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A Comparative Study on the Efficacy of Two Different Clinical Language Intervention Procedures

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Introduction

Delays in language acquisition are one of the most prevalent disabilities in early childhood. It has been documented that 70% of 3 to 5 year old children with developmental disabilities have language delays (Wetherby & Prizant, 1992). Language deficits beginning in early childhood can have ripple effect throughout the child's life. Not only do language deficits place children at risk for academic failure (Blank,1988) the lack of functional communicative skills also places children at risk for social failure in their interaction with peers (Rice,1993), for the development of dysfunctional relationship with their families (Embry,1981) and at increased risk for developing behaviour disorders (Goetz & Sailor,1985).

To remediate these deficits early on, widespread training is needed for early interventionists and parents regarding various effective intervention practices (Warren 2000, Wolery & Bailey 2002). Building support for children's development in the early stages of life may help to alleviate

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learning and behavioural problems as the child gets older (Calandrella & Wilcox, 2000).

Over the past three decades, numerous studies have been conducted to develop and examine different treatment procedures to enhance the communication and language development in children with disabilities. A majority of experimental research documenting treatment effectiveness are based on evidence based practices (Schwartz, Carta & Grant, 1996).

This impressive body of research provided a framework for a developmental model fostering language development and this model supports the use of different treatment approaches at different stages in a child's development. However, recent evidence has demonstrated that some teaching strategies by themselves may not be sufficient to ensure optimal language outcomes (Warren & Yoder 1997).

Most preschool language intervention approaches have focused on the direct teaching of new lexical and linguistic skills as a means of improving child's functional communication skill. It has been assumed that as children's formal linguistics skills improved in the training setting, their functional communication in everyday environments would also improve. But this assumption has not been well supported by empirical research (Costello, 1983).

Traditional and Naturalistic approaches are used by interventionists to facilitate language and communication in children with disabilities. Traditional language intervention is typically conducted in a speech therapy room and is highly structured by the therapist (Fey, 1986; Sundberg & Partington, 1998). The therapist selects the stimulus items to be used during intervention sessions, divides the language target skills into a series of independent tasks and presents these in a series of massed trials until certain criterion is met. The child is often provided with an arbitrary reinforcer combined with praise.

Naturalistic teaching follows the child's lead in terms of the interest and provides a "natural reinforcer" (Sunderberg & Partington, 1998). The reinforcers delivered in naturalistic approach are considered to be more functional in relation to the child's response. To address the need for language intervention in the child's natural settings, including the classroom and home, a number of related natural language teaching procedures have been developed. These include Incidental Teaching (Hart & Risley, 1975), Milieu Language Teaching, Mand Model (Rogers, Warren, 1980; Warren & Rogers Warren, 1984) and Time delay approach. (Halle, Marshall & Spradlin, 1979). Taken together, these procedures might be termed as naturalistic teaching.

Hart and Risley (1975) characterized incidental teaching as the interaction between an adult and a single child, which arises naturally in an unstructured situation such as free play and which is used by an adult to transmit information or give the child practice in developing a skill.

In mand model procedure the main focus is given to child's interest and demands a response from a child. This procedure was found to be highly effective for children with very low rates of initiation. (Rogers- Warren & Warren, 1980; Warren et al., 1984). Time delay procedure is defined as nonvocal cues for vocal language. The trainer identifies a situation in which the child wants an object or assistance and then waits for the child to make a response.

Incidental teaching, the mand model procedure, and the time delay technique have been combined with other strategies to encourage child language in natural environments (Alpert & Kaiser, 1992; Hart & Rogers-Warren, 1978). Hart and Rogers-Warren (1978) termed this approach as milieu language teaching". Kaiser (1993) defined milieu language teaching as "a naturalistic conversation based teaching procedure in which child's interest in the environment is used as a basis for eliciting elaborated child communicative responses. Naturalistic language teaching approaches have been increasingly viewed as the treatment of choice for children at risk or children with developmental disabilities (Noonan & McCormick; 1993 Tannock & Girolametto, 1992).

Naturalistic language teaching has been compared to more traditional therapist directed language approaches to language intervention, such as discrete trial training (Fey, 1986; Spradlin & Siegel, 1982; Sundenberg & Partington, 1998). There has been consistent evidence that didactic instruction to teach formal language skills do not result dependably in increased use of functional language. McGee, Krantz, and McClannahan (1985) reported that naturalistic promoted greater generalization of new language skills, more across people and settings than did a more traditional trainer directed approach. Similarly, Miranda a -Linne and Melina (1992) found that children are likely to generalize the new language skills following naturalistic teaching. However, traditional intervention has proved to be effective in improving the initial acquisition of new linguistic forms (Carr & Kologinsky, 1983; Kaczmarek, 1990) but failed to promote better generalisation of those skills.

Child language therapy in India has closely followed the developments in western literature which leads to many questions of efficacy of this treatment. By nature the service delivery is primarily done by parents as co therapists who favour more naturalistic approaches. Significant studies of efficacy of these approaches have not been reported. One way of looking at this is to compare the gains achieved by children on using different comparative approaches. Such data will be the beginning of evidence based practice research.

Need For This Study

Naturalistic approach such as milieu technique has been found to be effective for improving child's functional communication when compared with traditional approach. In the Indian context major share of language therapy in children with delayed speech and language is done by

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parents. This approach primarily involves naturalistic approaches. In the recent years one to one traditional therapy approaches are also becoming important. It is important to understand the efficacy of these approaches for effective implementation of language therapy. Such comparative studies are significantly lacking in Indian context. This study attempts to fill one such gap in the efficacy research.

Aim

- 1) To compare the outcomes of language therapy when two methods-traditional and milieu approaches used in two groups of language impaired children.
- 2) Indirect aim is to create awareness amongst speech language pathologist (SLP) regarding evidence based practises in therapy.

Methodology

Participants

12 language impaired children (6 children with autism and 6 children with mental retardation) were participated in the study. Participants were selected from clinical population and were randomly divided into 2 groups, Group A & B having 6 children each. The target children in Group A and Group B were selected for language intervention based on Milieu and Traditional approaches respectively. The children ranged in age from 3-5 years but language participated development wise were in the range of 14-28 months, and their severity varied from mild to moderate mental retardation. 6 post graduate speech and hearing students and parents (all mothers) of these children also participated in the study.

Table: 1 Details of child- participant characteristics (subjects)

Sl number	Age (yrs)	Sex	Condition	Years attending speech therapy	Language Age
1	3.6	M	MR	7 months	14-16 months
2	3.9	M	AUTISM	5 months	12-14 months
3	4.4	F	MR	1 year	20-22 months
4	3.3	M	MR	5months	16-18 months
5	4.6	F	AUTISM	6 months	24-28 months
6	3.9	M	MR	7 months	14-16 months
7	3.10	F	AUTISM	6 months	20-22 months
8	3.8	F	AUTISM	4 months	16-18 months
9	3.11	M	AUTISM	6 months	26-28 months
10	3.7	M	AUTISM	7 months	18-20 months
11	3.3	M	MR	6 months	18-20months
12	3.11	F	MR	10 months	20-22months

As can be seen from table 1, the age of children ranged from 3.3 to 4.4 years, Autism & MR was primary causal factor for language delay in 6 children each. All were attending regular speech & language Therapy for 4 months to 1 year duration. All parents were motivated to participate in the study. Overall language levels in subjects ranged in 14 to 28 months, as measured based on REEL scale expression. The group can be considered cohesive and comparable.

Settings and Materials

The groups A and B received language therapy based on milieu and traditional approaches respectively. A number of goals such as, makes request, appropriately responds to communication interaction, initiate and maintains communication interaction were selected to improve the Childs functional communication and these goals were similar across the groups.

The toys and materials were selected on familiarity and relevancy to language therapy goals..

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The Traditional intervention was conducted in a one to one setting in a therapy room, where the therapist and the child were the only participants. Each session was controlled by the SLP along with the selection of an independent task.

The milieu approach based therapy was provided in a wide hall (16'X16') with space for play activities. A variety of milieu teaching strategies such as child cued modelling; mand modelling and incidental teaching were used as key components. The child, SLP and parent were participated in activities while seated on the floor on a mat.

Administration and Scoring

SLP's individually explained about the method of therapy and the targets for therapy in detail, to the parents and their full cooperation was provided. A pre therapy evaluation of child's language was conducted. The 2 intervention approaches were then implemented and continued for 8 weeks (40 sessions).

Each session was monitored twice weekly followed by a discussion session. A functional communication checklist which consists of 30 parameters (Adopted from A Language Resource Packet, 2003; Tensee Department of Education, USA) was used to assess each child's pre and post functional communication skills. Five SLP's validated this checklist.

Pre and post data for functional communication of both the group were collected through observation during a 30 minute semi structured play activity. Each play activity was repeated for three days and was video recorded. The video recorded samples were analyzed and observations were confirmed about the ratings of all 30 parameters of the checklist. The parameters are listed in table 2

Statistical Analysis

Data was analyzed using paired t-test to compare the changes between pre and post.

Results

Results of the pre and post functional communication skills for Group A (Milieu approach) revealed highly significant differences for almost all the parameters except for few parameters like, Responds to questions with "yes" or "no" and expresses recurrence as shown in Table 2.

Table2: Mean, Standard Deviation (S.D) and t' values of the parameters in functional communication checklist for children in Group A

Parameters	Group A (Milieu approach)	Mean	S.D	't' Value
1	Pre	1.29	0.61	4.16**
	Post	2.14	0.53	
2	Pre	1.43	0.76	3.68**
	Post	2.14	0.66	
3	Pre	0.71	0.83	4.83**
	Post	1.57	1.01	
4	Pre	0.57	0.76	4.19**
	Post	1.5	0.94	
5	Pre	0.86	0.77	2.12NS
	Post	1.29	0.99	
6	Pre	1.36	0.74	1.57NS
	Post	1.79	0.80	
7	Pre	0.79	0.80	2.11NS
	post	1.14	0.86	
8	Pre	1.29	0.91	1.24*
	Post	2.07	0.73	
9	Pre	0.79	0.69	2.46*
	Post	1.29	0.91	
10	Pre	1.14	0.86	2.59*
	Post	1.79	0.98	
11	Pre	1.07	0.83	2.62*
	Post	1.85	0.86	
12	Pre	1.5	0.65	2.12NS
	Post	1.93	0.73	
13	Pre	1.00	0.78	4.37**
	Post	1.71	0.91	

14	pre	1.14	0.66	2.48*
	Post	1.57	0.75	
15	Pre	1.14	1.03	2.62*
	Post	1.93	0.83	
16	Pre	0.58	0.65	1.47NS
	Post	0.86	0.95	
17	Pre	1.21	0.69	3.23**
	Post	1.93	0.73	
18	Pre	1.14	0.86	5.49**
	Post	1.93	0.69	
19	Pre	1.36	0.63	2.93*
	Post	2.09	0.99	
20	Pre	0.43	0.65	1.8*
	Post	0.86	0.77	
21	Pre	0.36	0.63	3.29**
	Post	1.14	0.86	
22	Pre	1.00	1.10	0.21NS
	Post	1.07	0.99	
23	Pre	1.14	0.53	4.2**
	Post	2.00	0.88	
24	Pre	1.36	0.74	3.2*
	Post	2.07	0.62	
25	Pre	1.79	0.69	2.51*
	Post	2.36	0.84	
26	Pre	1.00	0.88	3.22**
	Post	1.64	0.84	
27	Pre	0.57	0.65	3.29**
	Post	1.14	0.86	
28	Pre	1.57	1.08	0.16NS
	Post	1.64	0.84	
29	Pre	1.36	1.03	2.62*
	Post	1.93	0.83	
30	Pre	0.93	1.14	6.51**
	Post	2.00	0.61	

Note: NS –Not significant,*-significant at 0.05 level, **-significant at 0.01level.

Significant improvement were observed in 23 parameters namely, eye gaze, gesture, physical

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manipulation, vocalisation ,facial expression, sign language, verbalisation, gains attention of people within environment, express activity choice, provides greetings, express physical condition, express feelings, responds to name call, follow simple commands with verbal clues ,maintains communication interaction, turn taking behaviour, terminates communication interaction, appropriately responds to communication interaction, make requests, expression rejection, responds to questions with yes or no, express recurrence, expresses finished or all gone, answers basic questions, asks question and follows simple commands with visual cues showed mark able differences. However, differences in 7 parameters like expresses needs with in an activity, express comments and anticipates familiar routines were not significant.

Table 3: Mean S.D and t’values of the parameters in functional communication checklist for Group B (Traditional approach).

Parameters	Group B (traditional approach)	MEAN	S.D	‘t’ value
1	Pre	1.21	0.58	2.4*
	Post	1.86	0.86	
2	Pre	2.6	0.51	1.17NS
	Post	3.0	0.94	
3	Pre	2.5	0.70	0.21NS
	Post	2.6	1.34	
4	Pre	1.07	0.92	3.1*
	Post	2.29	1.14	
5	Pre	2.6	0.52	1.14NS
	Post	3.1	1.29	
6	Pre	2.6	0.52	0.29NS
	Post	2.5	0.97	
7	Pre	2.5	0.70	1.96NS
	Post	3.4	1.26	
8	Pre	2.8	0.63	0.20NS
	Post	2.9	1.45	
9	Pre	2.9	0.74	0.00NS
	Post	2.9	1.10	
10	Pre	2.9	0.57	1.04NS
	Post	2.5	1.08	
11	Pre	2.3	0.82	1.66NS
	Post	3.0	1.05	

12	Pre	3.1	0.74	1.12NS
	Post	3.5	0.85	
13	Pre	2.9	0.74	2.18*
	Post	3.6	0.70	
14	Pre	2.0	0.00	1.00NS
	Post	2.3	0.95	
15	Pre	2.2	0.79	0.47NS
	Post	2.4	1.07	
16	Pre	1.9	0.32	1.73NS
	Post	2.8	1.62	
17	Pre	2.5	0.53	0.26NS
	Post	2.4	1.07	
18	Pre	2.5	0.85	0.23NS
	Post	2.4	1.07	
19	Pre	2.5	0.85	0.00NS
	Post	2.5	0.97	
20	Pre	3.1	0.86	0.66NS
	Post	2.8	1.14	
21	Pre	1.5	0.70	1.66NS
	Post	2.2	1.13	
22	Pre	1.4	0.52	1.90NS
	Post	2.2	1.23	
23	Pre	1.2	0.42	1.9NS
	Post	1.6	1.07	
24	Pre	1.2	0.42	0.89NS
	Post	1.5	0.97	
25	Pre	1.7	0.95	1.20NS
	Post	2.2	0.92	
26	Pre	1.7	0.95	1.20NS
	Post	2.2	0.92	
27	Pre	1.21	0.58	2.4*
	Post	1.86	0.86	
28	Pre	1.36	1.08	1.39NS
	Post	1.79	0.80	
29	Pre	1.14	0.95	2.5*
	Post	2.21	1.19	
30	Pre	1.5	0.65	2.12NS
	post	1.93	0.73	

Results of the functional communication checklist for the children who received traditional intervention showed significant differences in five parameters like eye gaze, vocalisation, gains attention of people with in environment, respond to name call and follows simple commands with visual cues. Most of the other parameters like gesture, physical manipulation, facial expression, sign language, verbalisation, etc.

Parameters like eye gaze, vocalisation, gains attention of people with in environment, respond to name call and follows simple commands with visual cues did show a mark able difference in both the groups.

Parameter like Facial expression, express needs within an activity, expresses comments, anticipates familiar routines and verbalisation were failed to give significant changes in both groups.

Discussion

The present study examined the efficacy of milieu and traditional intervention with respect to child's increased use of functional communication skills. Few studies have suggested that the linguistic environment of language impaired children is different and non-conducive for language learning. (Buium, Ryders &Turnure,1973; Marshall, Hegrenes, & Goldstein,1973; Wulbertet al,1975). Keeping this in mind the linguistic environment of language impaired children was improved through optimal natural setting during intervention. The result suggests that milieu approach is an effective language intervention strategy in terms of its primary within treatment setting and generalized effects.

The children who underwent intervention based on milieu approach showed an increased use of target language and functional communication skills across settings and conversational partners. Similar findings were documented by Alpert & Kaiser, 1992; Warren & Gazdag; (1990) & Peterson et al, (2005). Children who received traditional language intervention did not show marked difference in their functional language use. Studies done by McClannahan (1985) and Sundenberg & Partington, (1998) also reported the similar findings.

However, it was noted that there was a slight increase in language content for children who received traditional intervention. It shows that the therapist directed traditional approach is more favourable for the initial acquisition of language content, but failed to promote the child's functional communication skills. Evidences yielded from the studies of Carr & Kologinsky, (1983) & Kaczmareck (1990) also support these findings. However the length of time required to learn the target skills were varied across subjects in both the groups which may be due to individual differences and pathology variation. It is indicative that incorporating effective elements of both the approaches and paying attention to individual variability may hold high

clinical significance.

Conclusion

From the present study it is clear that milieu approach have a positive effect on improving the child's functional communication skills. This study has a major implication that the language intervention setting should be similar to child's usual environment and also attempt to use stimulus and reinforcers that are related to child's everyday activities rather than more therapist directed approaches. This has to be further generalised across settings and conversational partners.

Limitations of the Study

- 1) More rigorous measurement may be employed.
- 2) Parental participation needs to be objectively controlled.

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