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ABSTRACT

Three presentations described the relation of media implosion to delivery of educational services to deaf-blind multihandicapped children, a curriculum for profoundly retarded children in development centers, and a device for screening hearing in high risk newborns and infants, respectively. In proposing an interdisciplinary approach to delivery services, Charles Lynd identified communications problems created by the shift from printed to electronically imploded knowledge, and cited such solutions as data banks and use of new media. The curriculum presented by Charles Koontz for profoundly retarded children in centers for handicapped minors included task criteria: 359 tasks arranged in 22 progressive levels (the number of levels are given in parentheses) for gross motor (five), fine motor (five), social (six), and language (six) development, and an activity and a progress card for teacher recording of behaviors and for planning. Philip Peltzman offered a prototype system for detecting hearing loss which utilized a converter with a miniature commercial cassette recorder, whereby the child's electroencephalogram and clinical data could be recorded by an untrained person and sent from the high risk nursery to a data reduction center for quick diagnosis. (MC)

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MEDIA IMPLOSION AND DELIVERY OF SERVICES TO DEAF-BLIND MULTIHANDICAPPED CHILDREN

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Ours in an exciting area of concern and study. It has been in the past, and it is even more so today due to the great technological changes ongoing in the larger society. The electronics revolution makes available so much information that each of us begins to perceive change as the norm; as special educators we sense this fact best when we look at our work from a global perspective. If we assume that an increasingly complex, interdisciplinary approach is essential for the delivery of services to our children and families, we unavoidably encounter the fact that changes within education are mirrored in all our allied service professions. It is above all our attempt to communicate across specialist boundaries which reflects the deepest, and most promising change in the field of special education.

There is a sense in which the educator has always been called upon to play the role of the generalist; with today's nearly endless list of specialists contributing to the diagnosis and treatment of multihandicapped children, the teacher has a special stake in learning to coordinate this added information in order to develop effective remediation programs.

Past research and discussion of the interdisciplinary approach has for the most part cried out for the need of such an approach, and lamented the frustration and communication problems which to date have been typical. In this essay, I wish to suggest a very general framework within which we can begin to assess these communication problems, and then take steps to counteract them. I will begin in a somewhat indirect fashion by

contrasting the differential effects of print media and electronic media.

Print media enable the observer to privately visualize any subject-verb-object relationship: used with sophistication, we are able to analyze and fragment the processes of nature in order to manipulate and control the particular variables which interest us. The industrial revolution has demonstrated the explosive power made possible by this technique implicit in print media. We become increasingly detached from nature and from each other, and our specialist knowledge is extended linearly in many directions. Specialized disciplines characterize the humanities as well as the natural and social sciences; their traditional reliance upon the printed word and carefully circumscribed areas of research is now being challenged by the evolution of electronic media, and new ways to process information.

Electronic media result in an implosion of all our specialist knowledge and insights, thereby forcing each of us to become more aware of what the other is, and is doing. We are no longer content to study separately and hoard our knowledge, nor are we confidently detached from nature or each other. The phenomenon of interdisciplinary teams in all the arts and sciences are characteristic of this shift in perspective from print to electronic media. In fact, we are beginning to see the emergence of a global, ecological perspective which cuts across all specialist boundaries and emphasizes the continuity between them.

Although such a vision as described above is still largely unrealized and "in the air", it is important that we begin to think in such larger terms

in order to better analyze our own areas of interdisciplinary concern. Involved as we are in the lives of our clients, whose needs can only be served by a wide range of specialists, we must feel with urgency the need to solve the problems of the interdisciplinary approach.

The first problem might be called the specialist fallacy, and this refers to our tendency to think that we can simply add up bits of specialist information until we arrive at the total picture. We need to begin thinking synergistically, as it were, acknowledging that our knowledge is culled from different levels, and that the state of our art will depend upon our ability to mesh and blend differing aspects and factors of specialist information into a variety of "middle level" generalizations. This process will not yield perfect solutions at any level, and we will perhaps never be wholly satisfied with any particular decision, - - but it will be satisfaction enough to appreciate the complementary interaction between our disciplines.

Another major obstacle to the goal of effective interdisciplinary decision making involves the use of intradisciplinary terminology and jargon. Analytic philosophers and behavioral scientists of all stripes have warned us of the pitfalls of reified concepts. Nevertheless, there is still a kind of totem and taboo effect forbidding us to drop them. As the shift toward "ordinary language" and descriptions of events in behavioral terms gains momentum, perhaps the hold-outs can be persuaded to drop their cherished labels. But nothing succeeds like success, and we will first have to prove that the benefits of the interdisciplinary approach are worth

the efforts to change our separatist ways.

It is worth noting here that Karl Menninger has attempted to outline how we might develop a language which communicates between disciplines in his book, The Vital Balance. He suggests that we rely heavily on certain powerful but "neutral" descriptive words and phrases, for example, the terms "stress," "energy," "cost factor," "levels of functioning," "positive/negative reinforcement," "state of imbalance," etc. Utilizing such words and phrases, he argues, would convey maximum meaning across disciplines.

Another area which has been a continuing source of friction involves personality conflicts within the interdisciplinary team. Here again, if we recognize the general pattern of this problem we can look fruitfully at ways in which our more experienced neighbors in other organizations have dealt with this problem. Increasingly we find that corporate structures have been utilizing sensitivity training techniques, and with considerable success. However, it may be that much of this pain can be avoided or at least minimized in the future when we recognize the benefits of our shared goals more clearly, and therefore bring to bear a friendlier stance at the outset of our interdisciplinary encounter.

A corollary to these problems is implied when we consider our increasing need to be aware of what other professionals are doing in areas related to our own. One possible solution may lie in more creative, extensive use of inservice programming, and this may be necessary at the expense of our already overworked schedules. This would be a difficult decision for administrators because the benefits would occur in the long run. Again we

see the need to become aware of the largest possible perspective.

As I am writing this paper, I learn that an Idea Bank is being stored in a regional computer to help facilitate the flow of information and research studies relevant to professionals working with deaf-blind multihandicapped children. Other creative uses of the new media involve tape recordings of relevant talks, film and video tapes of new program techniques, and telethon discussions with experts at a distance. These and other techniques have only begun to be exploited effectively.

As I have tried to describe it, we are in transition toward a very exciting period for special education, and we are very much part of changes occurring at the global level. But as with any historic transition, there are dangers to be avoided. The first involves our natural absorption in a very small part of the whole, and a consequent over-emphasis on the real and immediate problems we face. As I have tried to show, we need to see ourselves as part of these larger changes in order to "keep the faith", as we say, for our larger goals.

Another disturbing characteristic of transition periods concerns our tendency to opt out for simplistic answers to complex situations. We are all aware of those persons who quite sincerely believe that we can ignore what goes on inside the organism, and rely exclusively on our manipulation of external variables, or, those persons at the other end of the spectrum who follow Doman and Delacato, who are convinced that our central nervous system is flexible enough to regenerate all our deficits. It is difficult to proceed cautiously and responsibly with limited information and insight.

Finally, we can ask ourselves how we are able to justify the large amounts of time and money which will be required to develop an interdisciplinary approach for serving multihandicapped children. Doctor Lou Cooper of New York University recently outlined the enormous social problems which plague New York City, and then asked this same question. He suggested that if we are able to solve the complex problems of delivering services to families as needy as ours, that we would then have developed models strong enough to utilize in the delivery of services to all our citizens. I must agree that we have not learned to do so to date. In the ongoing process of our working relationships may lie some of the answers to our pressing social problems. It is clear that we must begin to learn to work together across many disciplines to achieve such ambitious goals.

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A CURRICULUM FOR THE PROFOUNDLY RETARDED CHILDREN IN A DEVELOPMENT CENTER FOR HANDICAPPED MINORS

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CHAPTER I

INTRODUCTION

Recent developments in the State of California pertaining to the care of the profoundly retarded child have had an impact on education programs throughout the State. Until 1957, a profoundly retarded child was placed in a State Hospital for total care. Because of the strain on the family as well as the cost of institutionalization, the State Legislature authorized a pilot program to study the results of placing these children in a Day Care Center for the Handicapped. The study indicated that much more could be done with these children if they were kept at home and given specialized training in the Day Center. About 20% were transferred to higher programs such as T.M.R. at the end of the year. Less than 1% were transferred to State Hospitals. (Cole: Unpublished dissertation - 1971)

In 1967, legislation was passed that established the present Development Center for Handicapped Minors (DCHM) program. It recognized the benefit of the program to the family as well as the benefits to the child.

"16645.1 The purpose of the Legislature in enacting this article is to continue these development centers for physically handicapped and mentally retarded minors having successfully demonstrated that there is a need for such facilities to help these children from an early age, that such development centers prevent the breakup of homes through respite from continuous , hour care of severely handicapped minors, that such development centers effectively relieve parents to engage in work, that the centers reduce significantly the demand for institutional placement, and that the centers are accessible to families without causing the physical dislocation of minors from their families." (Ed. Code. Calif.)

Development Centers became the responsibility of the school districts requesting such centers and the programs became the responsibility of

the Special Education Department of the District.

At the present time there are 54 centers in California located in 39 school districts or County offices with a total enrollment of 1500. (Report of California State Department of Education to the Advisory Board of the DCHH - Feb. 15, 1972, Palm Desert, California.)

With the enactment of the DCHH program, the care and training of the retarded became the responsibility of the educator rather than the medical profession. This responsibility created a need for the educator to develop new skills and a new curriculum in the area of the profoundly retarded.

Workshops, institutes and other planning sessions for the personnel involved in development centers were conducted by the California State Department of Education in cooperation with the University of California at Santa Cruz in an effort to introduce personnel to the techniques utilized in training the profoundly retarded. These workshops were primarily concerned with Behavior Modification and Prescribing Individual Instruction. These workshops were successful in that personnel returned from them with skills in modifying bizarre behavior, helping a child feed and dress himself, and other skills requiring a one-to-one relationship. Some system of behavior modification is presently used in 90% of the centers (Survey reported to the Advisory Board, February 15, 1972, Palm Desert.)

Educators found that through these techniques, they had control of the individuals in the class well enough to begin to deviate from the one-to-one instruction and begin to expand to small group instruction. They found they must plan a program for the group that would be meaningful and in keeping with the general plan of individualization. The time

spent in group activities was many times as great as that spent in individual instruction -- hence the child benefited greatly when group instruction was coordinated with the individual instruction.

Group activities provided the child with the opportunity to observe his peers in the successful accomplishment of tasks and through this observation, to learn through imitation.

A program for small groups must be carried out by either the Permit teacher or the attendant, since one of them would be working with an individual and the other with the rest of the class. A planned program of activities necessary for the development of the child directly related to the child's abilities will hasten the success of his individualized program.

Statement of Problem:

A curriculum is urgently needed for the Development Centers for Handicapped Minors. As with any curriculum, it should be based on a theoretical background. It should include a method of determining the functioning level of the children enrolled. It should include a suggested program based on the functioning level of the children. Finally, it should provide for an ongoing measurement of the program.

A curriculum must be based on a theory of learning and requires a knowledge of the levels of functioning of the children involved. To be effective, the teachers involved in working with the curriculum must be knowledgeable of the curricula, and lastly, there must be a method of measuring its effectiveness. There has been no curriculum for the DCHM other than that of individualized instruction. There has been no program for training of teachers to work with groups of profoundly retarded children. There has been no effective method to measure the

areas of concern: Gross Motor, Fine Motor, Social and Language. These tasks were arranged into 22 levels of development, corresponding to age levels of normal children. The range in levels was from one month to 48 months, with levels for each month for the first 12 months, thereafter increasing the age span for each successive level in accordance with the practice of most sources.

Three hundred and fifty-nine tasks were finally selected on the following criteria: (1) that the tasks be observable; (2) that the tasks be describable in behavioral terms, and (3) that the tasks be developmental in nature - that is they must lead from or to another task in the developmental sequence.

To meet the remainder of requirements of this curriculum each of the 359 tasks were listed separately on a 5x8 Activity Card. Each card included (1) an abbreviated version of the task for quick reference; (2) the area of the task; (3) the level of the task; (4) a three character code designed to ease scoring; (5) the behaviors expected at the next level of development; and (6) suggested classroom activities associated with the next behaviors.

A Progress Card in the form of a grid was developed to be used in the initial evaluation of the child and in subsequent activities performed by the child. Instructions were given to the teacher to mark the Progress Card when tasks were performed or when tasks were known to have been performed. Each square of the grid corresponds to a task in the scale referred to by the three-character code. Hence a profile of the child's abilities resulted. Subsequent tasks were marked when successfully passed, using only the date in the square. This allowed the growth to be shown from one formal evaluation to the next.

Procedure

To provide a useful tool to the teacher in the Development Center for Handicapped Minors involves three concerns: (1) There must be a method of evaluating the functioning level of the child; (2) There must be a simple method of plotting the progress of the child; and (3) There must be classroom suggested activities for the teacher to follow. All of these must be arranged and organized so that the time spent in the assessment, plotting the progress, and the activity planning are at a minimum. This project was designed to develop tools related to the three concerns listed above.

Illingsworth (1962) states: "There is no short cut to developmental assessment. It can only be done against a thorough knowledge of the normal and of variations of the normal. It must be based on a careful detailed history, physical and developmental examination and interpretations of the findings against the background of knowledge of the difficulties of predictions."

According to Flory (1957), the assessment of the functioning level of the profoundly retarded child is important because it is believed to be actually detrimental to the child to start training if he is not ready, or if the level of training exceeds his developmental level.

The Evaluation Instrument

Four functional areas of development were considered: Gross Motor, Fine Motor, Social, and Language. Most normal activities of daily living fell within these four areas of development. Tasks from these four areas were selected from 18 sources: either existing scales such as

the Gesell Developmental Scales, the Cattell Measurement of Intelligence of Infants and Young Children, the Bayley Scales of Infant Development, or the Vineland Social Behavior Scales, or from other experts in various areas, such as Ayers for perceptual motor, Benberg for daily living skills, Lillywhite for language, Binet for tasks in fine motor, Cratty for gross motor, Illingsworth for social living, even to a tape-recording obtained from a visiting therapist who had no record of the person speaking, only that the tape was of the cries of retarded infants comparing those cries with the cries of the normal infant of the same age. Over eight hundred tasks were reviewed.

Tasks whose ultimate goals were ambulation were placed in the Gross Motor area. Tasks whose ultimate goals were skills necessary for social interaction as well as self-help skills leading toward independence were placed in the Social area. Tasks whose ultimate goals were communication -- verbal as well as non-verbal--were placed in the Language area. There were some tasks remaining that were in a grey area between Gross Motor area and the Social area that led toward success in both areas. These particular tasks required the manipulation of objects in space and the development of skills in eye-hand coordination. These tasks were placed in the Fine Motor area. The tasks which could be listed under each functional area were relatively specific and independent for each function; therefore over-lapping of tasks among the functional areas was minimized.

Tasks were arranged in order of progression into levels of development of the normal child and into the areas mentioned above. Duplications of tasks and conflicts as to the developmental levels were apparent. Both concerns were resolved in the following manner: Tasks

from Gesell were used for prime consideration because of the length and depth of his study. It was also noted that many of the other sources quoted from or duplicated tasks from the Gesell studies. Tasks from the Bayley Scales and Cattell Scales were the next main consideration because their respective scales included tasks in the earlier levels of development and their scales were standardized. Tasks from the remainder of sources were used where their tasks were supplemental to the sources of Gesell, Cattell and Bayley.

Tasks were listed for each month from one to forty-eight months, but a close study indicated fewer levels were needed than originally planned. Tasks in the later months were relatively few. Since the primary purpose of this study was to provide tasks in developmental order, the assignment of tasks to levels equal in months to the normal child was not binding. The levels were to be points of reference only. A decision was made by the author to label the levels in increments of one month for the first twelve levels; increments of two months for the next three levels; increments of three months for the next four levels; and increments of six months for the last three levels. This resulted in 22 levels, labeled 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 21, 24, 27, 30, 36, 42, and 48 months. Tasks were adjusted into these 22 levels.

A structure of the screening tool was designed consisting of 24 tasks for each of the 22 levels -- a possible total of 528 tasks. The 24 tasks were divided into 5 tasks for the Gross Motor area, 5 for the Fine Motor area, 6 for the Social area because this area included tasks in feeding, dressing, toileting, and general social skills necessary for daily living; and 8 tasks for the Language area -- four

tasks each for Receptive Language and Expressive Language.

Tasks were finally selected on the following criteria: (1) They must be observable by the teacher; (2) They must be described in behavioral terms; (3) They must be developmental in nature -- that is they must be dependent on or lead to another task. They were also selected on the basis that they would allow the teacher to observe and record the successful accomplishment of the task in an informal manner. No task was selected that would require the teacher to assume the role of a psychologist and require the child to perform the task on command.

Each task selected from the eighteen sources was assigned to an area and a level, and each task was stated in observable behavioral terms. The description of the task was usually rather lengthy, and to assist in quick identification, the description of each task was abbreviated to two or three words. A 5" x 8" Activity Card was made for each task in which the abbreviated form of the task, the area, the level and a three character code assigned to that task was listed on the top line. The statement of the task in behavioral terms was entered on the second line. The three character code consisted of a Capital letter, G, F, S, or L, corresponding to the areas Gross Motor, Fine Motor, Social or Language; a number corresponding to the level of development, and a small letter corresponding to the particular task in an area. For example: a task coded "F 6 b" would refer to the Fine Motor (F) area, the 6th month (6), and the second task listed (b). The Activity card was designed for quick reference when a new task was observed and to assist the teacher in quantitatively assessing the level of development of the child. Table I illustrates the card "F 6 b."

TABLE I

SAMPLE ACTIVITY CARD

Grasps Object if in Line of Vision Fine Motor Six Months F 6 b

Observable Behavior:

When child sees object, will reach for and grasp that object.

Next Behavior:

a. Eyes Lead
b. Secures Two Cubes
c. One Hand Approach
d. Pulls Peg from Peg-board
e. Thumb Opposition

Classroom Activities:

a. See F 5, Classroom Activity b.
b. See F 5, Classroom Activity c.
c. See F 4, Classroom Activity b.
d. Encourage pulling pegs from peg-board at this level. See F 12, Classroom Activity b.
e. Hand puppets will increase thumb opposition as well as increase the desire for language.

Plotting the Progress

A scoring device in the form of a grid was developed in which the 24 rows provided for the 24 tasks in the four areas previously mentioned, and 22 columns provided for the 22 levels. When the tasks were placed in the appropriate areas and levels, there were still some levels at which there were only a few tasks. It was decided to allow for the full component of 24 tasks for each level and to fill in the blank levels at a later time when additional tasks would be observed. Plus marks (+) were placed in the grid to indicate an absence of a task for that area at that month level. It was felt that there were sufficient tasks at each level and in each area to adequately describe the behavior and assess the developmental level of the children in the Development Center.

The grid (Table II) provides a graphic representation of the tasks listed in this study. Here are illustrations of the use of the evaluating instrument and the Progress Card.

The teacher should observe the child the first week to note the behavior patterns particularly in the area of ambulation, feeding, language, and fine motor manipulation.

The teacher should be familiar with the list of tasks and will be able to mentally note successes and failures. At the end of the first week, a conference with the parent should be held in which questions should be asked regarding tasks not observed during the week. The progress card is marked appropriately at the end of the conference.

This procedure accomplishes three things: (1) It enables the teacher and the parent to communicate strengths and weaknesses of the child in a non-threatening way. (2) It provides information from which

THE GRID

			1 mo.	2 mo.	3 mo.	4 mo.	5 mo.	6 mo.	7 mo.	8 mo.	9 mo.	10 mo.	11 mo.	12 mo.	14 mo.	16 mo.	18 mo.	21 mo.	24 mo.	27 mo.	30 mo.	36 mo.	42 mo.	48 mo.	Aver.
GROSS	MOTOR	a.																							
		b.																		+			+		
		c.		+									+							+			+		
		d.		+			+	+			+	+		+					+	+			+		
		e.		+	+		+	+	+		+	+		+			+	+	+	+	+		+		
FINE	MOTOR	a.																							
		b.											+												
		c.									+		+		+										
		d.									+		+		+						+				
		e.		+			+	+			+	+	+	+	+	+	+	+		+	+	+	+		
SOCIAL		a.									+				+										
		b.			+						+	+	+			+	+		+	+		+		+	
		c.	+	+	+	+	+	+	+	+	+		+		+			+				+		+	
	Feed	d.	+	+									+						+		+		+	+	
	Feed	e.	+	+	+	+	+	+										+	+	+	+	+	+	+	
		f.	+	+	+	+	+	+	+	+		+	+												
LANGUAGE	Expt	a.														+				+					
		b.														+				+					
		c.		+	+	+		+							+	+		+		+	+				
		d.	+	+	+	+	+	+	+		+	+	+		+	+		+	+	+	+				
	Recp.	e.					+		+																
		f.					+																		
		g.		+	+		+		+		+				+	+	+			+			+	+	
		h.		+	+	+	+	+	+	+	+	+			+	+	+		+	+	+		+	+	

(Name)

B. D. Entry

(Etiology)

(Date of Test)

(Mean Dev. Age)

a quantitative score can be obtained. (3) It alerts both the teacher and the parent of the tasks toward which they can both work.

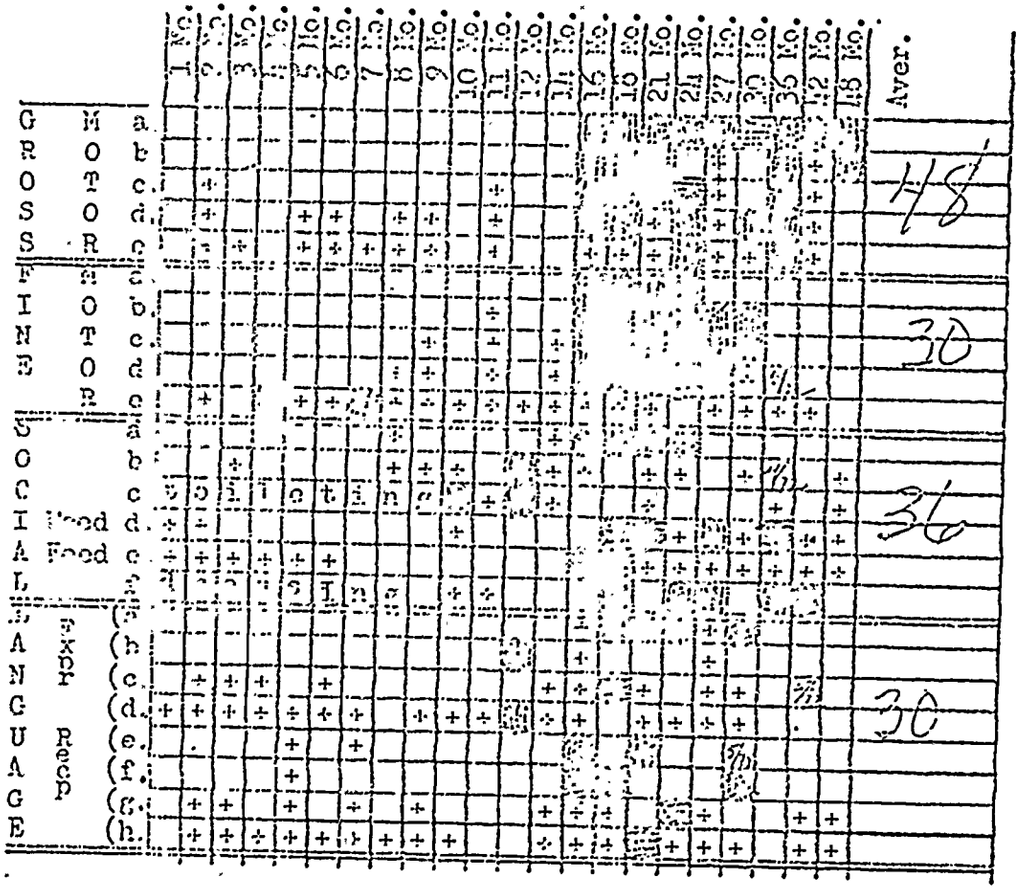
Developmental ages in each of the four areas are obtained by noting the highest level at which two or more tasks were completed. The mean developmental age is obtained by finding the arithmetic mean of the four areas. The only significance attached to the developmental age is to report this figure to the state agency on the admission and discharge form.

When a new task is observed, the teacher is instructed to fill in the appropriate square with the date of the observation. When the task is observed the second time, the square is to be partially filled in using widely spaced lines. At the time of the third observation of the successfully completed task, the square was to be completely filled in with the widely spaced lines. Of course, if the task is never observed, the square is left blank. This procedure allows the teacher to keep track of the progress of the child on a regular basis and will be a consistent reminder of the areas to be stressed for each child. Table III illustrates a completed Progress Card.

The classroom activities listed on the activity cards were the result of many brain-storming sessions in which three highly skilled teachers participated. Suggestions from four teachers who field-tested the tasks, observations made by the author in visiting many of the Developmental Centers in California through his work with the Area VI Administrators of Development Centers Committee, and the participation of the Institutes held at Santa Cruz mentioned in Chapter II also produced ideas incorporated in the activity cards.

The scoring device and the abbreviated listing of tasks were

PROGRESS CARD



Kim
Name

6 - 11 - 58 / B. D.
9-15-69 / Entry

Seizures and hyperactivity
Etiology

3-1-72
Date of Test

36 mo.
Mean Dev. Age

- 1st Observation
- 2nd Observation
- 3rd Observation
- Annual Eval.
- Parents Observ.

given to four development centers in Southern California. A total of 120 children were "tested" on the basis of the observation of the teacher. The teachers felt the results obtained were of benefit to them in that more tasks were given for the lower levels of development than previously were available. The tasks at the higher levels were felt to be helpful to the teachers in their planning activities for the children. Minor modifications were made in the arrangement of the tasks so that the recording would reflect the weaknesses and the strengths of the child in certain areas. For example, a portion of the rows were designated for certain tasks in the Social area specifically for skills related to feeding, dressing, and toileting. Skills in receptive language were separated from skills in expressive language so strengths or weaknesses in these sub-areas would be more obvious. Some tasks were eliminated as a result of the field testing because of the difficulty in describing the tasks in observable behavior terms.

In structions were given to the teacher to freely substitute the stated task for a similar task equal in scope. For example: a task was selected labeled "Licks an Ice Cream Cone." The intent of this was to demonstrate tongue control -- a task necessary for the development of speech; but whether the teacher saw the child licking an ice cream cone or licking a sucker, or even saw the child sticking out his tongue at another child (or the teacher), the task was demonstrated and should have been recorded.

It is of paramount importance that the emphasis of this paper was not to measure the ability of the child per se, but to give the teacher a tool that would assess the level of the child and also give some suggestions for activities suitable for subsequent levels of development.

It was also the intent to make this device a practical tool in the sense that the time spent in evaluation and in planning was at a minimum -- a condition that many administrators and evaluators tend to forget. The teacher is still encouraged to use his own talents in creativity and originality in planning classroom activities. The material presented in this paper is only suggested and can be modified and expanded to fit individual centers and individual teachers needs.

THE ACTIVITY

Each task listed is [illegible] a 5" x 8" card. The heading for each card is the abbreviated description of the task, the area of the task, the developmental level stated in terms of months of a normal child's development, and a three-character code for quick reference to the Progress Card. A complete description of the task, stated in observable behavioral terms is under the first heading. Following this description, tasks to be expected at the next level in the same area are listed. The final entry is the suggested classroom activities associated with the list of tasks at the next level.

The teacher will use this material in a number of ways. He will be able to evaluate the functioning level of a child in the four areas mentioned above. At the time of the evaluation he will be able to note the tasks expected in the developmental sequence. On the same card will be information that will enable him to plan a curriculum for the children based on the needs shown. Finally, he will have these cards availat for checking the progress of the children through observation of their normal activities. For example, if the teacher observes a new behavior of a child in the course of normal class activities, he will be able to identify the behavior by checking the description of the behavior on the Gestalt list. He will then refer to the Activity cards for complete information in terms of the developmental sequence. From the information in terms of the developmental sequence. From the information contained on the Activity Card, he will be able to plan appropriate classroom activities based on the suggested activities. He will also note the code number of the task and enter the date of the observation in the appropriate square on the Progress Card for a current display

of the progress of the child.

It will be impossible to give all of the suggested classroom activities. Not to share some of the activities with you would be selfish. The following activities were more or less randomly selected to give you the flavor.

First of all, no activities were given for any task below the four months level because it was felt that these tasks were best suited only for individual attention.

In the Gross Motor area, for the task "Sits on the Floor and Recovers Balance" the activity suggested is "When child is occupied with toy, in sitting position, gently push him a little off balance; he should recover balance." For the task "Walks Holding on," the activity is "Have children walk holding on to a chair or stool. Later give them a stick or a rope. Give variety of experiences -- over different textured surfaces, between rungs of a ladder, on slants and on balance beams with support. Gradually lessen the support." For the task "Imitates House Work" the activity suggested is "Assign each child to a task; such as bringing his own tray at lunch time, getting own mat for resting, wiping the table after meals, etc."

In the Fine Motor area, for the task "Eyes Focus on Small Objects" the activity suggested is "Place small objects near children to encourage them to reach for the objects. Place an object that makes noise or even food behind a screen, then move it so that it will appear from different places around the screen to increase eye-tracking. For the task "Reaches Persistently" the suggested activity is "With children in a circle, tie a balloon to a stick, then walk around the

circle of seated children holding the balloon inside the circle to encourage reaching." For the task "Thumb Opposition" the suggested activity is "Hand puppets will increase thumb opposition as well as increase the desire for language." For the task "Pincer Grasp" the suggested activity is "Finger puppets will increase pincer grasp. Put masking tape on children's arms, and face with one end of the tape not stuck down, children will pull off the tape for pincer grasp." For the task "Tries Tower of Cubes," the suggested activity is "The purpose of tower of cubes activity is to demonstrate controlled release. It is developmental in scope -- hence activities will increase in difficulty -- from two cubes to five or more cubes. Activities can include contest to see who can build the tower the highest. Toppling over the tower is reinforcing."

In the Social Area, for the task "Private Exploration," the suggested classroom activity is "Keep activities available for the children to explore. Observe the objects that are attractive to the children for use in behavior modification. Increase the natural curiosity by keeping some objects behind locked doors. Allow children to open doors themselves. Set up boxes to search through." For the task "Initiates own Play," the activity is "Provide the opportunity for the children to play by themselves and without direction for part of their play period. It is not necessary for every minute of the day to be under direct supervision and control." For the task "Puts on Shoes" the activity is "Continue the color code idea with each shoe tagged a different color to assist in choice of shoe. Match pant legs and shoe color for left and right shoes."

In the Language Area, for the task "Responds to Voice" the activity is "Tape record sounds child will normally hear such as [illegible] driver's voice, teacher's voice. Tape record playground noises, fire engines, classroom noises, thunder, to play at times of pleasureable activities. Purpose is to familiarize the child with sounds so child will not be frightened of them when they are sounded suddenly." For the task "Babbling Increases in Variety" the activity is "Have child talk into resonating chamber such as oat-meal box for feed-back to the child. Purchase speaker with lights that light when sound is made to use for stimulation of sound. Tape record vocal efforts of the child, then play back for stimulation." For the task "Adjusts to Words" the activity is "Activities are primarily geared to learning to associate words with activities or gestures. Be sure the activities with which you want to associate words are consistent, regular and routine. Have recordings made of appropriate activities, commands, and sounds children will normally hear. Use these for training." For the task "Knows Names of Objects he Uses" the activity is "Darken the room, and using a flashlight or slide projector, focus on object being discussed. Name the object and encourage the children to imitate. Vary this by just showing the object with no sounds at all. Another time give the audio portion without the visual stimulus. Place all objects around the darkened room and focus the flashlight on the objects one at a time to force concentration on the object." For the task "Initiates Motor Activities" the activity is "Use sound of egg-beater or something similar -- then ask the children to respond, indicating that they understood the sound. When sound of the crack of a bat is produced, have children show how the sound is produced.

For creativity; have children demonstrate what happens when a piece of toast is being toasted, [illegible], or pop-corn is popped.". For the task "Understands 'One'" the activity is "At nutrition time, hand child a plate of cookies. Tell him to take just one and stop him when he has taken one. Emphasize the fact that each child has one nose, one mouth, one head, when working with body parts. In all number concepts, begin with the child's own body and extend out."

SUMMARY

Children previously placed in the State Hospitals for total care are now being placed into communities. This has placed a burden on local educators to provide a meaningful program for these children. The California State Department of Education has conducted training institutes and workshops for personnel assigned to Development Centers for Handicapped Minors (DCHM), which now has this responsibility. These institutes and workshops were concerned with behavior modification and individual instruction. While this information is very valuable, it did not meet the needs of the teacher or attendant who must work with small groups of children enrolled in the DCHM.

A curriculum which included suggestions for small group activities was needed. It was determined that this curriculum must (1) be based on a developmental theory; (2) provide for an assessment of the current abilities of the children; (3) plan for activities suitable for small groups; (4) be easily understood by the permit teacher, aide or volunteer; (5) be designed so that the time spent in recording the progress of the child be minimal, and (6) be designed so that the results of this recording be revealing and useful. It was assumed that the developmental progress of the normal child and the profoundly retarded child paralled each other except in rate. Therefore, tasks from the development scales of normal children were identified and arranged in developmental sequence.

To assess the functional level of the children, tasks were selected from 18 sources - either from existing infant scales such as Gesell, the Cattell, or the Bayley - or from other experts in the four

areas of concern: Gross Motor, Fine Motor, Social and Language. These tasks were arranged into 22 levels of development, corresponding to age levels of normal children. The range in levels was from one month to 48 months, with levels for each month for the first 12 months, thereafter increasing the age span for each successive level in accordance with the practice of most sources.

Three hundred and fifty-nine tasks were finally selected on the following criteria: (1) that the tasks be observable; (2) that the tasks be describable in behavioral terms, and (3) that the tasks be developmental in nature - that is they must lead from or to another task in the developmental sequence.

To meet the remainder of requirements of this curriculum each of the 359 tasks were listed separately on a 5x8 Activity Card. Each card included (1) an abbreviated version of the task for quick reference; (2) the area of the task; (3) the level of the task; (4) a three character code designed to ease scoring; (5) the behaviors expected at the next level of development; and (6) suggested classroom activities associated with the next behaviors.

A Progress Card in the form of a grid was developed to be used in the initial evaluation of the child and in subsequent activities performed by the child. Instructions were given to the teacher to mark the Progress Card when tasks were performed or when tasks were known to have been performed. Each square of the grid corresponds to a task in the scale referred to by the three-character code. Hence a profile of the child's abilities resulted. Subsequent tasks were marked when successfully passed, using only the date in the square. This allowed the growth to be shown from one formal evaluation to the next.

The classroom activities listed on the Activity Cards were the result of many brain-storming sessions with three highly skilled teachers. This system of evaluation and screening was field tested by four Development Centers in Southern California and found to be very useful. The teachers reported that this scale allowed for smaller growth steps to be evaluated than in any previous scale.

Using the information on the cards, a teacher could initially evaluate the child through his observations, record these observations, arrive at a developmental age in the four areas, and a composite mean developmental age. The cards would also provide the teacher with a tool that would allow him to observe a new behavior in a child, identify the behavior as a developmental task, locate the task in a card file, record the completion of the task on the child's record, note the next behaviors to be expected, note the classroom activities suggested, and finally make suitable plans based on these suggestions. All of this is accomplished within a few minutes and with minimal effort on the part of the teacher and the child.

It is hoped that the material and information found in this paper will be of benefit to all teachers who have the dedication and inspiration to work so diligently with the Multi-handicapped child. The rewards are often so slow and not at all commensurate with the energy expended, if this paper has been of some help in lifting the spirits of such people, the time spent will be well worth while.

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SOURCES OF DEVELOPMENTAL TASKS

	Ayers	Baylor	Bensberg	Binet	Cattell	Crotty	Delecato	Denver	Doll	Engles	Gesell	Getman	Illingsworth	Jones	Kephart	Lillywhite	Piaget	Tape	
1 Mo		3						1	1	1	6	1	1					3	19
2 Mo		2			4			1					1		1	2		1	12
3 Mo		1	1		7		1				3		1					1	15
4 Mo		6			4			1			6						1		18
5 Mo		3			6								3			1			13
6 Mo		2			3				2				3			2	1	2	15
7 Mo		2			4						5		4			3			18
8 Mo		4			5						2		1			2		1	15
9 Mo		1			4						3		3			2		1	14
10 Mo	1	3			1				1		5		1			3			18
11 Mo		2			2				1				4			4	1		14
12 Mo	1	4			3			2	1	3	7		2						23
14 Mo	2	1	1		2				1		5					2			14
16 Mo		3			3			1	2		4		2						15
18 Mo		3		1	4			1	1		5		1	3				1	20
21 Mo		3		1	4				2		4			2					16
24 Mo		1		5		2		1	2		8								19
27 Mo				1	3				5		1		2						12
30 Mo		3			2				2		6		1			1			15
36 Mo		2	1	4	2			1	4		7								21
42 Mo				3	3			1	3		4					1			15
48 Mo				4	1			4	2		7								18
	4	54	3	19	67	2	1	14	30	4	88	1	30	5	1	23	3	10	359

APPENDIX I

APPENDIX II

THE GESTALT LIST

G 1 a Crawling Mvt of legs (Bayley)	G 2 a Begins to lift head (Cattell)
G 1 b Head drops when held (Bayley)	G 2 b Holds head momentarily (Illingsworth)
G 1 c Head turns to side (Bayley)	G 2 c
G 1 d Arms flexed or abducted (Gesell)	G 2 d
G 1 e Hand tight (Gesell)	G 2 e
F 1 a Reacts with eyes (Gesell)	F 2 a Holds rattle (Bayley)
F 1 b Follows to mid-line (Bayley)	F 2 b Eyes track (Cattell)
F 1 c Difficult to control eyes (Gesell)	F 2 c Right self (Kephart)
F 1 d Grasp reflex (Illingsworth)	F 2 d Looks and holds (Bayley)
F 1 e Startle reflex (Getman)	F 2 e
S 1 a Regards face (Denver)	S 2 a Smiles responsively (Denver)
S 1 b Occupies self (Doll)	S 2 b Inspect environment (Cattell)
S 1 c	S 2 c
S 1 d	S 2 d
S 1 e	S 2 e
S 1 f	S 2 f
L 1 a Responds to bell (Bayley)	L 2 a Attend to voice (Cattell)
L 1 b Heedful of sounds (Gesell)	L 2 b Responds to cooing (Lillywhite)
L 1 c Watches mother intently	L 2 c
L 1 d	L 2 d
L 1 e Cries with throaty sound (Engels)	L 2 e Rhythm cry slower (Tape)
L 1 f Makes demands - crying (Tape)	L 2 f Babbles (Lillywhite)
L 1 g Rhythmic crying (Tape)	L 2 g
L 1 h Cough-like crying (Tape)	L 2 h

CODE: Example: G 16 b
- G = the area of the task
- 1 = the level of the task
- b = a task in an area

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 3 a Head steady (Cattell)	G 4 a Head [illegible] (some) (Bayley)
G 3 b Crawls prone (Gesell)	G 4 b Rolls over (Bayley)
G 3 c Cross Pattern (Delacato)	G 4 c Head up when sitting (Bayley)
G 3 d Raises chest (Cattell)	G 4 d Arms in unison-swimming motion (Cattell)
G 3 e	G 4 e Likes sitting position (Gesell)
F 3 a Attends to cube (Cattell)	F 4 a Manual control by sight (Piaget)
F 3 b Swinging ring (Cattell)	F 4 b Ring to mouth (Gesell)
F 3 c Inspects fingers (Cattell)	F 4 c Fingers busy. Gesell)
F 3 d Plays with rattle (Illingsworth)	F 4 d Eye-hand coord. begins (Bayley)
F 3 e Fingers open (Gesell)	F 4 e Head to mid-line (Gesell)
S 3 a Demand for socialization (Gesell)	S 4 a Pulls dress over face in play (Illingsworth)
S 3 b	S 4 b Increased activity with toy (Cattell)
S 3 c	S 4 c
S 3 d Anticipates feeding (Cattell)	S 4 d Sucking strong (Cattell)
S 3 e	S 4 e
S 3 f.	S 4 f
L 3 a Anticipates with activity (Cattell)	L 4 a Turns to voice (Cattell)
L 3 b Reacts to visual sign (Bayley)	L 4 b Recognizes "mother" (Gesell)
L 3 c	L 4 c
L 3 d	L 4 d
L 4 E Crying plaintive (Tape)	L 4 e Coos, gurgles, squeals (Denver)
L 3 f Chuckles (Binsberg)	L 4 f Smiles meaningfully (Bayley)
L 3 g	L 4 g Laughs aloud (Bayley)
L 3 h	L 4 h

CODE: Example: G 16 b
- G = the area of the task
- 16 = the level of the task
- b = a task in an area

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 5 a May lift foot (Bayley)	G 6 a Reaches unilaterally (Bayley)
G 5 b Pulls to sitting position (Bayley)	G 6 b Weight on hands when prone (Illingsworth)
G 5 c Weight on forearms (Illingsworth)	G 6 c Weight on feet when standing (Illingsworth)
G 5 d	G 6 d
G 5 e	G 6 e
F 5 a Eyes focus on small objects (Cattell)	F 6 a Pick up string (Bayley)
F 5 b Transfers hand to hand (Cattell)	F 6 b Grasps object if in vision (Piaget)
F 5 c Pulls suspended ring (Cattell)	F 6 c Reaches persistently (Cattell)
F 5 d Attains ring (Cattell)	F 6 d Lifts cup (Cattell)
F 5 e	F 6 e
S 5 a Displeasure shown (Illingsworth)	S 6 a Fingers reflection in mirror (Cattell)
S 5 b Laughs when head hidden (Illingsworth)	S 6 b Demands attention (Doll)
S 5 c	S 6 c
S 5 d Picks up spoon (Cattell)	S 6 d Holds bottle part of time (Illingsworth)
S 5 e	S 6 e
S 5 f	S 6 f
L 5 a Turns to bell (Cattell)	L 6 a Babbling increases in variety (Lillywhite)
L 5 b discriminates strangers (Bayley)	L 6 b Responds to angry tone if coupled with gestures (Lillywhite)
L 5 c Responds to voices (Lillywhite)	L 6 c
L 5 d	L 6 d
L 5 e	L 6 e Crying not rhythmic (Tape)
L 5 f	L 6 f Rising and falling inflection (Tape)
L 5 g	L 6 g "Talks" (Doll)
L 5 h	L 6 h

CODE: Example: G 16 b
- G = the area of the task
- 16 = the level of the task
- b = a task in an area

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 7 a Hands very active (Gesell)	G 8 a Creeps on hands and knees (Bayley)
G 7 b May bear weight on hand (Illingsworth)	G 8 b Hand preference (Cattell)
G 7 c Bounce with enjoyment (Illingsworth)	G 8 c Sits on floor unsupported
G 7 d Sits on floor with support (Illingsworth)	G 8 d
G 7 e	G 8 e
F 7 a Eyes lead (Bayley)	F 8 a Attains ring (Cattell)
F 7 b Secures 2 cubes (Cattell)	F 8 b Secures pellet (Cattell)
F 7 c One hand approach (Gesell)	F 8 c Bangs spoon (Cattell)
F 7 d Pulls peg from peg-board (Cattell)	F 8 d
F 7 e Thumb opposition (Bayley)	F 8 e
S 7 a Attracts attention by coughing (Illingsworth)	S 8 a
S 7 b Private Exploration (Gesell)	S 8 b
S 7 c	S 8 c
S 7 d Sucks food from spoon (Gesell)	S 8 d Feeds self crackers (Gesell)
S 7 e Chewing begins (Gesell)	S 8 e Bites and chews (Gesell)
S 7 f	S 8 f
L 7 a Smiles at mirror (Cattell)	L 8 a Recognizes familiar sounds (Bayley)
L 7 b Responds to gestures (Lillywhite)	L 8 b Localizes gross sounds (Bayley)
L 7 c Rejects demands for imitation (Lillywhite)	L 8 c Increased tongue tip (Lillywhite)
L 7 d	L 8 d Increased babbling with gestures (Lillywhite)
L 7 e	L 8 e Combines 2 syllables (Cattell)
L 7 f Crows (Lillywhite)	L 8 f Babbling rhythmic (Tape)
L 7 g	L 8 g Repetitious syllables (Bayley)
L 7 h	L 8 h

CODE: Example: G 16 b
- G = the area of the task
- 16 = the level of the task
- b = a task in an area

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 9 a Pulses to sitting position (Gesell)	G 10 a Pulls self to feet (Bayley)
G 9 b Crawls backward (Illingsworth	G 10 b Walks holding on (Bayley)
G 9 c Sits on floor - recovers balance (Illingsworth)	G 10 c Prone to sitting and v. v. (Illingsworth)
G 9 d	G 10 d Stands momentarily (Doll)
G 9 e	G 10 e Rocks or creeps when prone (Gesell)
F 9 a Rings bell (Cattell)	F 10 a Holds own bottle (Gesell)
F 9 b Pincer grasp (Bayley)	F 10 b Crude release (Ayers)
F 9 c	F 10 c Attempts 3rd cube (Cattell)
F 9 d	F 10 d Bangs 2 cubes mid-line (Bayley)
F 9 e	F 10 e
S 9 a Arms in front of face (Illingsworth)	S 10 a Pattycakes (Bayley)
S 9 b	S 10 b
S 9 c	S 10 c Toilet Training begins (Gesell)
S 9 d Drinks from cup w/spill (Gesell)	S 10 d
S 9 e Finger feeds (Gesell)	S 10 e Solid foods (Gesell)
S 9 f Holds arms out (Lillywhite)	S 10 f
L 9 a Adjusts to words (Cattell)	L 10 a Comprehends "no no" (Lillywhite)
L 9 b Reads faces and gestures (Cattell)	L 10 b Understands "patty-cake" (Lillywhite)
L 9 c Cries to get attention (Lillywhite)	L 10 c Looks around corner for object (Lillywhite)
L 9 d	L 10 d
L 9 e Imitates sounds (Cattell)	L 10 e Waves bye-bye (Bayley)
L 9 f A-he syllable crying (Tape)	L 10 f Mama, dada not distinct (Bayley)
L 9 g	L 10 g Imitates speech sounds (Gesell)
L 9 h	L 10 h

CODE: Example: G 16 g
- G = the area of the task
- 16 = the level of the task
- g = a task in an area

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 11 a Strikes doll (Cattell)	G 12 a Stoops and recovers (Denver)
G 11 b Standing, lifts foot (Illingsworth)	G 12 b Pulls self to rail (Gesell)
G 11 c	G 12 c Plantigrade creeping (Gesell)
G 11 d	G 12 d Sits and pivots (Ayers)
G 11 e	G 12 e Walks with thand held (Bayley)
F 11 a Puts objects in container (Illingsworth)	F 12 a Release (Gesell)
F 11 b	F 12 b Chews and swallows (Doll)
F 11 c	F 12 c Tower of cubes (Bayley)
F 11 d	F 12 d Marks with pencil (Cattell)
F 11 e	F 12 e
S 11 a Enjoys audience (Bayley)	S 12 a Plays up-and down (Illingsworth)
S 11 b Repeats perf. laughed at (Illingsworth)	S 12 b Mouthing nearly stopped (Illingsworth)
S 11 c	S 12 c Toilet training earnestly (Gesell)
S 11 d Licks ice cream cone (Bayley)	S 12 d Fingerfeeds part of meal (Gesell)
S 11 e Does not drool (Doll)	S 12 e Holds spoon (Gesell)
S 11 f	S 12 f Cooperates in dressing (Gesell)
L 11 a Anticipates events (Piaget)	L 12 a Understands "no" (Cattell)
L 11 b Anticipates body movements (Illingsworth)	L 12 b Knows immediately turns to own name (Engels)
L 11 c Listens to isolated word (Lillywhite)	L 12 c Understands command with gestures (Engels)
L 11 d	L 12 d Recognizes familiar 20 feet (Engels)
L 11 e Says one word (Cattell)	L 12 e Mama, Dada distinct (Denver)
L 11 f Shakes head for "no" (Lillywhite)	L 12 f Indicates wants (Bayley)
L 11 g Imitates new sounds (Lillywhite)	L 12 g Two additional words (Cattell)
L 11 h Imitates correct no. syllables (Lillywhite)	L 12 h Two dysyllables (da-ba) (Bayley)

CODE: Example: G 16 b
- b = a task in an area
- 16 = the level of the task
- G = the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 14 a Walks fairly well (Gesell)	G 16 a Walks well (Doll)
G 14 b Starts and stops (Ayers)	G 16 b Imitates housework (Denver)
G 14 c Toddles about (Ayers)	G 16 c Seats self in chair (Illingsworth)
G 14 d Falls by collapsing (Gesell)	G 16 d Creeps upstairs (Gesell)
G 14 e Overcomes simple obstacles (Doll)	G 16 e
F 14 a Puzzles in holes (Bayley)	F 16 a Round block in form board (Bayley)
F 14 b Pulls and replaces peg (Cattell)	F 16 b Twoer 2 cubes (Bayley)
F 14 c	F 16 c Puts beads in box (Cattell)
F 14 d	F 16 d Scribbles in imitation (Cattell)
F 14 e	F 16 e
S 14 a	S 16 a Carries familiar objects (Doll)
S 14 b	S 16 b
S 14 c	S 16 c Indicates when wet (Illingsworth)
S 14 d Fingerfeeds self (Gesell	S 16 d Manipulates cup (Gesell)
S 14 e Turns spoon (Gesell	S 16 e Dips spoon in dish (Gesell)
S 14 f Pulls off socks	S 16 f Able to unzip large zipper
L 14 a Knows names of objects he uses (Lillywhite)	L 16 a
L 14 b Names few people (Lillywhite)	L 16 b
L 14 c	L 16 c
L 14 d	L 16 d
L 14 e Three words (Cattell)	L 16 e Five word vocabulary (Cattell)
L 14 f Imitates words (Bensberg)	L 16 f Indicates wants assertively (Bayley)
L 14 g	L 16 g
L 14 h	L 16 h

CODE: Example: G 16 b
- G 16 b
  - b = a task in an area
  - 16 = the level of the task
  - G = the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 18 a Hurls ball (Bayley)	G 21 a Walks upstairs with both feet (Bayley)
G 18 b Walks sideways (Bayley)	G 21 b Kicks ball (Gesell)
G 18 c Runs stiffly (Denver)	G 21 c Down from adult chair (Gesell)
G 18 d Pulls wheeled toy (Illingsworth)	G 21 d
G 18 e	G 21 e
F 18 a Tower 3 cubes (Bayley)	F 21 a Square in form board (Cattell)
F 18 b Scribbles spont. (Cattell)	F 21 b Six pegs in peg-board (Bayley)
F 18 c Walks into ball (Gesell	F 21 c Closes oblong box (Bayley)
F 18 d Turns pages of book (Gesell)	F 21 d Unwraps candy (Doll)
F 18 e	F 21 e
S 18 a Blows out candle (Jones)	S 21 a Goes about yard (Jones)
S 18 b Plays with other children	S 21 b
S 18 c Success at toilet (Gesell)	S 21 c
S 18 d Holds spoon in pronation (Gesell)	S 21 d Drinks from cup without spill (Gesell)
S 18 e Self feeding (Doll)	S 21 e
S 18 f Takes off mittens (Jones)	S 21 f Removes Garments (Jones)
L 18 a Points to nose etc. (Cattell)	L 21 a Attempts to follow direction (Cattell)
L 18 b Ident. picture (Cattell)	L 21 b Knows 5 body parts (Binet)
L 18 c Knowes 3 body parts (Binet)	L 21 c
L 18 d Fluent jargon (Cattell)	L 21 d
L 18 e Words when crying (Tape)	L 21 e Joins 2 words (all gone) (Cattell)
L 18 f Vocabulary 10 words (Gessell	L 21 f Identifies 2 pictures by name (Cattell)
L 18 g	L 21 g Talks in short sentences (Doll)
L 18 h	L 21 h Vocabulary 20 words (Gesell)

CODE: Example G 16 b
- b = a task in an area
- 16 = the level of the task
- G = the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 24 a Throws ball overhand	G 27 a Jumps in place (Doll)
G 24 b Runs rather than walks	G 27 b
G 24 c Squats on floor (Gesell)	G 27 c
G 24 d Kicks large ball (Gesell)	G 27 d
G 24 e Picks object off floor	G 27 e
F 24 a Three hole form board (Binet)	F 27 a Tower of 5 cubes (Cattell)
F 24 b Tower 4 blocks (Binet)	F 27 b Imitates vertical line (Cattell)
F 24 c Turns single page (Gesell)	F 27 c Turns door knot (Illingsworth)
F 24 d Folds paper (Bayley)	F 27 d Unscrews lid (Illingsworth)
F 24 e Unwraps coverings (Doll)	F 27 e
S 24 a Initiates own play (Gesell)	S 27 a Parallel play (Doll)
S 24 b	S 27 b Initiates own play of others (Doll)
S 24 c Dry at night	S 27 c Verbalizes toilet needs (Gesell)
S 24 d	S 27 d Eats with fork (Doll)
S 24 e	S 27 e
S 24 f Takes off shoes (Gesell)	S 27 f Removes own coat (Doll)
L 24 a Follows simple commands (Binet)	L 27 a
L 24 b Identifies 4 pictures (Binet)	L 27 b
L 24 c Refers to self by name (Gesell)	L 27 c
L 24 d	L 27 d
L 24 c Nouns & verbs predominate (Denver)	L 27 e Repeats 2 digits (Cattell)
L 24 f Names familiar objects (Binet)	L 27 f Initiates motor activity from verbal request (Binet)
L 24 g Echolalia (Doll)	L 27 g
L 24 h	L 27 h

CODE: Example: G 16 b
- G 16 b
  - b — a task in an area
  - 16 — the level of the task
  - G — the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 30 a Rides trike (Illingsworth)	G 36 a Balances one foot 1 sec. (Gesell)
G 30 b Broad jumps (Bayley)	G 36 b Climbs about (Doll)
G 30 c Avoids simple hazards (Doll)	G 36 c Walks upstairs altern. feet (Bayley)
G 30 d Walks on tiptoe (Gesell)	G 36 d Walks downstairs both feet (Bayley)
G 30 e	G 36 e Kicks ball well (Gesell)
F 30 a Drinks from straw (Gesell)	F 36 a Strings 4 beads (Binet)
F 30 b Holds crayon (Gesell)	F 36 b Draw vert. line and circle (Cattell)
F 30 c Unlaces shoes (Bayley)	F 36 c Builds bridge (Cattell)
F 30 d	F 36 d Cuts with scissors (Doll)
F 30 e	F 36 e
S 30 a Wash and dry hands (Gesell)	S 36 a Understands taking turns (Gesell)
S 30 b	S 36 b Cooperates with child (Doll)
S 30 c Asks to go to toilet (Gesell)	S 36 c
S 30 d	S 36 d Feeds self (Gesell)
S 30 e	S 36 e
S 30 f Dresses with supervision	S 36 f Buttons & unbuttons (Gesell)
L 30 a Identifies object by use (Cattell)	S 36 a Relates experiences (Doll)
L 30 b Understands "one" (Cattell)	L 36 b Picture memory (Binet)
L 30 c	L 36 c Can be "reasoned with" (Bensburg)
L 30 d	L 36 d Knows sex (Gesell)
L 30 e Short sentences (Doll)	L 36 e First and last name (Denver)
L 30 f Naming predominates (Bayley)	L 36 f Follows directions with 2 prepositions (Gesell)
L 30 g Counts to two (Lillywhite)	L 36 g Ten objects from pictures (Binet)
L 30 h	L 36 h repeats 3 digits (Binet)

CODE: Example: G 16 b
- G 16 b
- a task in an area
- the level of the task
- the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 42 a Balances one foot 2 sec. (Gesell)	G 48 a Hops on one foot (Bayley)
G 42 b	G 48 b Catches objects (Doll)
G 42 c	G 48 c Skips on one foot (Gesell)
G 42 d	G 48 d Jumps (running) (Gesell)
G 42 e	G 48 e Balances 1 foot 4-8 sec. (Gesell)
F 42 a Solve picture puzzles (Cattell)	F 48 a Laces shoes (Denver)
F 42 b Sorts by color (Cattell)	F 48 b Copies cross (Binet)
F 42 c 1/4" peg in peg-board (Cattell)	F 48 c String 7 beads 2 minutes (Cattell)
F 42 d traces diamond (Gesell)	F 48 d Draws recog. picture (Denver)
F 42 e	F 48 e Buttons small buttons (Gesell)
S 42 a Cooperative play (Doll)	S 48 a Plays simple games (Gesell)
S 42 b Helps household tasks (Doll)	S 48 b
S 42 c Cares for self at toilet (Doll)	S 48 c
S 42 d	S 48 d
S 42 e	S 48 e
S 42 f Puts on shoes (Gesell)	S 48 f Dresses without supervision (Gesell)
L 42 a Knows cold, hunger (Denver)	L 48 a Recog. 3 out of 4 colors (Denver)
L 42 b Knows "longer" (Binet)	L 48 b Knows why we have stoves (Binet)
L 42 c Obeys simple comm. (Binet)	L 48 c Knows opposites (Denver)
L 42 d Knows "heaviest" (Gesell)	L 48 d Names objects from memory (Binet)
L 42 e Relates story from picture (Binet)	L 48 e Repeats simple sentences (Binet)
L 42 f Counts to 3 (Lillywhite)	L 48 f Asks "why" (Gesell)
L 42 g	L 48 g
L 42 h	L 48 h

CODE: Example: G 16 b
- G 16 b — a task in an area
- G 16 — the level of the task
- G — the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

APPENDIX III

INSTRUCTIONS TO THE TEACHER

The Progress Card is a representation of the entire list of tasks. A square on the grid corresponds to a particular task. The code number assigned to a task (see either the Gestalt list or the Activity Cards) is also represented on the Progress Card. The capital letter and the small letter are represented by the horizontal rows. The numbers correspond to the months level of the task and are represented by the vertical columns.

To evaluate a child:

1. Estimate the functioning level in the four areas..
2. Note the tasks at that level and solidly fill in the squares corresponding to the tasks the child will regularly perform on command.
3. Question the mother for her observations and mark in the same manner (see Progress Card).
4. To obtain a developmental age, first determine the developmental age for each area by noting the level at which the child performs at least two tasks successfully. That level will be considered his functioning level in that area. To find the Mean developmental age, find the arithmetic mean of the developmental ages of the four areas.
5. After the initial evaluation, enter the date in the appropriate square for any task observed. Tasks observed twice, cross-hatch the entire square.
6. At the next evaluation, solidly fill in the tasks that are cross-hatched. This will indicate to you the growth accomplished since the initial evaluation.

A word of caution, the levels are not standardized, but should be considered points of reference only.

G 1 a Crawling Mvt of legs (Bayley)	G 2 a Begins to lift head (Cattell)
G 1 b Head drops when held (Bayley)	G 2 b Holds head momentarily (Illingsworth)
G 1 c Head turns to side (Bayley)	G 2 c
G 1 d Arms flexed or abducted (Gesell)	G 2 d
G 1 e Hand tight (Gesell)	G 2 e
F 1 a Reacts with eyes (Gesell)	F 2 a Holds rattle (Bayley)
F 1 b Follows to mid-line (Bayley)	F 2 b Eyes track (Cattell)
F 1 c Difficult to control eyes (Gesell)	F 2 c Right self (Kephart)
F 1 d Grasp reflex (Illingsworth)	F 2 d Looks and holds (Bayley)
F 1 e Startle reflex (Getman)	F 2 e
S 1 a Regards face (Denver)	S 2 a Smiles responsively (Denver)
S 1 b Occupies self (Doll)	S 2 b Inspect environment (Cattell)
S 1 c	S 2 c
S 1 d	S 2 d
S 1 e	S 2 e
S 1 f	S 2 f
L 1 a Responds to bell (Bayley)	L 2 a Attend to voice (Cattell)
L 1 b Heedful of sounds (Gesell)	L 2 b Responds to cooing (Lillywhite)
L 1 c Watches mother intently	L 2 c
L 1 d	L 2 d
L 1 e Cries with throaty sound (Engels)	L 2 e Rhythm cry slower (Tape)
L 1 f Makes demands - crying (Tape)	L 2 f Babbles (Lillywhite)
L 1 g Rhythmic crying (Tape)	L 2 g
L 1 h Cough-like crying (Tape)	L 2 h

CODE: Example: G 1 b
- G = the area of the task
- 1 = the level of the task
- b = a task in an area

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 3 a Head steady (Cattell)	G 4 a Head lag (some) (Bayley)
G 3 b Crawls prone (Gesell)	G 4 f Rolls over (Bayley)
G 3 c Cross Pattern (Delacato)	G 4 c Head up when sitting (Bayley)
G 3 d Raises chest (Cattell)	G 4 d Arms in unison-swimming motion (Cattell)
G 3 e	G 4 e Likes sitting position (Gesell)
F 3 a Attends to cube (Cattell)	F 4 a Manual control by sight (Piaget)
F 3 b Swinging ring (Cattell)	F 4 b Ring to mouth (Gesell)
F 3 c Inspects fingers (Cattell)	F 4 c Fingers busy Gesell)
F 3 d Plays with rattle (Illingsworth)	F 4 d Eye-hand coord. begins (Bayley)
F 3 e Fingers open (Gesell)	F 4 e Head to mid-line (Gesell)
S 3 a Demand for socialization (Gesell)	S 4 a Pulls dress over face in play (Illingsworth)
S 3 b	S 4 b Increased activity with toy (Cattell)
S 3 c	S 4 c
S 3 d Anticipates feeding (Cattell)	S 4 d Sucking strong (Cattell)
S 3 e	S 4 e
S 3 f	S 4 f
L 3 a Anticipates with activity (Cattell)	L 4 a Turns to voice (Cattell)
L 3 b Reacts to visual sign (Bayley)	L 4 b Recognizes "mother" (Gesell)
L 3 c	L 4 c
L 3 d	L 4 d
L 4 E Crying plaintive (Tape)	L 4 e Coos, gurgles, squeals (Denver)
L 3 f Chuckles (Bindberg)	L 4 f Smiles meaningfully (Bayley)
L 3 g	L 4 g Laughs aloud (Bayley)
L 3 h	L 4 h

CODE: Example: G 16 b

- a task in an area
- the level of the task
- the area of the task

C = Cross Motor
F = Fine Motor
S = Social
L = Language

G 5 a May lift foot (Bayley)	G 6 a Reaches unilaterally (Bayley)
G 5 b Pulls to sitting position (Bayley)	G 6 b Weight on hands when prone (Illingsworth)
G 5 c Weight on forearms (Illingsworth)	G 6 c Weight on feet when standing (Illingsworth)
G 5 d	G 6 d
G 5 e	G 6 e
F 5 a Eyes focus on small objects (Cattell)	F 6 a Pick up string (Bayley)
F 5 b Transfers hand to hand (Cattell)	F 6 b Grasps object if in vision (Piaget)
F 5 c Pulls suspended ring (Cattell)	F 6 c Reaches persistently (Cattell)
F 5 d Attains ring (Cattell)	F 6 d Lifts cup (Cattell)
F 5 e	F 6 e
S 5 a Displeasure shown (Illingsworth)	S 6 a Fingers reflection in mirror (Cattell)
S 5 b Laughs when head hidden (Illingsworth)	S 6 b Demands attention (Doll)
S 5 c	S 6 c
S 5 d Picks up spoon (Cattell)	S 6 d Holds bottle part of time (Illingsworth)
S 5 e	S 6 e
S 5 f	S 6 f
L 5 a Turns to bell (Cattell)	L 6 a Babbling increases in variety (Lillywhite)
L 5 b discriminates strangers (Bayley)	L 6 b Responds to angry tone if coupled with gestures (Lillywhite)
L 5 c Responds to voices (Lillywhite)	L 6 c
L 5 d	L 6 d
L 5 e	L 6 e Crying not rhythmic (Tape)
L 5 f	L 6 f Rising and falling inflection (Tape)
L 5 g	L 6 g "Talks" (Doll)
L 5 h	L 6 h

CODE: Example: G 16 b

- a task in an area
- the level of the task
- the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 7 a Hands very active (Gesell)	G 8 a Creeps on hands and knees (Bayley)
G 7 b May bear weight on hand (Illingsworth)	G 8 b Hand preference (Cattell)
G 7 c Bounce with enjoyment (Illingsworth)	G 8 c Sits on floor unsupported
G 7 d Sits on floor with support (Illingsworth)	G 8 d
G 7 e	G 8 e
F 7 a Eyes lead (Bayley)	F 8 a Attains ring (Cattell)
F 7 b Secures 2 cubes (Cattell)	F 8 b Secures pellet (Cattell)
F 7 c One hand approach (Gesell)	F 8 c Bangs spoon (Cattell)
F 7 d Pulls peg from peg-board (Cattell)	F 8 d
F 7 e Thumb opposition (Bayley)	F 8 e
S 7 a Attracts attention by coughing (Illingsworth)	S 8 a
S 7 b Private Exploration (Gesell)	S 8 b
S 7 c	S 8 c
S 7 d Sucks food from spoon (Gesell)	S 8 d Feeds self crackers (Gesell)
S 7 e Chewing begins (Gesell)	S 8 c Bites and chews (Gesell)
S 7 f	S 8 f
L 7 a Smiles at mirror (Cattell)	L 8 a Recognizes familiar sounds (Bayley)
L 7 b Responds to gestures (Lillywhite)	L 8 b Localizes gross sounds (Bayley)
L 7 c Rejects demands for imitation (Lillywhite)	L 8 c Increased tongue tip (Lillywhite)
L 7 d	L 8 d Increased babbling with gestures (Lillywhite)
L 7 e	L 8 e Combines 2 syllables (Cattell)
L 7 f Crows (Lillywhite)	L 8 f Babbling rhythmic (Tape)
L 7 g	L 8 g Repetitious syllables (Bayley)
L 7 h	L 8 h

CODE: Example: G lo b

. a task in an area
the level of the ta
the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 9 a Raises to sitting position (Gesell)	G 10 a Pulls self to feet (Bayley)
G 9 b Crawls backward (Illingsworth	G 10 b Walks holding on (Bayley)
G 9 c Sits on floor - recovers balance (Illingsworth)	G 10 c Prone to sitting and v. v. (Illingsworth)
G 9 d	G 10 d Stands momentarily (Doll)
G 9 e	G 10 e Rocks or creeps when prone (Gesell)
F 9 a Rings bell (Cattell)	F 10 a Holds own bottle (Gesell)
F 9 b Pincer grasp (Bayley)	F 10 b Crude release (Ayers)
F 9 c	F 10 c Attempts 3rd cube (Cattell)
F 9 d	F 10 d Bangs 2 cubes mid-line (Bayley)
F 9 e	F 10 e
S 9 a Arms in front of face (Illingsworth)	S 10 a Pattycakes (Bayley)
S 9 b	S 10 b
S 9 c	S 10 c Toilet Training begins (Gesell)
S 9 d Drinks from cup w/spill (Gesell)	S 10 d
S 9 e Finger feeds (Gesell)	S 10 e Solid foods (Gesell)
S 9 f Holds arms out (Lillywhite)	S 10 f
L 9 a Adjusts to words (Cattell)	L 10 a Comprehends "no no" (Lillywhite)
L 9 b Reads faces and gestures (Cattell)	L 10 b Understands "patty-cake" (Lillywhite)
L 9 c Cries to get attention (Lillywhite)	L 10 c Looks around corner for object (Lillywhite)
L 9 d	L 10 d
L 9 e Imitates sounds (Cattell)	L 10 e Waves bye-bye (Bayley)
L 9 f A-he syllable crying (Tape)	L 10 f Mama, dada not distinct (Bayley)
L 9 g	L 10 g Imitates speech sounds (Gesell)
L 9 h	L 10 h

CODE: Example: G 10 g

- a task in an area
- the level of the task
- the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 11 d Strikes doll (Cattell)	G 12 a Stoops and recovers (Denver)
G 11 b Standing, lifts foot (Illingsworth)	G 12 b Pulls self to rail (Gesell)
G 11 c	G 12 c Plantigrade creeping (Gesell)
G 11 d	G 12 d Sits and pivots (Ayers)
G 11 e	G 12 e Walks with hand held (Bayley)
F 11 a Puts objects in container (Illingsworth)	F 12 a Release (Gesell)
F 11 b	F 12 b Chews and swallows (Doll)
F 11 c	F 12 c Tower of cubes (Bayley)
F 11 d	F 12 d Marks with pencil (Cattell)
F 11 e	F 12 e
S 11 a Enjoys audience (Bayley)	S 12 a Plays up and down (Illingsworth)
S 11 b Repeats perf. laughed at (Illingsworth)	S 12 b Mouthing nearly stopped (Illingsworth)
S 11 c	S 12 c Toilet training earnestly (Gesell)
S 11 d Licks ice cream cone (Bayley)	S 12 d Fingerfeeds part of meal (Gesell)
S 11 e Does not drool (Doll)	S 12 e Holds spoon (Gesell)
S 11 f	S 12 f Cooperates in dressing (Gesell)
L 11 a Anticipates events (Piaget)	L 12 a Understands "no" (Cattell)
L 11 b Anticipates body movements (Illingsworth)	L 12 b Knows immediately turns to own name (Engels)
L 11 c Listens to isolated word (Lillywhite)	L 12 c Understands command with gestures (Engels)
L 11 d	L 12 d Recognizes familiar 20 feet (Engels)
L 11 e Says one word (Cattell)	L 12 e Mama, Dada distinct (Denver)
L 11 f Shakes head for "no" (Lillywhite)	L 12 f Indicates wants (Bayley)
L 11 g Imitates new sounds (Lillywhite)	L 12 g Two additional words (Cattell)
L 11 h Imitates correct no. syllables (Lillywhite)	L 12 h Two dysyllables (da-da) (Bayley)

CODE: Example: G 16 b

- a task in an area
- the level of the task
- the area of the task

G = Gross Motor
F = Fine Motor
S = Social
L = Language

G 14 a Walks fairly well (Gesell)	G 16 a Walks well (Doll)
G 14 b Starts and stops (Ayers)	G 16 b Imitates housework (Denver)
G 14 c Toddles about (Ayers)	G 16 c Seats self in chair (Illingsworth)
G 14 d Falls by collapsing (Gesell)	G 16 d Creeps upstairs (Gesell)
G 14 e Overcomes simple obstacles (Doll)	G 16 e)
F 14 a Puzzles in holes (Bayley)	F 16 a Round block in form board (Bayley)
F 14 b Pulls and replaces peg (Cattell)	F 16 b Twoer 2 cubes (Bayley)
F 14 c	F 16 c Puts beads in box (Cattell)
F 14 d	F 16 d Scribbles in imitation (Cattell)
F 14 e	F 16 e
S 14 a	S 16 a Carries familiar objects (Doll)
S 14 b	S 16 b
S 14 c	S 16 c Indicates when wet (Illingsworth)
S 14 d Fingerfeeds self (Gesell	S 16 d Manipulates cup (Gesell)
S 14 c Turns spoon (Gesell	S 16 e Dips spoon in dish (Gesell)
S 14 f Pulls off socks	S 16 f Able to unzip large zipper
L 14 a Knows names of objects he uses (Lillywhite)	L 16 a
L 14 b Names few people (Lillywhite)	L 16 b
L 14 c	L 16 c
L 14 d	L 16 d
L 14 e Three-words (Cattell)	L 16 e Five word vocabulary (Cattell)
L 14 f Imitates words (Bensberg)	L 16 f Indicates wants assertively (Bayley)
L 14 g	L 16 g
L 14 h	L 16 h

CODE: Example: G 16 b

- a task in an area
- the level of the task
- the area of the task

G = Gross Motor
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L = Language

G 18 a Hurls ball (Bayley)	G 21 a Walks upstairs with both feet (Bayley)
G 18 b Walks sideways (Bayley)	G 21 b Kicks ball (Gesell)
G 18 c Runs stiffly (Denver)	G 21 c Down from adult chair (Gesell)
G 18 d Pulls wheeled toy (Illingsworth)	G 21 d
G 18 e	G 21 e
F 18 a Tower 3 cubes (Bayley)	F 21 a Square in form board (Cattell)
F 18 b Scribbles spont. (Cattell)	F 21 b Six pegs in peg-board (Bayley)
F 18 c Walks into ball (Gesell	F 21 c Closes oblong box (Bayley)
F 18 d Turns pages of book (Gesell)	F 21 d Unwraps candy (Doll)
F 18 e	F 21 e
S 18 a Blows out candle (Jones)	S 21 a Goes about yard (Jones)
S 18 b Plays with other children	S 21 b
S 18 c Success at toilet (Gesell)	S 21 c
S 18 d Holds spoon in pronation (Gesell)	S 21 d Drinks from cup without spill (Gesell)
S 18 e Self feeding (Doll)	S 21 e
S 18 f Takes off mittens (Jones)	S 21 f Removes Garments (Jones)
L 18 a Points to nose etc. (Cattell)	L 21 a Attempts to follow direction (Cattell)
L 18 b Ident. picture (Cattell)	L 21 b Knows 5 body parts (Binet)
L 18 c Knowes 3 body parts (Binet)	L 21 c
L 18 d Fluent jargon (Cattell)	L 21 d
L 18 e Words when crying (Tape)	L 21 e Joins 2 words (all gone) (Cattell)
L 18 f Vocabulary 10 words (Gessell	L 21 f Identifies 2 pictures by name (Cattell)
L 18 g	L 21 g Talks in short sentences (Doll)
L 18 h	L 21 h Vocabulary 20 words (Gesell)

CODE: . Example G 16 b

- a task in an area
- the level of the task
- the area of the task

G = Gross Motor.
F = Fine Motor
S = Social
L = Language

G 24 a Trhows ball overhand	G 27 a Jumps in place (Doll)
G 24 b Runs rather than walks	G 27 b
G 24 c Squats on floor (Gesell)	G 27 c
G 24 d Kicks large ball (Gesell)	G 27 d
G 24 e Picks object off floor	G 27 e
F 24 a Three hole form board (Binet)	F 27 a Tower of 5 cubes (Cattell)
F 24 b Tower 4 blocks (Binet)	F 27 b Imitates vertical line (Cattell)
F 24 c Turns single page (Gesell)	F 27 c Turns door knot (Illingsworth)
F 24 d Folds paper (Bayley)	F 27 d Unscrews lid (Illingsworth)
F 24 e Unwraps coverings (Doll)	F 27 e
S 24 a Initiates own play (Gesell)	S 27 a Parallel play (Doll)
S 24 b	S 27 b Initiates own play of others (Doll)
S 24 c Dry at night	S 27 c Verbalizes toilet needs (Gesell)
S 24 d	S 27 d Eats with fork (Doll)
S 24 e	S 27 e
S 24 f Takes off shoes (Gesell)	S 27 f Removes own coat (Doll)
L 24 a Follows simple commands (Binet)	L 27 a
L 24 b Identifies 4 pictures (Binet)	L 27 b
L 24 c Refers to self by name (Gesell)	L 27 c
L 24 d	L 27 d
L 24 e Nouns & verbs predominate (Denver)	L 27 e Repeats 2 digits (Cattell)
L 24 f Names familiar objects (Binet)	L 27 f Initiates motor activity from verbal request (Binet)
L 24 g Echolalia (Doll)	L 27 g
L 24 h	L 27 h

CODE: Example: G 16 b

- a task in an area
- the level of the task
- the area of the task

G = Cross Motor
F = Fine Motor
S = Social
L = Language

G 30 a Rides trike (Illingsworth)	G 36 a Balances one foot 1 sec. (Gesell)
G 30 b Broad jumps (Bayley)	G 36 b Climbs about (Doll)
G 30 c Avoids simple hazards (Doll)	G 36 c Walks upstairs altern. feet (Bayley)
G 30 d Walks on tiptoe (Gesell)	G 36 d Walks downstairs both feet (Bayley)
G 30 e	G 36 e Kicks ball well (Gesell)
F 30 a Drinks from straw (Gesell)	F 36 a Strings 4 beads (Binet)
F 30 b Holds crayon (Gesell)	F 36 b Draw vert. line and circle (Cattell)
F 30 c Unlaces shoes (Bayley)	F 36 c Builds bridge (Cattell)
F 30 d	F 36 d Cuts with scissors (Doll)
F 30 e	F 36 e
S 30 a Wash and dry hands (Gesell)	S 36 a Understands taking turns (Gesell)
S 30 b	S 36 b Cooperates with child (Doll)
S 30 c Asks to go to toilet (Gesell)	S 36 c
S 30 d	S 36 d Feeds self (Gesell)
S 30 e	S 36 e
S 30 f Dresses with supervision	S 36 f Buttons & unbuttons (Gesell)
L 30 a Identifies object by use (Cattell)	S 36 a Relates experiences (Doll)
L 30 b Understands "one" (Cattell)	L 36 b Picture memory (Binet)
L 30 c	L 36 c Can be "reasoned with" (Bensburg)
L 30 d	L 36 d Knows sex (Gesell)
L 30 e Short sentences (Doll)	L 36 e First and last name (Denver)
L 30 f Naming predominates (Bayley)	L 36 f Follows directions with 2 prepositions (Gesell)
L 30 g Counts to two (Lillywhite)	L 36 g Ten objects from pictures (Binet)
L 30 h	L 36 h repeats 3 digits (Binet)

CODE: Example: G 16 b

- a task in an area
- the level of the task
- the area of the task

G = Gross Motor
F = Fine Motor
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L = Language

G 42 a Balances one foot 2 sec. (Gesell)	G 48 a Hops on one foot (Bayley)
G 42 b	G 48 b Catches objects (Doll)
G 42 c	G 48 c Skips on one foot (Gesell)
G 42 d	G 48 d Jumps (running) (Gesell)
G 42 e	G 48 e Balances 1 foot 4-8 sec. (Gesell)
F 42 a Solve picture puzzles (Cattell)	F 48 a Laces shoes (Denver)
F 42 b Sorts by color (Cattell)	F 48 b Copies cross (Binet)
F 42 c 1/4" peg in peg-board (Cattell)	F 48 c String 7 beads 2 minutes (Cattell)
F 42 d traces diamond (Gesell)	F 48 d Draws recog. picture (Denver)
F 42 e	F 48 e Buttons small buttons (Gesell)
S 42 a Cooperative play (Doll)	S 48 a Plays simple games (Gesell)
S 42 b Helps household tasks (Doll)	S 48 b
S 42 c Cares for self at toilet (Doll)	S 48 c
S 42 d	S 48 d
S 42 e	S 48 e
S 42 f Puts on shoes (Gesell)	S 48 f Dresses without supervision (Gesell)
L 42 a Knows cold, hunger (Denver)	L 48 a Recog. 3 out of 4 colors (Denver)
L 42 b Knows "longer" (Binet)	L 48 b Knows why we have stoves (Binet)
L 42 c Obeys simple comm. (Binet)	L 48 c Knows opposites (Denver)
L 42 d Knows "heaviest" (Gesell)	L 48 d Names objects from memory (Binet)
L 42 e Relates story from picture (Binet)	L 48 e Repeats simple sentences (Binet)
L 42 f Counts to 3 (Lillywhite)	L 48 f Asks "why" (Gesell)
L 42 g	L 48 g
L 42 h	L 48 h

CODE: Example: G 16 b

- a task in an area
- the level of the task
- the area of the task

G = Gross Motor
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S = Social
L = Language

(Name)

B. D. _____ Entry

(Etiology)

(Date of Test)

(Mean Dev. Age)

		1 Mo.	2 Mo.	3 Mo.	4 Mo.	5 Mo.	6 Mo.	7 Mo.	8 Mo.	9 Mo.	10 Mo.	11 Mo.	12 Mo.	14 Mo.	15 Mo.	18 Mo.	21 Mo.	24 Mo.	27 Mo.	30 Mo.	36 Mo.	42 Mo.	48 Mo.	Aver.
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	b.																							
	c.		+																+					
	d.		+									+												
	e.		+	+																				
FINE MOTOR	a.																							
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SOCIAL	a.								+															
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Feed	a.																							
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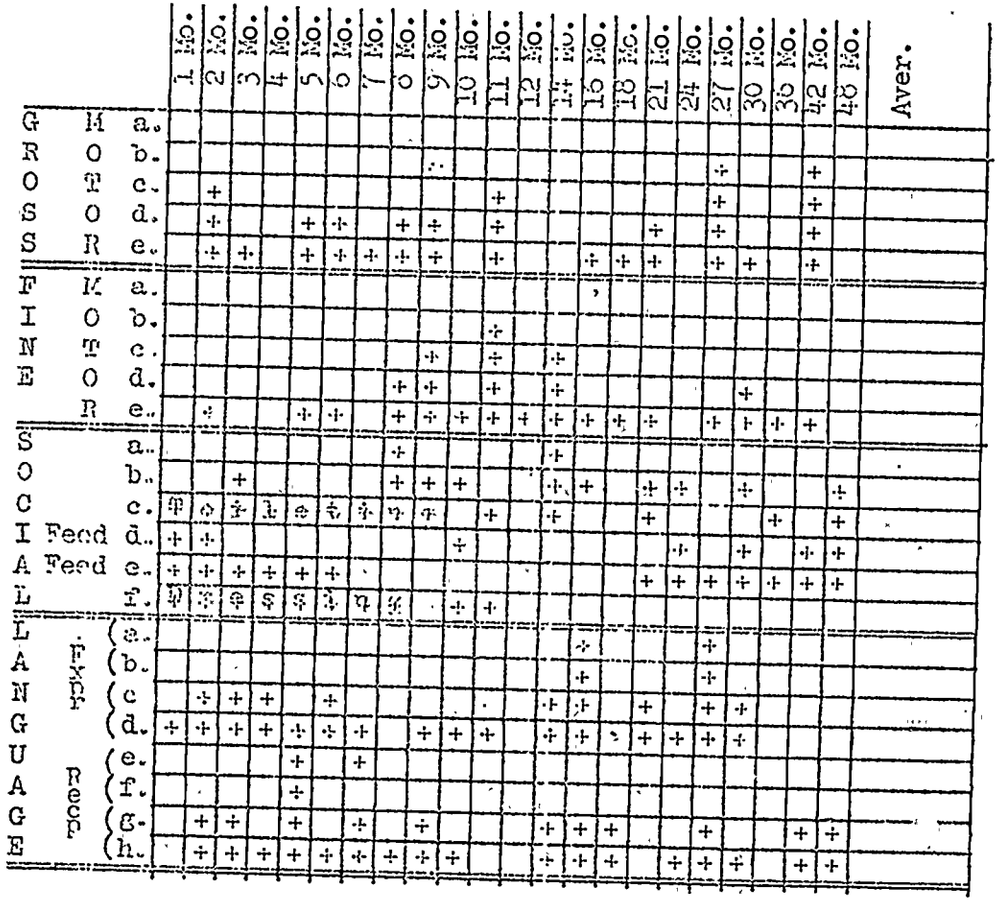

(Name)

B. D. Entry

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			1 Mo.	2 Mo.	3 Mo.	4 Mo.	5 Mo.	6 Mo.	7 Mo.	8 Mo.	9 Mo.	10 Mo.	11 Mo.	12 Mo.	14 Mo.	15 Mo.	18 Mo.	21 Mo.	24 Mo.	27 Mo.	30 Mo.	36 Mo.	42 Mo.	48 Mo.	Aver.
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C		c.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		+		+			+				+		+	
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L		f.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		+	+												
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(Name)

B. D. Entry

(Etiology)

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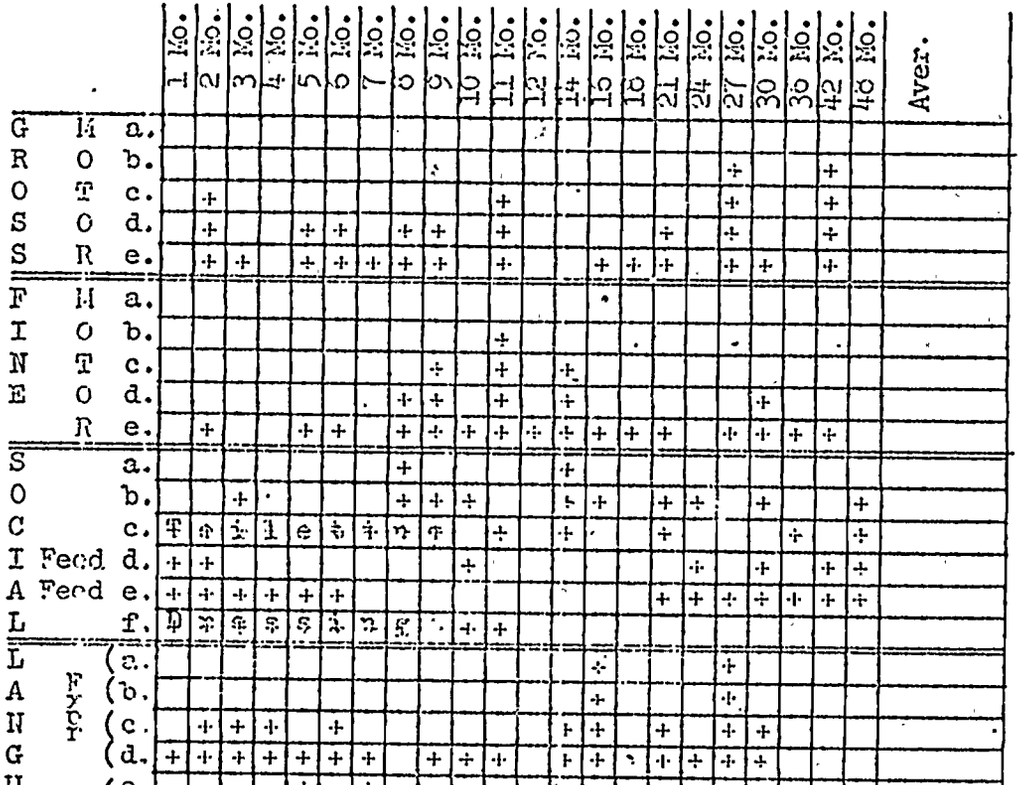

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Screening By AER With A Magnetic Tape Recorder - Practical Consideration

The availability of a quantitative, reliable hearing screening technique for high risk newborns and infants is a fundamental problem. One of the most promising techniques in the armamentarium of available procedures is the averaged evoked EEG response (AER). There seems to be universal agreement that when relatively high level acoustic stimuli are used, as suggested by a screening procedure, the evoked response method increases in precision and reliability. Observation and behavioral measures when obtained also help distill the significant content from the EEG measure.

Substantive problems in the areas of accuracy (constancy of data in terms of stimulus parameters and recording technique), automation (reduction of operator training and effort), interpretation (significance of readings in terms of presence or absence of response), and economics (costs in required equipment) have precluded the widespread use of the EEG method except in large medical institutions and select diagnostic centers. Some patients may be fortunate enough to be born in or travel to these places. However, only a small number of high risk infants and children are benefiting from the early identification provided at these limited locations. The "diagnostic" capability of AER has recently been applied to a pair of twin girls who had not fully separated at birth. They were born joined at the head (Peltzman, et al., 1970) and a preoperative appraisal of their individual sensory and CNS development was obtained. This extended application of AER is highly desirable but generally implies a high sophistication of equipment.

The realization that this need can be met grew out of our past work on

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The realization that this need can be met grew out of our past work on

a digital computer approach to EEG analysis. Our present efforts are motivated by the fact that several other large medical centers besides ours possess digital computers and either have, or can be given programs appropriate for obtaining averaged evoked EEG responses. Provided that some interface unit between the high risk nursery remotely located away from the computer can be developed within the practical considerations enumerated above, then theoretically a feedback link can be established between the remote station and existing data reduction computer facilities.

In making an individual EEG available for processing by a digital computer it is first necessary to convert the analog data into digital form. We have been collecting EEG data in the newborn nursery at Moffitt Hospital, University of California, San Francisco, with a tape recorder for subsequent analog-to-digital conversion and computer processing of evoked potentials at the adjoining Langley Porter Neuropsychiatric Institute. For EEG recording it is necessary to preserve DC or low frequency information. Magnetic tape recording is a convenient way to store this information but typical commercial audio recorders do not respond to signals below 20 C/S. To be recorded, low frequency data must be converted to a form which any ordinary tape recorder can handle. Expensive FM tape recording equipment usually contains the electronics to fulfill this requirement. However, because of its high price tag, complexity of operation and bulkiness, the FM recorder is subject to admitted improvement.

This proposal describes a small, compact system which we have recently developed as a prototype. At the heart of the system is an analog-to-FM modulator and FM to analog demodulator designed for tape recording and

reproduction of signals from DC to 1 KC. The converter is used with a miniature commercial cassette tape recorder. This replaces the elaborate, complex and expensive FM tape recorders widely used to record EEG data. The unit further contains a small size bio-amplifier with fixed gain and no adjustments required for the recording of EEG potentials. Two small, non-polarizable plastic disc electrodes with flexible leads provide the pickup of EEG activity. Also contained are solid state circuits for accurate timing and audio oscillator for producing a warble tone acoustic signal through a small loudspeaker. The acoustic tone has a center frequency of approximately 2 KC with about a 90 dB output. Care in circuit design and construction technique has resulted in an unusually small size of the entire system. The transistorized circuits allows the use of a small, rechargeable battery supply which has an extended life range. Owing to stable battery operation the system is relatively free of artifact influences and baseline shifts. This allows quality recordings to be obtained in electrically unshielded and otherwise noisy nurseries. It requires little if any maintenance, is very compact, lightweight (approx. 14 lbs.) and extremely portable. Multiple units are easily assembled and can be matched for response characteristics.

The prototype unit has effectively demonstrated that an EEG hearing screening test can be made in the hands of an untrained individual within several minutes. The actual operation of the system begins in the newborn nursery where any untrained person places the self adhering electrodes - one on top of the head and the other in the earlobe of the infant. The electrodes are plugged into their appropriately matched colored pin connectors. One single button is pressed to activate the system. The subsequent recording

sequence is now switched entirely automatic as follows:

1. An indicator light signals the operator to talk into a microphone and identify the infant by voice commentary and the tape is then automatically advanced.

2. A second indicator light signals that EEG recording has automatically begun (50 to 100 "control" or no-signal epochs are recorded). This allows us to compare what happened before the stimulus event and after the presentation of the tone.

3. A third indicator light alerts the operator that sound will begin (50 to 100 signal epochs are recorded) at the termination of which the tape is advanced and the unit automatically deactivated. The first light indicator will read "Identify" asking the operator for voice commentary. The next two lights are automatically programmed to read "Record" and "Sound" respectively, and merely caution the operator that the unit is recording correctly and it should not be moved during this period. Approximately ten records can be placed on a single cassette. It is them removed and placed in a self addressed container which is supplied for mailing to the University of California, San Francisco for computer analysis.

The estimated breakdown of time involved from the start of the procedure to the differential diagnosis is as follows:

To identify and record patient's EEG on magnetic tape cassette, including application of electrodes..... 5 minutes

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Store records of 10 infants and mail cassette to University of California, San Francisco for data reduction.

To playback magnetic tape cassette through a matched discriminator into Digital Equipment general purpose computer for recovery of the original EEG data and analysis..... 5 minutes

To plot a permanent record of the final averaged response and automatically obtaining a digital printout of the waveform characteristics (latency and amplitude features)..... 3 minutes

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Signal records scored and judged against control records for presences or absence of response and report mailed back to originating nursery staff. Infants who fail screen will be held in computer memory for followup and update.

This approach to screening gives the important added benefit of allowing a systematic identification of high risk infants who fail to respond to the screen. A card file or control panel board can be maintained for such infants and retests suggested at subsequent dates. Also, based on initial test results or retests, it may be recommended that the infant be brought to the University of California, San Francisco, for example, for more extensive testing. It is further feasible to write a computer program which has a built-in update function whereby the followup information is periodically reviewed to assure continued surveillance of suspected infants, ascertain their current residence, and prevent their loss to followup.

An extension of the strategy to provide a simple, inexpensive screening technique for general field use is to screen several infants at the same time. Often in our attention to the details of applying sophisticated research methodology to identify hearing impaired infants we tend to ignore

the greater goal which motivates the particular study with which we are involved - to identify the largest number of high risk infants at the lowest possible dollar cost. It is conceptually possible and practically probable to utilize our present equipment to do multiple screening using evoked responses. Since multiple testing is currently under study by us, the added benefit of some simple behavioral response indicator can further be evaluated to provide additional reliability of the EEG test results.

REFERENCES CITED

Peltzman, P.; Ostwald, P.F.; Yeager, C.L., and Manchester, D.; Sensory-vocal studies of a twin pair with cephalic union. Neuropadiatrie, 2, 79-97, 1970.