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ABSTRACT

This study examined whether infants with Down syndrome (N=32) undergoing early motor training would benefit from their parents observing a clinician implement an intervention program with their child. Parents of half the children remained in the room while the clinician implemented motor stimulation techniques, while parents of the other half were given detailed explicit instructions on carrying out the training objectives at home. Results of infant motor evaluations at ages 6, 12, 18, and 24 months found significant differences in favor of those whose parents underwent training by modelling rather than by direct instruction. A secondary finding was that subjects who began motor training earlier attained higher motor developmental quotients. (DB)

EARLY MOTOR TRAINING IN DOWN'S SYNDROME BABIES:

RESULTS OF AN INTERVENTION PROGRAM.

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INTRODUCTION

This research was undertaken in order to study a new application of the vicarious learning, and thereby ascertain whether subjects undergoing early motor training would benefit from this type of learning.

Looking through what has been written on this subjects, we have come across many studies applying learning by observation to the field of mental deficiency, to reduce the number of certain behavior patterns, implant new patterns, or abolish disruptive behavior. However, we have been unable to find any study applying vicarious learning to early motor training, perphars because in all the studies on vicarious learning in the clinic field, the model acted directly on the deficient subjects while in early motor training, due to the child's young age, the model would act on the parents since they are real stimulators of the child.

In this study we intented to test whether subjects undergoing early motor training would benefit from this type of learning. For this purpose we started from a fundamental premise in early care: the participation of the parents in the training of their child, and to this end we set up an experimental study with two training groups. In the first the parents were taught to work with their children through observation of the motor objectives aimed for; that is, they learned the intervention model vicariously from the clinicien. In the second training group, the parents were told how to stimulate their children by means of written instructions describing how to achive each of the proposed motor objectives.

EXPERIMENT

SUBJECTS.

A sample of 32 Down's syndrome was used: 17 girls and 15 boys (none of them displayed associated disturbance). The age range at the beginning of the study was from 0 to 12 months.

According to the age on joinning the experiment, two training subgroup were set up: Ag-6 (newly-born at 6 months) and Ag-12 (6 at 12 months), who remained in the experiment until 24 months. Each subgroup was made up of 16 subjects who were assigned at random to one of the two training types (Vicarious and Instructional group).

MATERIAL.

The motor stimulation programme was used: Early Motor Stimulation Programme (UNICEF, 1982). The child's progress was measured through initial diagnosis and periodic revisions. The Brunet-Lèzine's First Childhood Scale was used to measure the psychomotor development.

DESIGN

The design used was that of two independent samples distributed among two groups according to their initial age. There were two independent variables: type of training (Gr-M and Gr-I) and the age on starting the experiment. The dependent variable was: the development in gross motor.

PROCEDURE

As described in the section dealing with the sample, two subgroup were formed according to their initial age.

When the parents of a child came for the first time requesting early treatment for the child, they were interviewed while the child underwent examination and an observation period. Once all the data had been designed and expleined to the parents; treatment was begun allotting the subjects to one of the two kinds of training:

- Modelling training group (Gr-M): the parents observed the clinician training; that is, they learned the motor stimulation vicariously by staying in the room. When handed the programme of objectives they were told not to try out any item they had not previously seen being demostrated by the clinician in the treatment sessions.

- Instructional training group (Gr-I): when given the programme, the parents were also given detailed instructions on how to carry out each objective.

To control the children's evolution, diagnostical check-ups were made every six months; that is, the diagnostic revision periods stablished were: 6, 18 and 24 months. In both groups, programming for each subject was renewed once the criteria for achieving the objectives (the attainment of 75% of the items proposed) had been met. Furthermore, these objectives had to be achieved without an error in three trials and two sessions.

The daily attemps to achieve each objective were systematically recorded by mother on the evolution sheets. The aim used, the degree of collaboration of the child and the level of achievement were registered; social reinforcement was used when the subjects attained the desidered aim.

RESULTS

Table 1 and figure I show the motor development quotient (DQ) attained by the two age groups subjected to the both tested training types. It can be seen that differences between the motor DQ of two groups exist; due to this two ANOVAS were carried out, one for each age group, to check whether these differences were statistically significant. In each ANOVA carried out, the motor DQ attained in the succesive check-ups to the age of 24 months were compared of those subjects who had begun treatment at a certain age and were assigned to each of the training methods tested. The facts obtained by the initial diagnostic were in no case included as they were considered to be facts of basal values rather than treatment.

	training	
Ag at s.	M	I
Ag-6	79,93	75,42
Ag-12	69,64	64,59

Table 1: average motor DQ of subjects of Gr-M and Gr-I in each age group

Figure I: average motor DQ of the subjects of Gr-M and Gr-I who began at Ag-6 and Ag-12.

The results obtained in the two groups show that significant statistical differences exist between the two training groups. Thus, in the newborn at six months (Ag-6) and underwent the following revisions: 6, 12, 18 and 24 months, it found were a value, $F(1, 23)= 42,4372$ ($p< < 0.001$) in the group who took part in the experiment from 6-12 months (Ag-12), and underwent the following revisions: 12, 18 and 24 months, it found were a value $F(9,18)= 67,9850$ ($p< 0,0001$). It can bee seen that the differences attained by the two motor training types in all the groups are highly significant. By relating this with the averages which are show in table 1, we can affirm that the subjects who underwent training by modelling (Gr-M) obtain higher motor DQ than the subjects in the instructional group (Gr-I).

Age at start	TRAIN	REVISION			
		Rev-6	Rev-12	Rev-18	Rev-24
Ag-6	M	80,25	79,50	78,25	81
	I	78	75,50	76,25	78,50
Ag-12	M		72,25	69,25	73
	I		71,50	69,75	71,50

Table 2: average motor DQ obtained by the subjects in Gr-M and Gr-I according to the age at start of treatment.

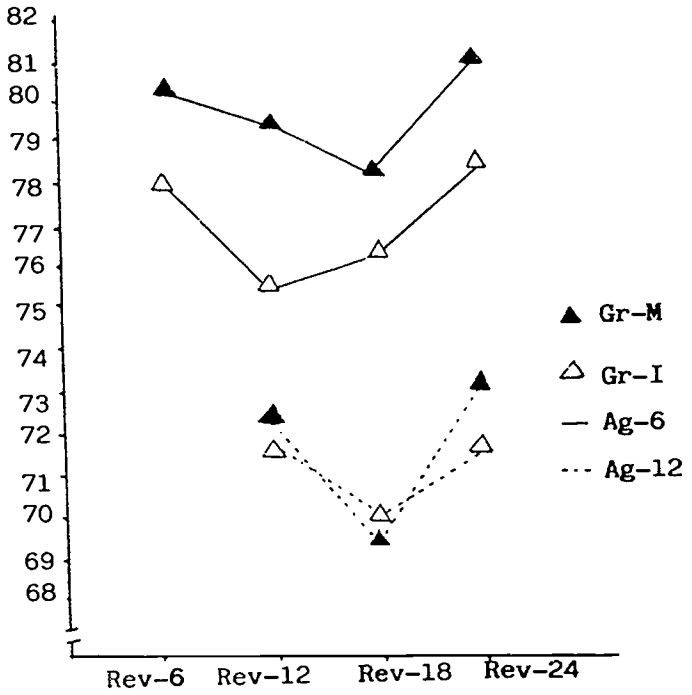

Figure II: average motor DQ attained by the subjects in Gr-M and Gr-I at Ag-6 and Ag-12 in the succesive revisions, respectively.

DISCUSSION

When this research was set up we proposed to stablish the cause of the marked delay in motor acquisition suffered by Down's syndrome children. In order to understand the importance of these results, we must remember that the subjects we are working show a marked hipotony which mediatizes their whole development. As a working hypothesis we set out to check two aspects: a) whether the reason for this delay was an intrisic pathological disturbance, in which case intervention would non produce significant results; b) whether the motor levels of these children could be considerably improved by giving suitable training to the parents.

The results shown in the above section conform the importance of early motor training. However, two conclusions shouldd be stressed; firstly, the groups of babies who started motor training at an early age attained higher motor DQ and secondly, within the two age groups tested, the subjects whose parents were vicariously taught motor stimulation attained statistically higher motor DQ than the instructions (table 2; figure II).

These results confirm:
1. The importance of a motor training for psychomotor development.
2. The benefit of vicarious techniques.