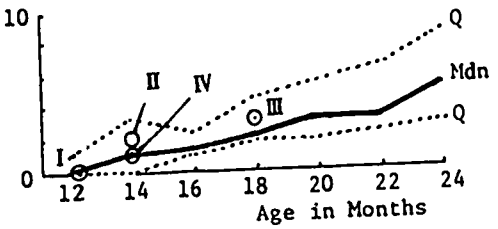

Fig. 4. Number of Different Elaborated Acts
(Figures are based on Shimada, 1981)

same manner with little variation. Therefore, showing various models and giving verbal suggestions facilitated the child to acquire some elaborated pretend acts but in limited repertory.

DISCUSSION

I. Language development

1) Cognitive training

The purpose of this training session prior to play activity was to have him become aware of the relationship between the signifier and the signified in everyday experiences. This approach is supported by Martin, et al (1984). Usually, the so-called language intervention program ends here. Application of newly learned behavior to every day life, then, remains untouched. It seems desirable to have combination of individual training with some provision for application.

Content of training is another matter of importance. In our program, understanding was first sought on the relationship between the signifier and the signified. Verbal stimuli were of course presented at the same time. Ater the child was able to identify over 50 objects, contrasting concept of "big" versus "small" was introduced. By the end of 12th session, his response to "big" was constantly correct whereas 'small" was not. Clark and Clark (1977) point out that the acquisition of the marked (big) preceeds the unmarked (small). The present result might reflect this developmental trend. On the other hand, selection of the above concept could have been premature in the training process. After having acquired some vocabulary which can represent the subject, or agent, next step might be to introduce action words.

2) Functional analyses on communicative behavior

Having play setting offered the child to relate to his therapist. After having established good relashionship with the therapist, the child imitated and responded well. The functional analysis of the therapist-child and mother-child interaction in 15 minute free play indicates that more imitation and responses are shown towards the therapist than to the mother (Table 1). However, the child showed little spontaneous behavior to both. Although mode of communication still remained non-verbal, some vocalizations were observed in imitating the therapist, but not the mother. This may suggest a need for further assistance to the mother in playing with her child. On the other hand, imitating parts of speech was seen towards both

mother and the therapist.

The main purpose of this play setting was to encourage the child develope language through applying learned concept in play. Discussion will be made in connection with the evaluation results on symbolic play.

2. Development of Pretend Behavior

The present study revealed that this retarded child did show similar developmental trend in object use, agent use, and also the types of elaborated acts.

There were, however, some characteristic patterns. In object use no pretend or gestural use was observed. In regard to elaborated acts, no organized multischeme combination was observed. The number of types of elaborated acts was limited. The number of types of elaborated acts is reported to be closely related to language comprehension (Shimada, 1981). Also it was reported that MA rather than C A had a closer relation to development of symbolic play (Jeffree & McConkey, 1976; Wing, et al, 1977). Furthermore, language development is much delayed with the retarded when compared with the non-retarded of same MA (Iitaka, 1983). The present result seems to agree with the previous findings.

While the developmental trends seen in the present study are in agreement with previous studies (Fein, 1981; Shimada, 1979, 1981; McCune-Nicolich, 1981, 1983), the difference must be examined. First, the level of comprehension must be a factor to consider. Wing, et al (1977) point out that language comprehension is very crucial in facilitating even imitative use of objects. Presenting gestural model and encouragement might not have been sufficient to raise the level of language comprehension.

Second, the level of mental age might be another factor for consideration. Jeffree & McConkey (1974) introduced a systematic symbolic play to a retarded child with mental age of 2 years and 1 months and succeeded in producing two word utterances. The child had already been using one word utterances but very rarely used two word utterances. Kanda, et al (1981) reported a similar result on a retarded child whose MA was 3 years and 7 months. The mental age of present child was not measurable in the beginning of training session and reached the vocabulary age of 2 years at the end. However, his linguistic comprehension and expression were estimated to be on the first year level (Fig. 1). This suggests that his MA might have not been at the optimal age range where benefits from symbolic play could be expected. Iitaka, et al (1979) seems to support this suggestion.

To follow up this question, this child had continually received individual as well as group training. When the child became 9 years old, he was given a series of test for syntax comprehension and production in relation to symbolic test of object use (Kajiwara 1984). While his VA being 4:6, his score was on the 22nd month level when compared with the level of the non-retarded. There must be more factors which need to be examined.

3. Language intrervention and cognitive training

Language intervention program through stimulating function is a subject of interest. In the present study, the results suggest that cognitive training and play setting to elicit pretend behavior do offer some positive results in stimulating language concept. However, no clear-cut relationship was observed among the two. Reese (1983) suggests that distinction between cognitive and language training is very difficult to maintain. The relation of cognitive development to language development is also interrelated (Fein, 1981; McCune-Nicholich, 1983). It was our hypothesis that stimulating cognitive functions should lead to development in language. However, learning tasks of the retarded are not only to build language comprehension, but to acquire expressive skill in appropriate program adjusted to an individual needs through which the retarded child can achieve best with what he is given.

SUMMARY

The purpose of this study was to evaluate an intervention program with a hypothesis that cognitive training and eliciting pretend play would stimulate language development.

The subject was a quiet non-verbal boy of 3 years

and 9 months who had slight delay in motor and marked delay in social and cognitive development. An intervention program was conducted for the first six months to engage in physical activities and sensory motor play with sand and water. The child became more alert and vocal bu no meaningful word was seen.

For the next year, 20 minutes cognitive training was conducted followed by 40 minutes play. In the former, the emphasis was placed for the child to recognize the relationship between the signified and signifier in daily experiences. After having taught names and functions of familiar objects, attempts were made in play to stimulate him to imitate use of objects, to substitute, and to pretend while no object was present.

Assessments were made four times to evaluate his language development and play behavior. There was an increase in spontaneous vocal utterances in addition to a few meaningful words. His VA reached 2 year level and non-verbal IQ of 79 was obtained.

As for his play behavior, he was observed to show the followings. (1) developmental sequence of play behavior showed a similar trend as in the non-retarded subjects; i.e. imitative object followed by substitute use except no gestural use. (2) As for agent use, there was a developmental trend of self to passive other, and on to active other. (3) The progression from single acts to multischemes or elaborated acts was also similar to that observed among the non-retarded. However, only the unordered multischemes were seen in a limited repertory.

Intervention program for the retarded which included cognitive training as well as experiences in pretend play seemed to have some positive effects upon language development. Further research needs are discussed.

ACKNOWLEDGEMENT

The authors wish to express their appreciation to Ms. Shoko Shimada who gave many helpful suggestions and comments in carrying out this study. Acknowledgement is also due to Ms. Yoshie Iwami, Ms. Yoko Aida, Ms. Masako Onuma, Ms. Noriko Matsuura, Ms. Masako Suzuki, Ms. Tamiko Suzuki, Ms. Akiko Tonomura, and Ms. Shizue Kuga for their part in carrying out this study. The authors would like to also thank our boy and his mother who participated in this study.

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言語発達遅滞児に対する概念形成訓練および見たて遊びによる指導経過

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運動機能の発達がやや遅れ，喃語もなく有意味語未獲得の３歳９ヶ月の男児に対し，概念形成訓練および見たて遊びによる言語発達の促進指導を行った。

日常生活で親しみのある事物の名称，機能理解などの概念形成訓練の後に，遊び場面において遊具の見たて遊びの促進をはかった。事物の模倣的使用から見たて使用への進展過程は健常児のそれと同様であったが，その場にないものを見たてることはできなかった。また，一連の流れをもつ組み合わせの遊びもみられたが，その種類は非常に限られており発展性に乏しかった。遊び場面でみられた見たて行動はすべて模倣か示唆によるものであり自発的なものには至らなかった。一方，発声活動は活発化し，限られた有意味語も獲得され，理解語彙は２歳レベルに達した。指さしは要求と報告に用いられたが全体的に自発的な人への働きかけに乏しかった。

言語発達遅滞児への指導に際して象徴機能の形成・促進活動の効用と問題点について論じられた。

キーワード：言語促進指導　見たて遊び　概念形成　精神遅滞児