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TITLE OF THESIS/*TITRE DE LA THÈSE* An Observational Instrument to Describe the Individualized Instruction in Motor Skills of Moderately Mentally Retarded Children in the Preschool Play Programme

UNIVERSITY/*UNIVERSITÉ* University of Alberta

DEGREE FOR WHICH THESIS WAS PRESENTED/*GRADE POUR LEQUEL CETTE THÈSE FUT PRÉSENTÉE* Master of Education

YEAR THIS DEGREE CONFERRED/*ANNÉE D'OBTENTION DE CE GRADE* 1978

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AN OBSERVATIONAL INSTRUMENT TO DESCRIBE THE INDIVIDUALIZED INSTRUCTION IN MOTOR SKILLS OF MODERATELY MENTALLY RETARDED CHILDREN IN THE PRESCHOOL PLAY PROGRAMME

by

(C) Marjorie Ellen Whincup

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF ELEMENTARY EDUCATION

EDMONTON, ALBERTA

SPRING, 1978

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "An Observational Instrument to Describe the Individualized Instruction in Motor Skills of Moderately Mentally Retarded Children in the Preschool Play Programme"

submitted by Marjorie Ellen Whincup

in partial fulfilment of the requirements for the degree of Master of Education.

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Date December 15th, 1977

ABSTRACT

The focus of this study was the development of an observational instrument with which to describe the individualized teaching procedures within the Preschool Play Programme for Moderately Mentally Retarded Children conducted at the University of Alberta. The Prep Programme, as it is more frequently called, was begun in 1973 as a research project of the Department of Physical Education. It was established because of the recognized need for the development of instructional programme materials designed to improve the gross motor play skills of preschool children who are moderately mentally retarded. Crucial to the development of such a curriculum programme is the ability to monitor the implementation of the special teaching strategies adopted.

To describe the individualized instructional episodes it was necessary to observe and consider the events that do and logically can occur. To identify the significant features it was necessary to consider the characteristics of moderately mentally retarded children and the theoretical constructs which have influenced the development of the teaching strategies within the programme.

The research began with a pilot study in which video-tape recordings were made of individualized instructional episodes. This video-taped material permitted a close examination of the unique events in the teaching/learning situation. Categories were selected on the basis of these

events and with reference to principles of applied behavioural analysis and motor skill acquisition. Definitions were formulated and coding rules established.

In order to test the instrument video-taped recordings were made of eighteen instructional episodes. Three teachers participated. Video-tapes were made of the development of one play skill by each teacher over three instructional episodes. On the completion of this series of three episodes a different skill with a different child was similarly recorded.

The video-taped material was then divided into discrete 30 second segments. Eighteen such segments were randomly selected, lengthened by 15 seconds and edited on to a master tape to be used to assess inter-observer agreement.

From the remaining video-taped material a further eighteen 30 second instructional segments were selected to train observers.

The instrument was tested for accuracy and objectivity by the calculation of inter-observer agreement between each of three trained observers and a criterion observer: the researcher.

Agreement was calculated on each of the major category groupings of Antecedents, Behaviours, Consequences and Subscripts. With the exception of the Behaviour categories, the mean agreement between all observer pairs was well above the 80 percent set down as a guideline for evaluation. Inter-observer agreement was then calculated on each individual

category and an analysis made of the types of problems the observers experienced.

ACKNOWLEDGEMENTS

The writer wishes to express sincere appreciation to the many people who have made this study possible.

Special thanks must go to Professor J. Vallance, thesis supervisor, for her continuous support and encouragement; to Professor A. E. Wall and Dr. J. Watkinson for their very practical help and guidance; to Dr. W. Wilde and Dr. G. Kysela for their suggestions.

Warmest gratitude is expressed to the three observers, Joyce Rice, Val Hunt and Donna Wasson who generously gave so much of their time and effort.

A debt is owed to the three teachers who endured video-taping so graciously and showed genuine interest in the study; to the staff in the Audio-Visual Centre for their willing cooperation; to Alex Hillyard and Sue Duxbury for sharing their experience so generously.

Finally, to the friends who sustained me - thank you.

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CHAPTER I

THE PROBLEM AND ITS SETTING

The focus of this study was the development of an observational instrument with which to describe the teaching procedures within the Preschool Play Programme for Moderately Mentally Retarded Children conducted at the University of Alberta.

The Prep Programme, as it is more frequently called, was begun in 1973 as a research project of the Department of Physical Education. It was established because of the recognized need for the development of instructional programme materials designed to improve the gross motor play skills of preschool children who are moderately mentally retarded (Watkinson and Wall, 1977).

The importance of free play activity for the preschool child is well recognized. It contributes greatly to his social, emotional, cognitive and motor development, and is the means through which a large part of his learning is acquired. For the non-retarded child, the skills necessary for play seem to be acquired relatively easily, as a natural consequence of his interactions with the environment. Typically, by the age of four and five a wide range of skills have been developed and are used in free play activity.

In contrast, however, the mentally retarded child at the same age tends to have poor motor ability, few play skills and spends a large proportion of his time in idleness (Noble, 1975).

Watkinson (1977) states the preschool mentally retarded child:

> demonstrates a lag in his play behaviour that is comparable to the lag displayed in motor development (Carr, 1975), physical fitness (Stein, 1963), and other movement characteristics (Francis and Rarick, 1960). (p. 2)

During the preschool years the lag in all areas of development tends to increase. This has led to a growing recognition of the importance of early exposure to structured educational experiences for those children who fail to make adequate developmental gains in motor, language and other skills within the home environment. It is this recognition that has led to the establishment of the Prep and other programmes and the reason for the increasing number of retarded children taking part.

Rationale for an Observational Instrument to Describe Individualized Instruction in the Prep Programme

The goal of the Prep Programme is to teach moderately mentally retarded children the skills needed for play (Watkinson, 1976). Within the programme the children are introduced to a stimulating play environment and much of the time is spent in free play activity. However, at appropriate intervals the child is given brief periods of individual instruction in prescribed motor skills. The skills that have been selected are those considered to be normally used by non-retarded preschool children. Each skill has been analysed and a sequence of skill progressions defined. These have been written as behavioural objectives

(Watkinson, 1976).

The moderately mentally retarded children participating in the programme exhibit wide individual differences in their motor ability and play behaviour and, therefore, an individual instruction procedure has been adopted. Each individual child's play skills are assessed according to what the child can do and what he actually chooses to do with some frequency. On the basis of this assessment, one or more play skills are prescribed for individual instruction. Progress in the teaching/learning situation is recorded daily and evaluated regularly.

In summary, it may be said that the Prep Programme fulfils a dual purpose. It not only provides a direct service to a group of children within the community but it also provides a laboratory for the development and examination of instructional materials and teaching strategies (Watkinson and Wall, 1977).

Rosenshine and Furst (1973) indicate that settings in which special instructional programmes are being used are settings for descriptive, correlational and experimental research. The same authors speak of a research loop which would seem to have significance for the Prep Programme. The research loop involves:

1. training teachers to use programme materials,
2. using an observational system to describe the instructional activities with particular reference to behaviours considered important for the effective implementation of the programme,

3. studying the relationship between instructional activities and student progress,
4. modifying teacher training procedures and/or materials on the basis of these findings,
5. initiating new studies to determine the effects of change, and
6. determining the new relationship between instructional activities and student progress.

A programme specific observational instrument can be used as a research tool to collect observable data. It can also be used to provide feedback to teachers as to their own teaching behaviours and achievements (Simon and Boyer, 1970). Training in process observation is now used in many teacher education programmes. There is an increasing awareness of the value of providing teachers with a tool with which they can monitor their own teaching behaviours and thus develop and control those behaviours (Simon and Boyer, 1970).

In summary it may be said that an observational instrument designed specifically for the Prep Programme may be used in three ways.

It may be used to:

1. Monitor the teaching strategies employed by the teachers,
2. Study the relationship between instructional activities and student progress, and
3. Provide feedback to participating teachers, thus

helping them to develop their own teaching skills.

Statement of the Problem

The purpose of this study was the development of an accurate and objective observational instrument to describe the behaviour exhibited within the individualized instructional situation in the Preschool Play Programme for Moderately Mentally Retarded Children at the University of Alberta.

The objectivity and accuracy of the instrument was measured by the calculation of inter-observer agreement between each of three observers and a criterion observer.

A figure of 80 percent was set as a guideline for the evaluation of inter-observer agreement for:

1. Antecedents
   Behaviours
   Consequences
   Subscripts
2. Individual categories within the above category groupings.

Delimitations

1. The study focussed on the development of an observational instrument to describe aspects of teacher and pupil behaviour in the individualized instructional episodes in the Prep Programme at the University of Alberta.
2. The instrument was designed to code:
   1) selected verbalizations by the teacher and any

physical contact with the child that accompanied these verbalizations, and

2) selected physical responses by the child.

3. The observational instrument was designed to be used to code video-tape recordings of the individualized instructional episodes.

4. The teachers who participated were those working in the Prep Programme. All of the teachers were third year Physical Education students who had undergone a course in the Prep Programme materials and teaching strategies. All had had a similar preparation and experience in teaching motor skills to moderately mentally retarded preschool children.

5. The play skills that were taught were selected by the teachers from those prescribed for each individual child according to administrative procedures of the programme. The skills taught were jumping down, kicking, catching, bouncing and reverse hanging from a bar.

6. The inter-observer agreement analysis was calculated using the investigator as the criterion observer. Inter-observer agreement between trained observers was not used in this study.

Limitations of the Study

1. The teaching episodes may not have been entirely typical of those normally occurring in the programme. There were several reasons for this.

a) Teachers were aware that they were being video-taped and therefore some reactivity may have occurred.

b) A cordless microphone had to be worn and a transmitter carried in a pocket by each teacher.

c) The removal of each child to a suitable position for video-taping at the time required may have had some effect on the child's behaviour. This is contrary to the recommendation in the Prep Manual that teachers should use discretion as to when the individualized instruction is given so as not to interrupt the child in any self-initiated constructive play experiences.

2. The one-way glass partition through which the video-taping was done was an effective mirror. This was observed to be distracting to one of the children. However, the glass partition was a permanent feature of the environment and reflected the activity of a large part of the room.

Terminology

1. Prep Programme: The Preschool Play Programme for Moderately Mentally Retarded Children conducted at the University of Alberta (Watkinson, 1976).

2. Instructional episode: A variable period of time in which the teacher helps the child to develop a motor skill. The instructional episodes in this study had an average length of 5 minutes and 25 seconds. The

instructional episode usually ends when the child's attention can no longer be maintained or the teacher deems it suitable to finish.

3. Individualized teaching situation: This represents the teaching situation in which one teacher instructs one child on a skill that has been prescribed on the basis of an assessment of the child's skill repertoire.

4. Teaching segment: A 30 second segment edited from an instructional episode.

5. Moderately retarded (trainable): Children with a measured intelligence quotient between 30 and 50 on a standardized intelligence test.

CHAPTER II

REVIEW OF THE LITERATURE

Observational Instruments

There has been an increasing interest in the development and use of observational instruments. "Until the last decade few tools have been available for the study of dynamic, ongoing interaction between people" (Simon and Boyer, 1970, p. 1). However, observational instruments now exist in abundance (Rosenshine and Furst, 1973).

Observational instruments have been used in many different settings, including educational, commercial, industrial, hospital and corrective institutions, group dynamics courses and workshops. They have been developed to describe many aspects of human interaction and behaviour such as the social-emotional climate in the classroom (Adams-Biddle, 1970; Flanders, 1970), non-verbal communication (Buehler-Richmond, cited in Simon and Boyer, Vol. B, 1970), pupil questioning (Dodl, cited in Simon and Boyer, Vol. B, 1970) and teacher behaviour (Robbins, 1973).

Flanders (1970) states:

> An observational system is essentially a process of encoding and decoding, i.e., categories for classifying statements are established, a code symbol is assigned to each category, and a trained observer records data by jotting down code symbols. Decoding is the reverse process: a trained analyst interprets the display of coded data in order to make appropriate statements about the original events which were encoded, even though he may not have been present when the data was collected. (p. 29)

There appear to be three elements that differentiate the various observational instruments: the scope and specificity of categories, the format used to code individual events, and the recording procedure.

Categories

Simon and Boyer (1970) refer to categories as "descriptors of behaviour" (p. 33). When selecting categories the developer must determine the type of information that is required (Siedentop, 1976). It is impossible to record all that happens in an instructional situation and therefore the key information must be retained so that meaningful observations may be made (Robbins, 1973).

Important decisions must be made as to the amount of information that is required. The more categories that are included in an observational instrument, the more information that is gained. However, as the number of categories are increased the more difficult the instrument becomes to both learn and administer (Simon and Boyer, 1970). It is clearly necessary to reach a compromise between the amount of information preserved and the facility with which it can be gained. The Flanders System (1966), the most widely known and used observation system, (Simon and Boyer, 1970) uses ten categories.

Robbins (1973) states that:

> Systems have been developed using 30 or more categories. These systems appear to be too unwieldy for general use unless they are based on a checklist approach, rely on expert observers, use audio or video tapes which can be replayed many times, or use duplicated categories. (p. 20)

Coding

A variety of coding methods can be found in the literature. Flanders (1970) used a number coding method in which each of his ten categories were identified by number and recorded on a matrix. Gallagher (cited in Simon and Boyer, Vol. A, 1970) used a three digit number system in which a number not only identified a category but its position indicated the dimension of the three dimensional system in which it fell. The Ascher-Gallagher and Simon-Agazarian systems (cited in Simon and Boyer, Vol. A, 1970) used mnemonic abbreviations, while Hall (cited in Simon and Boyer, Vol. B, 1970) made use of an iconic code. Whichever code symbols are adopted it is important that they are easy to learn and use.

Recording Procedure

The developer of an observational system must also decide what will be the unit of analysis. The majority of the seventy nine observational instruments cited in Simon and Boyer (1970) use a category change to prompt a recording. Many of these instruments however use the category change procedure in conjunction with other coding units such as speaker change, topic change, or time units. The recording of category change alone has the disadvantage of providing no concept of elapsed time. Consequently many of the systems use a time unit.

> This is particularly true of the systems in the Flanders lineage that use a several seconds time interval so that the codes recorded carry with them not just notations of category changes but some sense of elapsed time as well. (Simon and Boyer, 1970, p. 15)

In an attempt to describe the one-to-one teaching situation in the Prep Programme it was necessary to observe and consider the events that do and logically can occur.

In order to identify the significant features it was also necessary to consider:

1. The characteristics of moderately mentally retarded children.
2. The theoretical constructs which have influenced the development of the teaching strategies used within the programme.

Some Characteristics of the Motor Performance of Mentally Retarded Children

"Mental retardation is almost invariably accompanied by substandard levels of performance in both fine and gross motor skills" (Rarick, 1973, p. 225). However, one cannot attribute the mentally retarded child's motor deficiencies solely to his mental deficiencies. In addition to this disability mentally retarded children often have health and developmental problems and reduced opportunity for play (Bruininks, 1974; Rarick, 1973).

Studies have suggested that mentally retarded children have smaller physical dimensions than non-retarded children of the same age and sex. Down's syndrome children, for example, are significantly retarded in linear growth and skeletal age (Bruininks, 1974). The greatest deficits in physical growth and development, however, are found amongst

the more severely retarded persons with associated organic conditions and motor impairment (Bruininks, 1974).

In measures of strength, power and coordination, mentally retarded children tend to score well below their non-retarded peers (Rarick, 1973). Reaction time studies show similar substandard performances (Berkson, 1960; Jones and Benton, 1968; Rarick, 1973). Mentally retarded children often have difficulty in maintaining balance. This difficulty is experienced both in the maintenance of a stationary body position and during motor performance (Bruininks, 1974; Rarick, 1973).

The poorer performing mentally retarded child takes longer than his non-retarded peer to accustom himself to a new task. Rarick (1973) has suggested that this is a reflection of the novelty of the task and the lack of relevant motor experience of these children.

Wall (1976) explains this initial difficulty as follows:

> Mentally retarded children by definition, are impaired in their cognitive verbal abilities; furthermore, recent research has indicated that the mentally retarded have short term memory deficits and have considerable difficulty in identifying and then attending to the salient features within a stimulus display (Brown, 1975; Ellis, 1970; Zeaman and House, 1963). (p. 76)

Wall hypothesizes that due to these limitations mentally retarded children have difficulty in observing the salient features in a perceptual motor skill. Therefore they have difficulty in modelling the motor behaviour of others. This tends to retard their motor development.

> Thus, because they cannot adequately model the motor performance of others, from a very young age retarded children are handicapped in the opportunities for practice naturally presented by the environment. (Wall, 1976, p. 76)

Because they cannot model they do not have the basic skills which would allow them to interact effectively within different play environments.

Motivation is an important factor in the motor learning of the mentally retarded (Rarick, 1973). Levy (1974) has suggested that while the intellectually normal child may approach a new task with reasonable confidence due to successful motor and play experiences in the past, the retarded child often approaches a new task with an expectancy for failure due to a history of failure in physical activity settings. Levy further suggests that this generalized expectancy for failure helps explain why social and tangible reinforcement has more significance for mentally retarded children than for the non-retarded. A number of studies have indicated the positive influence of social reinforcement such as verbal praise, smiles and urging on motor skill performances by mentally retarded children (Ellis and Distefano, 1959; Levy, 1974).

A number of researchers have recognized the aforementioned motor performance deficits of mentally retarded children. In order to facilitate the motor development of these children considerable work has been done on task analyzed instructional sequences. The I CAN programme of Michigan State University (Wessel, 1976) has an extensive

curriculum for elementary school age mentally retarded children. The Prep Programme is an extension of the I CAN programme in that it focuses on the development of motor play skills for younger retarded children (Watkinson, 1977). It too, has established sequential learning objectives in a broad range of basic play skills.

Teaching Strategies in the Prep Programme

The teaching strategies that have been adopted in the Prep Programme take account of the nature of moderately mentally retarded children, basic principles of skill acquisition and applied behavioural analysis.

Gentile (1972) suggests that the basic operations that a teacher can perform in an effort to facilitate skill acquisition are:

1. Verbal instruction
2. Demonstrations
3. Direct manipulation or positioning of the learner.

In view of the characteristics of moderately mentally retarded children, the teaching strategies prescribed in the Prep Manual (Watkinson, 1976) utilize all of the input modes, auditory, visual and tactile.

The retarded child is usually late to develop language and may have limited language skills throughout life. The teacher therefore needs to ensure that verbal instructions are appropriate for each individual child in terms of sentence length, structure and vocabulary (Watkinson, 1976).

When learning motor skills retarded children need varying degrees of physical assistance ranging on a continuum from complete physical manipulation, through varying degrees of partial physical prompting to a demonstration and verbal cue only.

> To avoid reliance by the child on visual or tactile input however the teacher must learn to fade the prompts he uses and pair them with verbal instruction so that eventually the child can respond to verbal cues or can initiate skills without the help of the teacher. (Watkinson, 1976, p. 9)

A fundamental principle of applied behavioural analysis states that the future strength and direction of a behaviour are influenced by the consequences of that behaviour (Becker, Engelmann and Thomas, 1975). When a consequence strengthens a behaviour by increasing its frequency, duration or intensity, then that consequence is said to be a reinforcer. It is suggested that reinforcing good behaviour by loving attention and withholding affection during periods of unsuitable behaviour can go far to help change behaviour (Neisworth and Smith, 1973). The low intellectual drive (Bruininks, 1974) and the sensitivity to motivational factors (Wall, 1976) characteristic of retarded children give particular significance to the conscious use of reinforcement in the Prep Programme.

Because of the motor learning difficulties characteristic of mentally retarded children shaping procedures are used (Watkinson, 1976). In shaping behaviour the teacher uses positive reinforcement for responses that come closer and

closer to the actual skill to be learned (Becker, Engelmann and Thomas, 1975). The criterion for reinforcement is gradually moved in the direction of the skill.

Gentile (1972) presents some basic concepts of skill acquisition and then draws some practical applications to teaching. She suggests that initially the teacher's responsibilities are to create a specific environmental problem, make the goal clear to the child and establish an adequate motivational level.

However, in order to perform the task the learner must be able to identify and process information about the environmental conditions that control his movement.

> Unless the learner recognizes the events to which his movement must conform, unless he selectively attends to the stable or variable regulatory conditions, he will not be able to consistently organize a movement that matches the environmental demands. (Gentile, 1972, p. 7)

The work of Zeaman and House (1963) suggests that retarded children suffer from a low initial probability of recognizing the significant features in a stimulus display. It would seem therefore that it is particularly important that the teacher of retarded children should help the child identify and selectively attend to the environmental stimuli that will regulate the movement. Furthermore the teacher can simplify the conditions in which the skill is to be performed by reducing non-regulatory inputs (Gentile, 1972). It follows that by manipulating the environment, the regulatory stimuli, the teacher can vary the difficulty of the movement to be performed.

It is the child who must organize his motor plan of execution. The teacher can only provide guidance of a very general nature. The human motor performance model indicates that feedback from the performance of a response is essential for the organization of a subsequent response (Gentile, 1972). The stimulation produced by the movement within the individual and the perceived effect of the movement on the environment are referred to collectively as intrinsic feedback. The encoding of intrinsic feedback is essential for the organization of the motor plan for the next response (Gentile, 1972). The teacher may augment the intrinsic feedback by providing the child with knowledge of performance and knowledge of results. Gentile suggests that this augmentation may have little value, unless the performer failed to attend, encode or retain input or was unable to determine the degree of accomplishment. In view of the nature of moderately mentally retarded children, augmented feedback may have a particular significance for the teaching of motor skills to these children.

Siedentop (1976) suggests that the first step in the development of an observational instrument is the identification of the behaviours that one wishes to observe.

In this observational instrument the selection of categories, the "descriptors of behaviour", was made on the basis of:

1. The motor abilities of mentally retarded children,
2. Pmep Programme teaching strategies, and

3. The theoretical constructs which have influenced the adoption of those strategies, namely principles of applied behavioural analysis and motor skill acquisition.

CHAPTER III

THE DEVELOPMENT OF THE OBSERVATIONAL INSTRUMENT

The development of the observational instrument began with a pilot study in which video-tape recordings were made of the individualized teaching episodes conducted in the Prep Programme. For the purposes of the pilot study video-tape recordings were made of the six teachers working in the programme, in a set random order. The children with whom they worked and the skills taught were pre-determined by curriculum procedures prior to this study. No attempt was made to interfere with routine procedures, except that teachers were requested to carry out their instructional duties in a position convenient for the video-camera.

A Sony video-camera, model AVC-3200, and a Sony video-tape recorder, model number 3600, were used to record the teaching episodes. Teacher verbalizations were recorded by a Sony F98 microphone placed near the instructional situation. The equipment was obtrusive and some reactivity on the part of the teachers and children may have occurred. However, the teaching episodes recorded were considered to be typical of those normally occurring in the programme. The video-taping was completed on two mornings each week over a period of three weeks. A total of 85 minutes of instruction was recorded.

The video recordings of the teaching episodes permitted a close examination of the unique events in the individualized teaching situation.

The following is a summary of proceedings in the individual instructional episodes. Associated with these events are the observational categories which they suggest. The researcher identified these proceedings as being typical and significant in the teaching/learning situation.

The Teaching/Learning Situation

In the teaching/learning situation, the teacher frequently asks the child for a variety of specific skill and general motor responses.

Such requests may be made in a direct, demanding way, or they may be made in a more indirect, informal manner. The researcher chose to refer to the former style as "manding" and the latter as "soliciting". — Manding / Soliciting

Similarly teachers may mand or solicit the attention of the child.

When setting a task the teacher will frequently

1) demonstrate the response that is required. — Demonstration
2) draw attention to parts of the body and their function in the execution of the task. — Body Focus
3) ask the child to focus attention on significant features of the environment. — Environmental Focus

Occasionally, the task may be made more or less challenging by the manipulation of the environmental conditions under which it is to be performed. — Environmental Manipulation

Recognizing the varying abilities of moderately retarded children, the teacher may give the child varying degrees of physical assistance. A child may need to be:

1) fully manipulated through a task. — Manipulation
2) given a lesser degree of physical prompting or assistance. — Physical Prompt
3) given no assistance at all.

A child may or may not respond to these requests. When the child responds he may do so:

1) correctly. — Correct Response
2) incorrectly. — Incorrect Response
3) by doing something contrary. — Negativism
4) by trying to escape from the teaching situation.

A lack of response, or an unsuitable response, may cause the teacher to use persuasion or censure in an attempt to regain the cooperation of the child. — Censure/Compliance

The child's attempted skill or motor response may cause the teacher to:

1) express approval in some way. — Positive Teacher Initiated Consequences

2) express disapproval. — Negative Teacher Initiated Consequences

3) provide information about the response beyond simple evaluative comments. — Feedback

In some instances, the attempt may have hurtful consequences to the child. — Negative Environmental Consequences

The Shaping of the Observational Instrument

The Child/Teacher Language Rate Code (Warren and Rogers-Warren, 1976) provided an initial model for the observational instrument. This code was developed

> to allow the sequential recording of specific coded teacher verbalizations to a target child, the target child's verbalizations, and specific kinds of consequent events for the child's verbalizations. (p. 1)

This language code suggested the form the observational instrument might take.

Under the major headings of Antecedents, Behaviours and Consequences the unique behavioural events of the individualized instructional situation were categorized and coded. Due reference was given to the basic principles of motor skill acquisition and applied behavioural analysis. The close examination of the teaching episodes made possible the gradual development of the working definitions for each category and the rules for coding.

In order to facilitate the recording of procedures the

researcher chose to differentiate a fourth group of categories called Subscripts. These are behaviours that are, or may be, associated with other categories in each of the Antecedent, Behaviour or Consequence groupings.

The following are the Categories selected and the code symbols that represent them. The complete description of the observational instrument may be found in Appendix A.

Categories

Antecedents

1.	Specific Skill Response	
	1.1 Mand for Skill Response	S
	1.2 Soliciting for Skill Response	Ⓢ
2.	General Motor Response	
	2.1 Mand for General Motor Response	M
	2.2 Soliciting for General Motor Response	Ⓜ
3.	Attention	
	3.1 Mand for Attention	A
	3.2 Soliciting for Attention	Ⓐ
4.	Censure/Compliance	C

Behaviour

1.	Specific Skill Responses	
	1.1 Correct Skill Response	✓
	1.2 Incorrect or Incomplete Skill Response	Ⓥ
2.	General Motor Response	
	2.1 Correct Response	X
	2.2 Incorrect or Incomplete Response	Ⓧ
3.	Negativism	N

Consequences

1.	Positive Teacher Initiated Consequences	
1.1	Positive Verbal Consequences	+v
1.2	Positive Physical Consequences	+p
2.	Augmented Feedback	F
3.	Negative Teacher Initiated Consequences	
3.1	Negative Verbal Consequences	-v
3.2	Negative Physical Consequences	-p
4.	Negative Environmental Consequences	-e

Subscripts

1.	Manipulation	m
2.	Physical Prompt	p
3.	Demonstration	d
4.	Focus	
4.1	Environmental Focus	ef
4.2	Body Focus	bf
5.	Environmental Manipulation	(em)

Time Check

1.	Time Lapse	>3

The Gathering of the Data

Three teachers participated in this phase of the study. Random selection of teachers was not possible due to Prep Programme administrative restrictions.

Video-recordings were made of 18 instructional episodes over a period of three weeks. Video-taping was done on Monday, Wednesday and Friday mornings. In order to reduce reactivity on the part of both the teacher and the child, the

video-taping was done from an adjacent observation room through a one-way glass partition. This was made possible by the use of a Sony AVC 3200, low light camera and a cordless Sony electric condenser microphone model 150 in association with a Comrex wireless microphone transmitter and receiver. The small cordless microphone was worn by the teachers clipped to the clothing. The radio transmitter was carried in a pocket on their person.

Video tapes were made of the development of one skill with one child by each teacher over three instructional episodes. On the completion of this series of three episodes, a different skill with a different child was begun by each teacher. The development of this skill was recorded during a further three instructional episodes. Thus 18 teaching episodes were recorded. The average length of the episodes was 5 minutes and 25 seconds.

The children had been allocated to the teachers by administrative procedures outside the jurisdiction of this study. For the purposes of this study the teachers selected the children with whom they would work from those in their care. Similarly the skills to be taught were selected by the teachers on the basis of the assessment procedures presented in the Prep Manual (Watkinson, 1976). Thus there were as few additional demands made of the teachers by this study as possible.

Each instructional episode was video-taped from beginning to end.

The teachers did not work on the skill with the particular child involved on any morning prior to the video-taping of the episode. The teachers organized their teaching station in advance of the video-taping in a position convenient for the camera.

The video-taped material was then divided into discrete 30 second segments. The complete 30 second segments totalled 177. These 30 second segments were numbered and identified by both audio and visual cues. Using a table of random numbers, 18 segments were then randomly selected from the 177 segments available. This represented a sample of 10 per cent with which to test the observational instrument for inter-observer agreement.

The randomly selected 30 second segments were then transferred to a master tape. For this purpose a one half inch editing bench was used. This was comprised of a Sony V.T.R. model 3650, a Panasonic V.T.R. model N3130-K, and two Electrohome 9 inch monitors. In editing the material each 30 second segment was lengthened by approximately 15 seconds of recording at the beginning of the segment. This was essential to allow the observers to adjust to the material and place the behavioural events to be coded in the proper context.

An interval of 10 seconds was used to separate each teaching segment. The randomly selected teaching segments were then identified numerically in the interval between the segments with the use of audio dubbing procedures. Three copies were then made of this master tape of the material

that would be used for assessing inter-observer agreement.

In a similar manner a master training video-tape was made. From the remaining video-taped teaching material 18 additional 30 second segments were selected to be used to train observers. Care was taken to ensure that there was no repetition of the data to be used for assessing inter-observer agreement.

Six segments were selected to show the work of each teacher. Three of these segments were representative of the work with one child and three with the second child. Each of the training segments was lengthened by approximately 15 seconds and transferred to a master training tape. A space of 10 seconds was used to separate each segment. The selected segments were then identified numerically in the interval between the segments with the use of audio dubbing procedures. Three additional copies were then made of this master training tape: one for the use of each observer.

The researcher used these training segments to further shape the observational instrument and refine the definitions.

The Training of Observers

A training manual was prepared (Appendix A). This consisted of:

1. A transcript of a typical but fictitious segment of an individualized instructional episode, and a coded representation of that sample.
2. A summary of the instructional situation which also provided a brief rationale for the choice of categories.

3. A list of the Categories, Subscripts, time check and the code symbols which represent them.

4. Definitions of the categories, subscripts and time check.

5. Rules for Coding. These included a section entitled Problem areas which gave additional guidance for observers.

6. Self Testing Exercises, with answers:

   1) Identification of code symbols.

   2) Lists of words, phrases and sentences typically used within the instructional episodes.

   3) Transcripts of typical but fictitious samples of the instructional episodes.

Three observers were trained over a period of three weeks. The observers met with the experimenter daily, Monday through Friday. The total time spent each week was approximately 9 hours. Each training session involved individual coding by the observers and some group discussion. The individual coding took place in three private cubicles each equipped with a Sony video-tape recorder AV 3600 and a Sony 12 inch colour monitor model CVM 1225.

In the introductory training session, an explanation of the study was given and the training manual was presented and discussed. A pre-view of the video-recordings to be used for training was also shown. Following the introduction, observers were asked to make themselves thoroughly familiar with the categories, codes and definitions. Subsequent training sessions involved coding, comparing and discussing

the training segments. In this way the observers became familiar with the observational instrument and also identified additional problem areas. As problems were identified definitions were clarified, and additional ground rules were established. On the completion of the coding and comparing of 12 of the training segments, the remaining six segments were coded by the observers without consultation. On the completion of the coding of these six segments, the coded materials were assessed and discussed. On the basis of this assessment and in view of time constraints, it was decided to proceed to the next stage: the coding of the data to assess the objectivity and accuracy of the observational instrument.

The Testing of the Instrument

Each observer was provided with:

1. A copy of the master tape bearing the eighteen 30 second teaching segments to be coded.
2. Coding forms.
3. Written material which identified each teaching segment, stated the skill and indicated the audio cues to begin and end coding.
4. Coding procedure and check sheet.

Copies of the written materials given to observers are included in Appendix C.

The same three individually equipped cubicles were again used for coding. These were arranged in such a way as to provide maximum convenience for the observers.

The coding of the eighteen 30 second segments was completed by observers over a period of two weeks. No attempt was made to hurry the observers. Some flexibility was permitted as to the time for coding to suit the convenience of the observers. The researcher monitored each coding period when more than one observer was working. The instructional segments varied in complexity and it is estimated that each segment required between 30 and 45 minutes to code.

The coded data was then assessed for inter-observer agreement. The formula that was used was percent agreement, i.e. $\frac{\text{number of agreements}}{\text{number of agreements and disagreements}} \times 100.$ The use of this formula required the discrimination between both agreements and disagreements. For this purpose observers were required to transcribe teacher verbalizations and associate these with the appropriate code symbols. In this way it was possible to ensure that each separate event in the instructional episode was being accurately compared for agreement. (Johnson and Bolstad, 1973; Kazdin, 1977)

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

The purpose of this study was the development of an accurate and objective observational instrument to describe the behaviour exhibited within the individualized instructional situation in the Preschool Play Programme for Moderately Mentally Retarded children.

Objectivity may be defined as the degree of uniformity with which various individuals code the same behavioural events. Accuracy may be defined as the extent to which observations scored by an observer match those of a pre-determined standard for the same data. The objectivity and accuracy of this observational instrument, therefore, was assessed by the calculation of inter-observer agreement between each of three trained observers and a criterion observer: the researcher. The inter-observer agreement was calculated on the total number of agreements and disagreements over all instructional segments.

As an initial gross assessment of the objectivity and accuracy of the observational instrument, the inter-observer agreement was calculated between each of the three trained observers and the criterion observer for all events classified as:

1. Antecedents
2. Behaviours

3. Consequences

4. Subscripts

These are shown in Table I.

Following this, the individual categories within the larger category groupings are considered. Table II shows the percent agreement calculated for all categories within the Antecedent grouping. The Behaviour, Consequence and Subscript categories are shown in Tables III, IV and V respectively. Thus an indication of the frequency of occurrence and the objectivity and accuracy of recording is shown for each individual category.

Results

The figures displayed in Table I indicate that inter-observer agreement was in general high. All but the Behaviour category grouping exceeded the 80 percent set down as a guideline for evaluation. The percent agreement was highest for the high frequency Antecedent categories. The mean agreement between the three observer pairs was 91.82 percent.

Antecedents

Table II shows the percent agreement between each observer pair for individual categories within the Antecedent category group. As the agreements for Antecedents as a whole was high it was to be expected that each of the individual categories within the group would be high. This is shown to be so except in the case of Motor Solicitations. The results

TABLE I

INTER-OBSERVER AGREEMENT BETWEEN CRITERION OBSERVER AND TRAINED OBSERVERS FOR ANTECEDENTS, BEHAVIOURS, CONSEQUENCES AND SUBSCRIPTS, WITHIN ALL INSTRUCTIONAL SEGMENTS

Categories	Criterion + Observer 1	Criterion + Observer 2	Criterion + Observer 3	Mean
Antecedents (207)	91.98	92.92	90.56	91.82
Behaviours (77)	76.74	76.74	82.35	78.61
Consequences (121)	88.61	87.09	92.68	89.46
Subscripts (229)	83.07	84.29	84.61	83.99

Note: a) The frequency of events in each category grouping, as coded by the criterion observer, is indicated in parentheses.

b) The agreement is expressed as percent agreement.

indicate exceptionally high agreement in all of the three manding categories. The mean agreements were Skill Mands 95.48 percent, Motor Mands 97.94 percent and Attention Mands 100 percent. Solicitations provided a little more difficulty for observers. While the agreements on Skill and Attention Solicitations were high, the mean agreement on Motor Solicitations was low at 59.52 percent.

TABLE II

ANTECEDENTS

INTER-OBSERVER AGREEMENT BETWEEN CRITERION OBSERVER AND TRAINED OBSERVERS FOR ANTECEDENT CATEGORIES, WITHIN ALL INSTRUCTIONAL SEGMENTS

Categories	Criterion + Observer 1	Criterion + Observer 2	Criterion + Observer 3	Mean
Skill Mands (43)	93.33	95.45	97.67	95.48
Skill Solicitations (41)	93.02	88.88	93.02	91.64
Motor Mands (64)	100.00	98.43	95.38	97.94
Motor Solicitations (14)	71.42	57.14	50.00	59.52
Attention Mands (12)	100.00	100.00	100.00	100.00
Attention Solicitations (26)	76.92	96.15	84.60	85.89
Censure/ Compliance (7)	87.50	87.50	100.00	91.66

Note: a) The frequency of events in each category, as coded by the criterion observer, is given in parentheses.

b) The agreement is expressed as percent agreement.

Behaviours

Table III shows the inter-observer agreement between each observer pair for individual categories within the Behaviour category group. The two highest frequency behaviour categories also showed the highest percent agreement. The important category of correct skill responses showed a mean agreement between all observer pairs of 92.82 percent. The percent agreement for correct motor responses ranged between 73.68 percent and 79.41 percent with a mean agreement for all observer pairs of 76.95 percent.

The percent agreements for the remaining three behaviour categories all showed a considerable range of score. All had a relatively low frequency and this helps to account for the wide variation in the percent agreement calculated.

Consequences

Table IV shows the inter-observer agreement between each observer pair for individual categories within the Consequence category group. The percent agreement calculated was uniformly high except in the case of the low frequency Negative Verbal Consequence category. The high frequency Positive Verbal and Physical Consequence behaviours showed percent agreement scores of 92.05 and 89.76 percent respectively.

The 83.33 percent agreement shown for two observer pairs represents the omission of one of six occurrences in the Augmented Feedback category. As may be expected, no instances of Negative Physical Consequences were observed.

Only one occurrence of a response having Negative Environmental, i.e. hurtful, consequences, was recorded. Since all observers coded this occurrence, 100 percent agreement was obtained.

TABLE III

BEHAVIOURS

INTER-OBSERVER AGREEMENT BETWEEN CRITERION OBSERVER AND TRAINED OBSERVERS FOR BEHAVIOUR CATEGORIES, WITHIN ALL INSTRUCTIONAL SEGMENTS

Categories	Criterion + Observer 1	Criterion + Observer 2	Criterion + Observer 3	Mean
Correct Skill Response (25)	92.00	90.47	96.00	92.82
Incomplete Skill Response (12)	75.00	66.66	66.66	69.44
Correct Motor Response (31)	73.68	79.41	77.77	76.95
Incomplete Motor Response (4)	75.00	50.00	80.00	68.33
Negativism (5)	57.14	62.50	71.42	63.68

Note: a) The frequency of events in each category, as coded by the criterion observer, is given in parentheses.

b) The inter-observer agreement is expressed as percent agreement.

TABLE IV

CONSEQUENCES

INTER-OBSERVER AGREEMENT BETWEEN CRITERION OBSERVER AND TRAINED OBSERVERS FOR CONSEQUENCE CATEGORIES, WITHIN ALL INSTRUCTIONAL SEGMENTS

Categories	Criterion + Observer 1	Criterion + Observer 2	Criterion + Observer 3	Mean
Positive Verbal Consequences (54)	94.44	87.27	94.44	92.05
Positive Physical Consequences (54)	90.74	89.28	89.28	89.76
Augmented Feedback (6)	83.33	83.33	100.00	88.88
Negative Verbal Consequences (6)	66.66	66.66	100.00	77.77
Negative Physical Consequences (0)	-	-	-	-
Negative Environmental Consequences (1)	100.00	100.00	100.00	100.00

Note: a) The frequency of events in each category, as coded by the criterion observer, is given in parentheses.

b) The inter-observer agreement is expressed as percent agreement.

Subscripts

Table V shows the inter-observer agreement between each observer pair for individual categories within the subscript categories.

The highest agreement was recorded for the Body Focus and Environmental Focus subscripts. These represent aspects of teacher verbalizations. There was a mean agreement between the observer pairs of 92.15 percent for the Environmental Focus category. Two observer combinations recorded 100 percent agreement. The higher frequency Body Focus category showed a mean agreement of 86.37 percent.

The Manipulation and Physical Prompt categories represent the teacher's physical contact with the child and reflect the degree of assistance that is given. The percent agreement calculated for each observer pair in relation to the high frequency Physical Prompt category was relatively close and showed a mean agreement of 85.62 percent. Agreement on the low frequency Manipulation category was more widely divergent and had a mean of 64.28 percent.

The Demonstration category had a mean agreement between all observer pairs of 76.03 percent. The criterion observer classified one event as an Environmental Manipulation by the teacher. Since none of the trained observers recorded that event, zero percentage is shown.

No instances of the Time Lapse category were recorded.

TABLE V

SUBSCRIPTS

INTER-OBSERVER AGREEMENT BETWEEN CRITERION OBSERVER AND TRAINED OBSERVERS FOR SUBSCRIPT CATEGORIES, WITHIN ALL INSTRUCTIONAL SEGMENTS

Categories	Criterion + Observer 1	Criterion + Observer 2	Criterion + Observer 3	Mean
Manipulation (7)	71.42	50.00	71.42	64.28
Physical Prompt (161)	85.79	83.73	87.35	85.62
Demonstration (23)	70.37	79.48	78.26	76.03
Body Focus (34)	82.85	84.61	91.66	86.37
Environmental Focus (12)	100.00	100.00	76.47	92.15
Environmental Manipulation (1)	0.00	0.00	0.00	0.00
Time Lapse	-	-	-	-

Note: a) The frequency of events in each category, as coded by the criterion observer, is given in parentheses.

b) The inter-observer agreement is expressed as percent agreement.

Frequencies

Table VI shows the frequency of occurrences of events in each individual category as coded by the criterion observer. The frequency is given for each individual 30 second segment and totalled over all segments.

Considerable variation occurred in the number of events over all categories recorded in each 30 second segment. The maximum number of events in any segment was 56 and the minimum 22. The mean recorded over all segments was 35.72.

An idea of the varying complexity of the individual 30 second segments may be gained by considering both the number and variety of the categorized events recorded.

TABLE VI

CATEGORY FREQUENCIES AS CODED BY THE CRITERION OBSERVER

Segment	S	Ⓢ	M	Ⓜ	A	Ⓐ	C	✓	⊘	X	Ⓧ	N	+v	+p	F	-v	-p	-e	m	p	d	bf	ef	em	>3	Events/ Segment
1	1	3	8			2		1		2	1		4	4					2	16		7				51
2	3	1	6			1		3		2			6	6						11						39
3	5	2		5	2	3	1		2	1		1									6		3			31
4	1	2	3	2	3	3		3		3			1								4	1	5			31
5			7	1		5			1	4					1	1		1		7	4	5				37
6	8	2	2	1				2	3				2	2	2				2	7		3				36
7	1	7						1					3	3						9						24
8	1		10					1	1	2	1		5	8		4				16		4				53
9	1		4			6	2	1		2		2	1							4		1				24
10	3	4	4	1	5		3		1	1		1								8	7		2			40
11	4	4						2	1				4	4	1	1			2	4						27
12	1	5	2					1		2			2	3						11						27
13	6	1	3			1	1	2	3	1			6	4					1	4						33
14		1	3	2				1		2	1		2	2	2					12		1				29
15	2	1	2	1	2	3		1		1		1	3	3						11	2	3	2	1		39
16	2	5	2	1		1		2		1	1		4	4						14		2				39
17	3	3	5			1		3		4			7	7						19		4				56
18	1		3					1		3			4	4						8		3				27
	43	41	64	14	12	26	7	25	12	31	4	5	54	54	6	6		1	7	161	23	34	12	1	-	643

Antecedent Total 207 Behaviour Total 77 Consequence Total 121 Subscript Total 229

Maximum 56
Minimum 22
Mean 35.72

General Discussion

The results indicate that the inter-observer agreement for the observational instrument in general was relatively high. This section will attempt to identify the types of errors and the general problems that the observers experienced. The identification of these problems would seem to be important for both the strengthening of the instrument and the future training of observers.

Every occurrence of a categorized behaviour is recorded and this involves the breaking down of the verbalizations into meaningful pieces of information. For the most part, a clear lead is given by pauses in the teacher's verbalizations. However, on occasions when the teacher's verbal behaviour becomes disjointed, some difficulty may occur if the observers have had little exposure to this problem.

Instances of disjointed teacher verbalization in the data were seen to lead to errors of omission, addition and misinterpretation. It would seem important, therefore, that observers should be exposed to specially selected complex instructional sequences that would provide experience in dealing with this problem.

The results showed high inter-observer agreement in all Antecedent categories except Motor Solicitations. The agreement between the three observer pairs for this category was 71.42, 57.14 and 50.00 percent, giving a mean agreement of 59.52 percent. Of the 14 Motor Solicitations recorded by

the criterion observer, 5 occurred in a brief period of one instructional segment. In this period, the teacher was attempting to draw the child back to the teaching/learning situation with some subtle requests. The degree of subtlety in all solicitations is a problem factor to be considered.

Categories in the Behaviour group generally were below the figure of 80 percent established as a guideline for evaluation. The important Skill Response category was high having a mean agreement of 92.82 percent. The other high frequency Behaviour category, that of Correct Motor Response, was unexpectedly lower at 76.95 percent. It is believed that this may not be a true reflection of the difficulty of observation.

An examination of the raw scores indicate some simple omissions. For example, although two instances of Motor Mands with Manipulation were correctly coded in the Antecedent row, the necessary manipulated responses by the child were not recorded. These amount to clerical errors.

Failure to record motor responses was also seen to occur when the teacher manded or solicited a response that the child was already performing, as for example in urging.

Little difficulty however was experienced in the coding of discrete motor responses following mands and solicitations.

The recording of Incomplete Skill and Motor Responses

posed some difficulty. Disagreements in these areas appeared to be caused by two problems with which the observers had had little experience. Judgements had to be made as to the point at which a child's preliminary, sometimes unbalanced, movements constituted an incomplete attempt at the skill or motor response. In addition to this, there were a small number of instances in which the teacher's reactions seemed to be inconsistent with the child's observed performance. Clear guidelines must be given to observers as to whether to be guided by their own assessment of the skill performance or the teacher initiated consequences.

Negativism is another low frequency category in which considerable judgement is sometimes required. While many behaviours by the child clearly indicate an unwillingness to participate in the teaching/learning situation, it is sometimes difficult to determine at which point a child's behaviour indicates non-cooperation.

The low frequency Negative Verbal Consequences (Table IV) showed the poorest inter-observer agreement in the Consequences group. No obvious persistent error could be found.

The Subscript categories were in general satisfactory. Mean agreements over 85 percent were recorded for Physical Prompt, Body Focus and Environmental Focus.

Some difficulty was experienced by observers in determining the degree of physical assistance given to the

child. However, both the manipulation and physical prompt categories are influenced by errors in the other major categories. For example, the omission of a child's motor or skill response may automatically create an additional disagreement in the manipulation or physical prompt which should accompany the response. The level of inter-observer agreement calculated for the majority of the subscript categories is considerably influenced by the agreement gained on the other major categories.

The Demonstration category had a mean agreement of 76.03 percent. Demonstrations in which the teacher drew attention to the performance provided little difficulty for observers. However, mands and solicitations that were made with a demonstrative prompt and without reference to that prompt tended to go unnoticed. This is probably due to the fact that training materials provided few instances of demonstrative prompts given without an explicit reference.

The analysis of the results has provided an indication of the strengths and weaknesses of the observational instrument. The examination of the types of errors that were made suggested guidelines for the efficient and effective training of observers.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was the development of an observational instrument to describe the individualized instruction in motor skills of moderately mentally retarded children in the Preschool Play Programme.

The study arose primarily as a result of a felt need for a tool to monitor the teaching procedures and child achievement within the programme. In addition to this it was recognized that an observational instrument could be used:

1. to provide suitable feedback for teachers, thus enabling them to assess and develop their own teaching skills,
2. as a research tool to provide data in test, treatment, retest situations.

The research began with a pilot study in which video-tape recordings were made of individualized instructional episodes. This video-taped material permitted a close examination of the unique events in the teaching/learning situation. Categories were selected on the basis of these events and with reference to principles of applied behavioural analysis and motor skill acquisition. The examination of the instructional episodes also permitted the formulation of working definitions and coding rules.

An integral part of the study was the testing of the

instrument for accuracy and objectivity. This was done by the calculation of inter-observer agreement between each of three trained observers and a criterion observer: the researcher. As an initial gross assessment of the instrument, agreement was calculated on each of the major category groupings of Antecedents, Behaviours, Consequences and Subscripts. With the exception of the Behaviour categories, the mean agreement between all observer pairs was well above the 80 percent set down as a guideline for evaluation.

Inter-observer agreement was then calculated on each individual category and an analysis made of the types of problems that the observers experienced.

Conclusions

The point by point agreement was considered to be a stringent test of the instrument's objectivity and accuracy. The analysis of the results suggests that the instrument as tested may be a useful tool within the Prep Programme.

The purpose for which the instrument is used would dictate the degree of accuracy of coding demanded. If it was to be used for scientific research, then few errors could be tolerated. If, however, it was to be used to provide feedback for teachers, then perhaps greater latitude may be permissible.

Inter-observer agreement is influenced by many factors. These include the complexity of the instrument, the clarity of the definitions, the complexity of the data, the conditions under which coding is done and the efficiency of

observer training. Much experience was gained by the researcher in this initial training of observers. A number of considerations were recognized as being important to the efficient and effective training of the observer team.

1. There was a need to emphasize the strict application of definitions and rules.
2. Observers needed to be encouraged to work with video-tapes and definitions constantly. It is only through this constant reference to definitions that awareness of their full implications is gained.
3. Observers must be exposed to complex data. This data may need to be especially selected and edited to provide concentrated experience in recognized problem areas. This is particularly important for relatively low frequency categories. Some of these problem areas were identified in the general discussion in Chapter IV.
4. Implicit in the preceding observation is the need to make observers aware of the types of errors that are made, e.g. the omission of demonstrative prompts made without verbal reference.
5. Observers should be trained from the beginning to adopt a systematic approach to coding.

It would seem that the instrument can, with reasonable accuracy and objectivity, provide a useful record of behaviours in the individualized teaching situation. For example, the proportion of mands and solicitations can indicate the teaching style adopted. A high proportion of mands suggests a firm, direct and explicit style of teaching. A high proportion of

solicitations suggests a more informal approach.

Manipulations and physical prompts reflect the amount of physical contact the teacher has with the child. The instrument can show whether, over time, these prompts are faded. The fading of the prompts also indicates progress in the child's skill learning. This may also be indicated by the number of correct responses that are recorded.

Repeated unsuccessful attempts at a skill performance may suggest that the task is too difficult. This may be seen to lead to reduced cooperation on the part of the child reflected by instances of negativism, censure, excessive attention manding and a poor response rate.

Recommendations

As a result of the information gained in this study the following recommendations are made.

1. It is recommended that a training package be developed to include:
    a. a training manual.
    b. the identification of the types of errors associated with each category.
    c. specially selected and edited video-taped materials that give concentrated exposure to the problem areas associated with each category. This is particularly important for problem areas associated with categories of relatively low frequency.
2. Further study is recommended to determine the effect on

inter-observer agreement when the existing instrument is tested under conditions which limit the number of reviews of a video-taped instructional segment.

3. Further to the previous recommendations, it may be valuable to determine the effect on the usefulness of the observational instrument of speed training for observers.

4. Video-tape recordings have the advantage of providing a lasting and comprehensive record of behaviour which can be played and replayed for careful observation. Live observations have the disadvantage of the need for immediate coding and no possibility of replay. However, they would seem to provide a greater flexibility being independent of technology. It may be of value therefore to determine:

    a. the modifications that would be needed to use the instrument in the live setting.

    b. the amount of information that would necessarily be lost by these modifications.

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APPENDIX A

An observational instrument to describe the individualized instruction in motor skills of moderately mentally retarded children in the Preschool Play Programme

TRAINING MANUAL

A Coded Teaching Segment

The following is a fictitious but typical sample of the one-to-one teaching/learning situation that is to be described.

Antecedents

1. "Would you like to play catch, Lyle?"
2. "Let's go over there to play catch", says the teacher as she takes the child by the hand.
4. "Put your hands out like this, and (5) I'll throw the ball to you, O.K?"

   The teacher demonstrates how the arms are to be held as she speaks to the child.
6. "Put your hands out."
7. Demonstrating again, the teacher says "Put your hands out ready."
10. "Ready - catch!"
13. "Never mind, let's try again."

Behaviours

3. Teacher and child walk across the room together.

   The child does not respond.

   The child does not respond.
8. The child stretches his arms forward as required.
11. The child attempts to catch the ball but drops it.
14. The child runs away.

Consequences

9. "That's good."
12. "Oops, you dropped it."

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Antecedents	(S)	(Mp)		Mbfd	(Sd)	Mbf	Mbfd			S			(S)	
Behaviour			Xp					Xd			(∅)			N
Consequences									+v			F		

The Teaching/Learning Situation

A Summary

In the teaching/learning situation, the teacher frequently asks the child for a variety of skill and motor responses.

Such requests may be made in a direct, demanding way, or they may be made in a more indirect, informal manner. In this observational instrument, the former style is referred to as "manding" and the latter as "soliciting". Manding Soliciting

Similarly teachers may mand or solicit the attention of the child.

When setting a task the teacher will frequently

1) demonstrate the response that is required. Demonstration
2) draw attention to parts of the body and their function in the execution of the task. Body Focus
3) ask the child to focus attention on significant features of the environment. Environmental Focus

Occasionally the task may be made more or less challenging by the manipulation of

the environmental conditions under which it is to be performed. — Environmental Manipulation

Recognizing the varying abilities of moderately retarded children, the teacher may give the child varying degrees of physical assistance. A child may need to be:

1) fully manipulated through a task. — Manipulation
2) given a lesser degree of physical assistance or prompting. — Physical Prompt
3) given no assistance at all.

A child may or may not respond to these requests. When the child responds he may do so:

1) correctly. — Correct Response
2) incorrectly. — Incorrect Response
3) by doing something contrary. — Negativism
4) by trying to escape from the teaching situation.

A lack of response, or an unsuitable response, may cause the teacher to use persuasion or censure in an attempt to regain the cooperation of the child. — Censure/Compliance

The child's attempted skill or motor response may cause the teacher to:

1) express approval in some way. — Positive Teacher Initiated Consequences

2) express disapproval. — Negative Teacher Initiated Consequences

3) provide information about the response beyond simple evaluative comments. — Feedback

In some instances the attempt may have hurtful consequences for the child. — Negative Environmental Consequences

Categories

Antecedents

Major Categories

1. Specific Skill Response
    - 1.1 Mand for Skill Response — S
    - 1.2 Soliciting for Skill Response — Ⓢ
2. General Motor Response
    - 2.1 Mand for General Motor Response — M
    - 2.2 Soliciting for General Motor Response — Ⓜ
3. Attention
    - 3.1 Mand for Attention — A
    - 3.2 Soliciting for Attention — Ⓐ

Minor Category

4. Censure — C

Behaviour

Major Categories

1. Specific Skill Responses
    - 1.1 Correct Skill Response — ✓
    - 1.2 Incorrect or Incomplete Skill Response — ⓥ
2. General Motor Response
    - 2.1 Correct Response — X
    - 2.2 Incorrect or Incomplete Response — Ⓧ

Minor Category

3. Negativism — N

Consequences

Major Categories

1.	Positive Teacher Initiated Consequences	
1.1	Positive Verbal Consequences	+v
1.2	Positive Physical Consequences	+p
2.	Augmented Feedback	F

Minor Categories

3.	Negative Teacher Initiated Consequences	
3.1	Negative Verbal Consequences	-v
3.2	Negative Physical Consequences	-p
4.	Negative Environmental Consequences	-e

Subscripts

1.	Manipulation	m
2.	Physical Prompt	p
3.	Demonstration	d
4.	Focus	
4.1	Environmental Focus	ef
4.2	Body Focus	bf
5.	Environmental Manipulation	(em)

Time Check

1.	Time Lapse	> 3

Definitions

Antecedents

1. Specific Skill Response

1.1 Mand for Skill Response S

In this observational instrument a mand is defined as a direct and explicit demand by the teacher for the performance of a particular response by the child.

A mand for skill response therefore is a direct and explicit demand by the teacher for the performance of the specific skill being taught.

E.g. The teacher may say:

"Kick the ball, Walter!"

"Ready - throw!"

"Jump!"

The mand, as used in this observational instrument, is explicit and authoritative; it does not rely on context for its meaning.

E.g. The teacher may say "Try again!" The tone may seem to be firm and authoritative, but what is to be tried must be inferred from that which has gone before. The demand "Try again" therefore is not a "mand".

Mands must include a verb.

The Skill Mand will frequently, but not always, take the form of a caution, a pause and an executive word.

E.g. "One, two, three - jump!"

"Ready - throw!"

Also to be regarded as mands are firm direct statements of future intent.

E.g. "We are going to kick the ball."

"We will play catch."

1.2 Soliciting for Skill Response Ⓢ

The term "soliciting" is used in this observational instrument to indicate requests by the teacher, that are made in a less direct, more informal way than manding.

Soliciting for a skill response therefore is a request for the performance of the specific skill being taught, that is made in a less direct, more informal way than manding.

Solicitations may be in the form of a question.

E.g. "Can you bounce the ball and catch, Carmen?"

"Can you kick the ball into the basket, Leo?"

Solicitations may exhort the child to demonstrate his ability to the teacher or to another child.

E.g. "Show me how well you can bounce the ball."

"Show Karen how you can kick."

The skill may be specifically stated as in the examples above, or the task may need to be inferred from prior proceedings.

E.g. "O.K., now it's your turn."

"Shall we have another go?"

"Let's try again." "Try again!"

2. General Motor Response

2.1 Mand for General Motor Response M

A mand for motor response is a direct and explicit demand by the teacher for the performance of a motor response other than the specific skill being taught.

E.g. "Stand up, Michael!"

"Bend your knees, Walter!"

"Pick up the ball, Lyle!"

"Come over here, Eddy!"

"Spring up again when you land."

2.2 Soliciting for General Motor Response (M)

Any request by the teacher for the performance of a motor response other than the specific skill, that is made in a less direct, more informal way than manding.

E.g. "Can you step up on the bench?"

"Show Carmen how you can step up."

"Would it be better if you sit back a bit?"

3. Attention

3.1 Mand for Attention A

Any verbal behaviour by the teacher which directly demands the attention of the child.

E.g. The teacher may say:

"Watch, Eddy!"

"Look this way, Carmen!"

3.2 Soliciting for Attention (A)

The teacher may call for attention in a less direct, more informal way than manding.

E.g. The teacher may call the child's name to gain attention.

Or the teacher may say:

"Are you watching me?"

"Where is the ball, Robert?"

4. Censure/Compliance C

Any verbal behaviour by the teacher which attempts to gain or regain the child's cooperation in the teaching/learning situation. Censure/Compliance is most likely to occur after the child has exhibited Negativism or repeatedly failed to respond.

This category includes verbal behaviours ranging from promises of rewards and other persuasive measures, mild censure, strong criticism to threats of punishing consequences.

The teacher may promise the child an opportunity to participate in favourite activity if cooperation is given.

E.g. "First we'll play catch and then we will play hockey."

"If you jump now then you can ride the bike later."

The teacher may appeal to the child.

E.g. "You're not a bad boy, are you?"

"I am trying to help you learn to play catch."

The teacher may solicit a response in a negative way.

E.g. "Leo's not looking at me."

"You can't catch the ball with your back to me."

The teacher may demand that the child cease an unsuitable behaviour.

E.g. "Stop waving that hockey stick about."

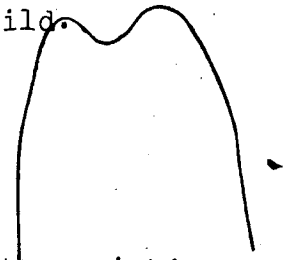
"No, I don't want you running away."

The teacher may be critical of the child.

E.g. "Don't be silly."

"No, you don't need any help."

"O.K., that's enough."



The teacher may threaten the child with punishing consequences.

E.g. "You had better behave yourself, young man."

"Do you want to sit in the corner?"

"This is your last chance now."

Note Verbal behaviours that seemingly solicit a response but are expressed in a negative manner are to be regarded as Censure.

Behaviours

1. Specific Skill Responses

1.1 Correct Skill Response ✓

Any attempt by the subject to perform the specific skill that conforms with the task set.

1.2 Incomplete or Incorrect Skill Response ⊘

Any attempted skill response by the child that does not conform with the task set.

Examples of incomplete or incorrect responses are:

A step down instead of the required jump.

The child attempts to catch but drops the ball.

The child misses the ball in attempting to strike it.

The child does not complete a bounce and catch sequence.

2. General Motor Responses

2.1 Correct General Motor Response X

A general motor response by the child which follows and conforms with a mand or solicitation for that response.

E.g. The child retrieves the ball as requested.

The child steps onto the bench when asked.

2.2 Incorrect or Incomplete Motor Response (X)

Any attempt by the child to fulfil a mand or solicitation for a general motor response which is incomplete or incorrect.

E.g. The child attempts to climb onto the bench but fails.

The child retrieves the ball but throws it in the general direction of the teacher instead of returning with it as requested.

3. Negativism N

Any physical behaviour on the part of the child that is contrary and unrelated to the teacher's stimulus or mands and clearly shows non-cooperation.

E.g. The child, when asked to throw the ball, may lie face down on the floor, or cross his arms and bow his head. He may sit on the floor, put his hands over his ears, or throw the equipment down, or run away.

The negativism exhibited may clearly show defiance as for example, when a child turns his back on the teacher, sits on the floor and folds his arms.

The negativism however may be of a more playful nature as when the child runs behind a pillar and peeks out to see if the teacher is following.

The negativism may be an attempt by the child to remove himself permanently from the teaching/learning situation.

Note that negativism is signified by observable behaviour, it is not to be inferred from a non response.

Consequences

Major Categories

1. Positive Teacher Initiated Consequences

These are positive outcomes of the response that it is hoped will reinforce or strengthen the response.

1.1 Positive Verbal Consequences +v

Any verbalizations by the teacher which indicate approval or give praise for the subject's response.

E.g. "Good jump!"

"Good boy!"

"You did a good job."

These are simple evaluative comments which tell the child nothing about the response other than it pleased the teacher. The comment may praise the child or the response in general.

E.g. "Good boy!" "That was a good jump."

The indications of approval may be closely associated with, but are distinct from, verbalizations in the Feedback category, which may tell the child why the response was pleasing.

Single sounds made by the teacher such as "oh" or "arrh" are to be ignored for the purposes of this observational instrument.

1.2 Positive Physical Consequences +p

Any physical act by the teacher towards the subject which indicates approval. Such acts involve physical contact with the student, initiated by the teacher, e.g. a pat or a hug.

It should be noted that teacher initiated positive physical and positive verbal consequences frequently occur in combination. In this instance they are coded together [+v+p]

2. Augmented Feedback F

Any verbal behaviour by the teacher which gives the child information about the immediately preceding skill or motor response. This information is distinct from the simple evaluative comments such as

"Good, Jennie, that was a good throw!" [+v | +v]

"Atta boy, that was good." [+v | +v]

Feedback must give some information to the child regarding why the response was good or bad, successful or unsuccessful. Augmented feedback may give the child knowledge of results or knowledge of performance.

It may relate to the appropriateness or completeness of the performance.

E.g. "That wasn't a jump, that was a step!"

"You did not catch the ball at the end."

"Your back was nicely curled up."

Knowledge of results may indicate the degree of attainment.

E.g. "You hit the target right in the centre."

"You are upside down."

Augmented feedback must specifically refer to the past response. Advice for future skill or motor responses should be categorized as motor mands or solicitations and recorded in the antecedent row.

E.g. Following the child's skill response the teacher may say:

"Good, Robert!" (+v in consequences row)

"Keep your body curled up when you roll."

(Mbf in the antecedent row)

Although this statement followed closely the child's skill response, and was prompted by it, there is no reference to the last response and therefore is coded as a motor Mand.

Minor Categories

3. Negative Teacher Initiated Consequences

3.1 Negative Verbal Consequences -v

Any verbalizations by the teacher indicating disapproval of the subject's attempted skill or motor response.

E.g. "Oh, no, Michael."

"I didn't like that much."

"That wasn't very good, was it."

These are simple evaluative comments which tell the child nothing about the response other than it displeased the teacher.

The indications of disapproval may be closely associated with, but are distinct from, verbalizations in the Feedback category which may tell the child why the response was displeasing.

Single sounds made by the teacher such as "oh" or "arrh" are to be ignored for the purposes of this observational instrument.

Negative teacher verbalizations that follow a non response or negativism are classed as Censure and coded in the antecedent row.

3.2 Negative Physical Consequences -p

Any physical act by the teacher towards the subject which indicates disapproval. Such acts involve physical contact with the student, initiated by the teacher, e.g. a poke or a shake.

4. Negative Environmental Consequences -e

Any outcome of a child's attempted motor or skill response which is shown to be hurtful by the child's subsequent action.

E.g. The child falls from a box and cries.

The child is hit in the face by a ball and then rubs her nose.

The child lands awkwardly from a bench and rubs his ankle.

It is not sufficient to assume the outcome of a response is hurtful, it must be confirmed by the child's subsequent behaviour.

Subscripts

1. Manipulation m

Manipulation is the complete physical manipulation of the child by the teacher.

Manipulation may be associated with mands or solicitations.

Mand with manipulation

Any direct and explicit demand for the performance of a skill or motor response that is made by the teacher while manipulating the child through the response.

Soliciting with manipulation

Any less direct, more informal request for the performance of a skill or motor response that is made by the teacher while manipulating the child in the fulfilment of that request.

E.g. Skill Mands and Solicitations with Manipulation

The teacher may say "Hit the puck, Robert!" as the teacher holds the child's hands on the hockey stick and manipulates the child through the hitting action. Sm

The teacher may say "I wonder if you can catch the ball", as she holds the child's hands and actually makes the catch for him. (S)m

General Motor Mands and Solicitations with Manipulation

The teacher may say "Stand up on the bench" as she lifts the child to a standing position on the bench. Mm

The teacher may say "Can you put your foot on the pedal" as she takes the child's foot and places it on

the pedal of the tricycle. (M)m

Attention Mands and Solicitations with Manipulation

The teacher may say "Look this way, Carmen" as the child's head is turned manually. Am

The teacher may say "Where is the ball?" as she turns the child's head towards the ball. (A)m

In manding or soliciting with manipulation it is clearly the teacher who performs the task while the child is manipulated. However, the subscript "m" is associated with a child's response.

E.g. ✓m or Xm

The skill or motor response with manipulation may be performed simultaneously with a mand or solicitation.

E.g. The teacher may say "Hit the ball" at the same moment as she manipulates the child to hit the ball.

However, the teacher may manipulate the child in the performance of the skill without making a mand or solicitation.

E.g. The teacher may say "Shall we try again?" and then manipulate the child in the performance of the skill without further comment.

2. Physical Prompt

A physical prompt involves some form of physical contact by the teacher towards the child. This physical contact may provide a measure of assistance in the performance of the task, or prompt the child to initiate the response.

A physical prompt may be associated with Mands or Solicitations.

Mand with Physical Prompt

Any direct and explicit demand for the performance of a skill or motor response that is made by the teacher while giving the child some physical assistance or prompting.

Soliciting with Physical Prompt

Any less direct, more informal request for the performance of a skill or motor response that is made by the teacher while giving the child some physical assistance or prompting.

E.G. Skill Mands and Solicitations with Physical Prompt

The teacher may say "Jump down, Carmen", while tugging gently on the child's hands to prompt the jump. Sp

The teacher may say "I'll help you with one hand this time, O.K.", while giving the child one hand to hold while bouncing on the trampoline. (S)p

General Motor Mands and Solicitations with Physical Prompt

The teacher may hold the child's hand to assist balance while demanding that he step up onto the bench. Mp

The teacher may say "Can you put your foot on the pedal" and at the same time give the child's foot a light tap. (M)p

Attention Mands and Solicitations with Physical Prompt

The teacher may say "Watch, Eddy" and at the same

time give the child a gentle poke. Ap

The teacher may say the child's name and at the same time tap him on the shoulder. (A)p

A Physical Prompt may be associated with the child's skill or motor response.

Skill or Motor Response with Physical Prompt ✓p or Xp

Any attempt by the subject to perform the required skill or motor response while being given some physical assistance or prompting by the teacher.

E.g. The child may jump off the bench while having one or both hands held by the teacher to assist balance. ✓p

The child may perform a forward roll while the teacher holds his head to keep it tucked under. ✓p

The child may step onto a bench while having one or both hands held by the teacher to assist balance. Xp

The prompt may be a gentle tug, or touch of the hand to initiate the movement. The physical prompt involves some physical contact by the teacher towards the child during the execution of the skill.

3. Demonstration d

A demonstration is a physical performance by the teacher of a skill or motor task.

A demonstration may be associated with Mands and Solicitations.

Mand with Demonstration

Any direct and firm demand or statement concerning

a skill or motor response that is accompanied by a performance of that response.

E.g. The teacher may say:

"Tuck yourself up in a ball - like this", as she demonstrates a crouch position. Md

"I jump!" as she jumps off the bench. Sd

"Stretch out ready", as she stretches her arms out in the required manner. Md

Soliciting with Demonstration

Any less direct, more informal request concerning a skill or motor response that is accompanied by a performance of that response.

E.g. The teacher may say "Can you roll over like this?" and immediately roll over herself. (S)d

The teacher may say "Shall we step up on the bench" and at the same time step up on the bench herself. (M)d

Demonstrative Pr[illegible] d

A demonstra[illegible] occur without a mand or solicitation and [illegible] prompt a response by the child.

E.g. The teacher and child may establish a sequence of movements in which they repeatedly step onto the bench and jump together.

The teacher and child may repeatedly hit a hockey puck to each other.

Responses with Demonstrative Prompt ✓d or Xd

Any attempt by the child to fulfil the task set by a mand or solicitation given with a demonstration or a

demonstrative prompt.

4. Focus

4.1 Environmental Focus ef

Any statement by the teacher to the child that directs the subject to focus attention on particular stimuli in the external environment.

"Watch the target and - throw!" | Aef | S |

"Watch me bounce the ball, Virginia". Aef

"Where is the ball, Carmen?" (A)ef

"Look at the ball, Leo!" Aef

4.2 Body Focus bf

Any statement by the teacher to the child in which explicit reference is made to the body or parts of the body and their role in the motor task.

E.g. "Bend your knees and - jump!" | Mbf | S |

"You really stretched your knees that time." Fbf

"You did not hang on tightly enough with your hands." Fbf

"Tuck your head under and - roll!" | Mbf | S |

"Hold out your hands and - catch the ball!" | Mbf | S |

"Oh, we'll touch toes, O.K.?" (M)bf

"Try to get your foot higher." (M)bf

"Was your back curled up all the time?" Fbf

5. Environmental Manipulation (em)

Any modification of the skill task brought about by changing the environmental conditions.

E.g. Introducing a new target in a throwing or kicking task.

Increasing the height of a jump.

Reducing the size of a landing area.

Substituting a large ball for a small ball.

The manipulation of the environmental conditions may be a clearly deliberate act by the teacher.

E.g. The teacher may place a hoop on the mat in front of the child and then say "Can you jump into the hoop, Carmen?" [(em) | Ⓢ]

However, the environmental manipulation may appear to be coincidental.

E.g. The teacher may say "Do you want to jump in this direction this time?" thus causing the child to jump onto a lower mat. [Ⓢ (em)]

Time Check

1. Time Lapse >3

If the time between the completion of the task and the teacher initiated consequences exceeds 3 seconds then this is indicated by the code (>3) in brackets following the consequence and in the same column.

E.g. [+v+p(>3)]

Self Testing Exercises

Exercise 1

Name the category represented by the code symbol.

1. Ⓐ	_____	16. +v+p	_____
2. C	_____	17. -e	_____
3. M	_____	18. -p	_____
4. Ⓢ	_____	19. m	_____
5. ✓	_____	20. ✓d	_____
6. -v	_____	21. A	_____
7. Ⓧ	_____	22. ef	_____
8. Ⓥ	_____	23. (em)	_____
9. N	_____	24. Xp	_____
10. +p	_____	25. -v-p	_____
11. F	_____	26. +v	_____
12. d	_____	27. >3	_____
13. X	_____	28. p	_____
14. S	_____	29. bf	_____
15. Ⓜ	_____	30. Sdp	_____

Refer to the list of categories for the answers.

Exercise 2

Cover the answer column and give the appropriate code symbol for the following words, sentences or phrases.

Answers

M	1.	"Up you get."	____
Ⓜ Ⓜ	2.	"Come on, on the bench."	____
C	3.	"You can't catch with your back to me."	____
C	4.	"No more fooling, Michael."	____
Ⓢ	5.	"Let's try to catch - ready." (Skill)	____

Aef	6.	"Watch me."	___
(M)	7.	"Let's throw it back and forth to each other."	___
M	8.	"Bounce it back to me."	___
(S)	9.	"Want to play catch for a little while?" (Skill)	___
Aef	10.	"Watch the ball, Jamie."	___
(S)	11.	"Do you know how to kick the ball?" (Skill)	___
S	12.	"We are going to kick the ball." (Skill)	___
M | S	13.	"We are going to swing our leg and kick the ball." (Skill)	___
A	14.	"Watch!"	___
(A)	15.	"Michael!"	___
(M)	16.	"Show me how you can get up on the bench."	___
C	17.	"I have had enough of your nonsense."	___
A	18.	"Look this way."	___
C	19.	"Karen's not looking at me."	___
M	20.	"Hold on to the bar."	___
M	21.	"Curl yourself up."	___
(M)	22.	"You had better sit back a bit, hadn't you?"	___
+v | +v	23.	"Good, Laurie, that was a good jump."	___
Fbf	24.	"You forgot to tuck your head under."	___
-v	25.	"No, that wasn't a very good one."	___
C	26.	"Don't run away."	___
S	27.	"Ready - jump." (Skill)	___
(A) ef	28.	"Where is the ball, Michael?"	___
+v | +v	29.	"Good, that was good!"	___
F	30.	"You hit the target right in the middle."	___

Exercise 3

Code the following situations and interactions.

3.1 The Skill is swinging on the bar.

"Now we are going to swing on the bar!" [1]___ "Can you hold on to the bar?" [2]___ "Can you hold onto the bar really tight with your hands?" [3]___ (Child takes hold of the bar) [4]___ "Now swing!" [5]___ (The child makes an attempt but lets go with one hand and drops off.) [6]___ "You have to hang on really tight with your hands." [7]___ "Try again." [8]___ (The child swings briefly and satisfactorily.) [9]___ "Yes, that was a good one." [10]___ "Have another go." [11]___

3.2 The Skill is catching the ball.

"I bet we could play catch if we try." [1]___ "Would you like to play catch?" [2]___ "O.K., let's play catch." [3]___ "Put your hands out ready." [4]___ (Child puts his hands out.) [5]___ "Now catch!" [6]___ (Child catches the ball.) [7]___ "Good - that was a good one." [8]___ "Throw the ball back to me." [9]___ (Child throws the ball.) [10]___ "Good." [11]___ "Now put your hands out ready." [12]___ "Put your hands out." [13]___ (The child puts his hands out.) [14]___ "Catch!" [15]___ (The ball hits the child on the ne[redacted] drops it and puts his hand over his face.) [16]___

3.3 The Skill is a forward roll.

"Tuck your head under." [1]___ "You need to tuck your head under when you roll." [2]___ "Curl yourself up." [3]___ (Child crouches near to the mat.) [4]___ "That's better." [5]___ Teacher says "Roll over!" and at the same time gives the child

a gentle push to give him a start. [6]___ "Good, that was a good one." [7]___ "Sit up at the end of your roll." [8]___ "Do you want to try again?" [9]___ "O.K., bob down!" [10]___ "Tuck your head under." [11]___ "Your head, tuck it under!" [12]___ (Child tucks his head under.) [13]___ "That's right." [14]___ "Can you roll over by yourself this time?" [15]___ (Child tries but collapses in a heap.) [16]___ "Oh, no." [17]___ "You didn't push hard enough." [18]___ "You've got to push hard to roll." [19]___ "Try again and see if you can push hard." [20]___ ___

3.4 The Skill is a series of bounces followed by a catch.

"Now watch me." [1]___ "I bounce, bounce, bounce and catch" (says the teacher as she performs the skill task.) [2]___ "Now you try." [3]___ (Child takes the ball and throws it away.) [4]___ "Go and get that ball." [5]___ "Go and get it." [6]___ (Child sits on the floor and bows his head.) [7]___ "Stand up!" [8]___ "Stand up!" [9]___ "Do you want to sit in the corner?" [10]___ "Stand up!" [11]___ "You are being silly." [12]___ "If you stand up we will be able to play at bouncing." [13]___ (The child gets up and runs away.) [14]___

Answers

Exercise 3.1

1, S; 2, Ⓜ; [redacted]Ⓜbf; 4, X; 5, S; 6⊘; 7, Mbf; 8, Ⓢ; 9, ✓; 10, +v+v; 11, Ⓢ.

Exercise 3.2

1, Ⓢ; 2, Ⓢ; 3, Ⓢ; 4, Mbf; 5, X; 6, S; 7, ✓; 8, +v+v; 9, M; 10, X; 11, +v; 12, Mbf; 13, Mbf; 14, X; 15, S; 16, ⊘ -e.

Exercise 3.3

1, Mbf; 2, Ⓜbf; 3, M; 4, X; 5, +v; 6, Sp; 7, +v+v; 8, M; 9, Ⓢ; 10, M; 11, Mbf; 12, Mbf; 13, X; 14; +v; 15, Ⓢ; 16, ⊘; 17, -v; 18, F; 19, M; 20, Ⓢ, Ⓜ

Exercise 3.4

1, Aef; 2, Sd; 3, Ⓢ; 4, N; 5, M; 6, m; 7, N; 8, M; 9, M; 10, C; 11, M; 12, C; 13, Ⓜ, Ⓢ; 14, N.

Rules for Coding

1. Any behaviour which does not fit into a category is to be ignored.

2. All meaningful pieces of information are to be recorded providing a) that they can be categorized;

   b) they are not excluded by the coding rules.

3. Code symbols are to be recorded sequentially in rows and columns.

Antecedents							
Behaviour							
Consequences							

3.1 Rows

3.11 Antecedents Row - Teacher Behaviours

Mands and Solicitations for

- Skill Responses
- Motor Responses
- Attention

Censure/Compliance

3.12 Behaviour Row - This row is used exclusively for child behaviours.

Correct and incorrect skill responses

Correct and incorrect general motor responses

Negativism

3.13 Consequences Row - This row is used for the teacher-initiated consequences, feedback and also punishing environmental consequences.

3.2 Columns

The columns do not represent equal time intervals, however, they may be regarded as a moment in time.

3.21 Often only one event will occupy a column

E.g.

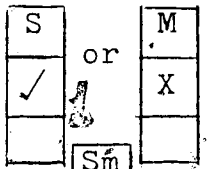
Antecedent	S			
Behaviour		✓		
Consequences			+v	F

In this instance a skill mand was followed by a correct response by the child and later verbal praise and additional feedback by the teacher.

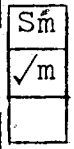
3.22 However, two or more events may occupy the same column.

E.g.

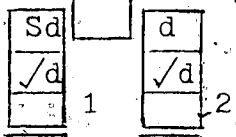
A skill or motor mand by the teacher may be made simultaneously with the child's response in order to associate a verbal cue with the physical experience.



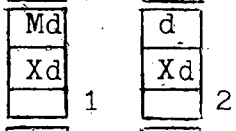
Similarly, the teacher may manipulate the child through a skill response while making a mand for that skill.



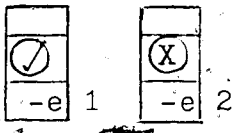
The teacher and child may perform a skill task together. This may[1], or may not[2], be accompanied by a mand.



Similarly the teacher and child may perform a general motor response together, with[1] or without[2] a mand.



An incorrect or incomplete skill[1] or motor response[2] by the child may be hurtful.



4. Manding and Soliciting

4.1 When mands or solicitations are made for a response that is part of the particular skill being taught, then these are recorded as mands or solicitations for a

motor response.

If such a mand is then incorporated into a skill mand then the two mands are recorded separately.

E.g. The teacher may say:

"Bend your knees."[1] "Bend your knees."[2]
"Bend your knees[3] and jump!"[4]

	1	2	3	4
A	Mbf	Mbf	Mbf	S
B			X	
C				

In this example the child's motor response coincided with the third motor mand, thus enabling the teacher to make the skill mand.

Similarly the teacher may say:

"Stretch your arms out."

"Stretch your arms out - and catch the ball."

A	Mbf	Mbf	S
B		X	
C			

"Tuck your head under - and

A	Mbf		S
B		X	
C			

4.2 When the teacher demands a motor response as part of the skill performance, then this is coded as a mand for motor response.

E.g. "Catch the ball at the end of your bouncing."

"Sit up when you finish your roll."

The mand in these examples is for a motor response within a certain skill context.

5. Recording of Skill and Motor Responses

5.1 All performances by the child of the specific skill are to be recorded. The specific skill responses are to be recorded irrespective of whether there was a mand, solicitation, demonstrative prompt or no apparent teacher stimulus.

However, only general motor responses that are specifically manded, solicited or prompted by demonstration are to be recorded.

5.2 The skill or motor response is recorded at the end of the attempted performance. The attempt is then shown as correct, incorrect, or incomplete.

5.3 The observer should ask whether or not the child fulfils or is fulfilling the task set. If the answer is yes, then a response is recorded.

6. Negativism

Negativism is recorded every time the child exhibits a different type of negative behaviour. This is illustrated by the following episode.

The teacher and child are facing each other approximately two metres apart.

1. Teacher: "Put your hands out ready to catch."
2. Child: Sits down on the floor.
3. Teacher: "Stand up, Tommy."
4. Child: Catches hold of a hockey stick carried by a passing child.
5. Teacher: "Let go that hockey stick!"

   Child: Takes no notice and continues to hold the stick held by the other child. (no code)

6. Teacher: "Do you want to play hockey, Tommy?"

7. Child; Having gained possession of the stick, he waves it about while still sitting on the floor.

8. Teacher: "O.K., first we play catch and then we play hockey."

9. Child: The child drops the stick and lies face downward on the floor.

	1	2	3	4	5	6	7	8	9
Antecedent	Mbf		M		C	(M)		C	
Behaviour		N		N			N		N
Consequences									

7. Subscripts

Subscripts are associated with other major and minor categories. Two subscripts, namely demonstrations and environmental manipulations may stand alone.

E.g.

1. The teacher may use only a demonstration to prompt the child to respond. Teacher and child may perform the task together[1] or one after the other.[2]

d	
√d	

d	
	√d

2. The teacher may first change the conditions under which the task is to be performed and then demand a skill response by the child.

(em)	S

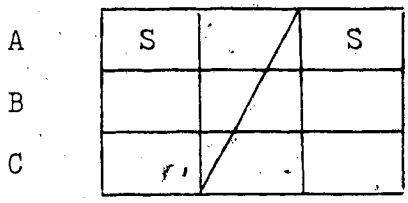
8. Interruption

Any interruption or break in the continuity of the one-to-one teaching/learning situation is recorded by a diagonal line drawn through the length of the next column.

Such interruptions may, for example, be due to the

intrusion of another child, or the lack of equipment. When teaching resumes coding should be continued in the next column.

E.g.



E.g. The teacher may demand that the child throw the ball at a target. However, another child may remove the target, thus interrupting the one-to-one instructional episode, until the target can be replaced and the mand repeated.

9. Problem Areas

9.1 Manding and Soliciting

The teacher's tone of voice is not a factor in this observational instrument. Some verbalizations which are made very authoritatively are classed as solicitations.

E.g. The teacher may say firmly to the child:

- "Up!" or "Under the bar!"

These instructions however do not include a verb and therefore are classed as solicitations.

A request by the teacher in which the specific skill is used as a noun is classified as a solicitation.

E.g. "Have a big jump!"

9.2 The use of the child's name

Teachers may use the child's name when manding or soliciting a response from the child. In these instances the name is clearly regarded as part of the

mand or solicitation.

E.g. "Throw the ball, Michael." S

"Look at the ball, Leo." Aef

Teachers, however, may call the child's name alone to gain attention. This has been defined as a solicitation for attention. The name may be called in such a way as to suggest dissatisfaction and censure. However, since this is a very subjective judgement, the calling of the child's name alone will not be considered in terms of the censure category.

9.3 Readiness

The cautionary word "ready" is frequently used by teachers prior to a mand.

E.g. "Ready, are you ready - jump!"

"Ready - throw!"

This along with other cautionary words are defined as part of the mand.

E.g. "One, two, three - catch!"

"And - - jump!"

For the purposes of this observational system a reference to "readiness" does not necessarily constitute a call for attention.

9.4 Context

Some choice of codes will depend on the context in which the event occurs. For example, whether the solicitation, "have another try" refers to a general motor or specific skill response is indicated by preceding events.

9.5 Confounding Words and Expressions

The expression "come on" can be an indirect way of asking for a general motor, skill response, or attention. What it is that is being solicited is indicated by the context in which the phrase is used. Sometimes the context makes the meaning very clear.

E.g.

1. "Ready - throw!" "Throw the ball." "Come on, Toby." "Throw the ball to me."

S	S	Ⓢ	S

2. "Step up on the bench." "Come on, Toby." "Step up." "Up."

M	Ⓜ	M

3. "Watch me!" "Are you watching me?" "Come on, Toby." "Watch me bounce the ball."

Aef	Ⓐef	Ⓐ	Aef

In the above examples the same type of teacher verbalizations both precede and follow the expression. However, when the expression "come on" does not have the same type of verbalization before and after there can be considerable ambiguity as to the meaning.

The following rules therefore are indicated:

1. The expression "Come on" will always be classed as a solicitation.
2. The type of solicitation will be indicated by the type of verbalizations that follow the expression.

E.g. "Bend your knees." "Come on." "Jamie!"

Mbf	Ⓐ	A

3. If the behaviour that follows is a child response then the type of solicitation must be indicated by

the preceding teacher verbalization.

4. If the above rules cannot be applied then the expression will be ignored.

Another confounding word is "O.K." For the purposes of this observational instrument the expression will be ignored at all times.

9.6 In this observational system Positive and Negative Teacher Initiated Consequences are consequences of a skill or requested motor response and indicate the teacher's satisfaction or dissatisfaction with that response.

Positive verbal consequences may follow skill or motor responses, which are coded. They may also follow attention responses by the child which are recognized by the teacher but not coded in this system.

Negative teacher initiated consequences indicate the teacher's dissatisfaction with a skill or requested motor response by the child.

Negative verbal communications following a no response or negativism are classed as Censure and recorded in the antecedent row.

Note: 1) It is possible to have a combination of positive and negative teacher initiated consequences E.g. The teacher may say "That wasn't a very good jump" and at the same time cuddle the child. -v+p

2) The continued holding of the child by the teacher after a physical prompt or manipulation when associated with positive or negative verbal

consequences is coded as +p.

9.7 The specific skill being taught must be defined for each teaching segment. Such a definition is necessary for the guidance of observers in distinguishing between skill and motor mands and correct or incorrect skill responses.

9.8 Meaningful pieces of information.

Rule 2 states:

"All meaningful pieces of information are to be recorded providing
a) that they can be categorized;
b) they are not excluded by the coding rules."

Words or phrases that are meaningful and <u>can</u> and <u>do</u> stand alone are to be coded.

Some examples have already been given.

E.g. "Bend your knees, and jump!" |Mbf|S|

"Stand up and do it." In this instance the child is being asked to stand up and perform the skill. The phrase is therefore coded: |M|S.|

"Take my hand and we will go for a run." |M|M|

"Yes!" "That was good!" These two comments are separated by a noticeable pause and clearly stand alone. They are coded |+v|+v| However, such a pause is not always evident and therefore observers must be guided by whether the words can stand alone.

E.g. "Yes, that was good!" The comma suggests a slight pause following the word "yes". The sentence is coded |+v|+v|

When there is no pause, e.g. "yes that was good", there

are still two confirming comments and therefore the sentence is still coded [+v][+v].

It should be noted however that:

A promise of reward (If you do this, then you can do that) or a threat of punishment (Unless you do this you will have to do that) is recorded as a single Censure/Compliance.

9.9 Recording of responses.

When the observer finds it extremely difficult to determine whether the response coincided with or followed the mand or solicitation for that response, then the response should be recorded as coinciding.

APPENDIX B

DETAILS OF TEACHERS

CHILDREN

OBSERVERS

The Teachers

The three teachers who participated in the major part of the study were students in the third year of the Bachelor of Physical Education degree programme at the University of Alberta. All had undergone courses in the Prep Programme materials and teaching strategies. The teachers worked in the Prep programme three mornings each week during the school year.

The age of each teacher and the experience in the programme is as follows:

	Age in Years	Experience in months
Teacher 1	21	6
Teacher 2	21	10
Teacher 3	20	9

The Children

The six children who participated in the study were students from the Dr. Winnifred Stewart School for Retarded Children. All had been assessed as moderately mentally retarded.

The age, sex and disability of the children is as follows:

Child	Age Years-Months	Sex	Disability
1	6 - 9	Male	Brain damage
2	5 - 0	Female	Brain damage
3	7 - 8	Male	Down's syndrome
4	7 - 1	Male	Socially deprived and disturbed
5	4 - 4	Male	Down's syndrome
6	5 - 10	Male	Down's syndrome

The Observers

The three observers who participated in the study had varying backgrounds and experience.

Observer 1.

Age: 37

Qualification: Master of Education

Teaching Experience: Twelve years of teaching experience in elementary schools.

This observer had had no previous experience of the Prep Programme materials or teaching strategies and only limited experience with retarded children.

Observer 2.

Age: 32

Qualifications: B.P.E.

M.A. in Physical Education

Teaching Experience: Three years in the Prep Programme.

Observer 3.

Age: 21

Qualification: Student in the fourth year of the B.P.E. programme

Teaching Experience: One year in the Prep Programme.

APPENDIX C

WRITTEN MATERIALS PROVIDED FOR OBSERVERS

Coding Form

Segment No. _____ Teacher and Child _____

Observer _____

Teacher Verbalizations											
Antecedent											
Behaviour											
Consequences											

MASTER TAPE DATA

No.	Excerpt No.	Participants	Skill	Audio Cue to Begin	Audio Cue to Finish
				Note: Audio Cues to be included in the coding where appropriate.	
1	138 (Rev. 346)	Cathy and Jamie	Jump	"You show Karen. Show Karen how you can jump."	"Bend your knees." "That's the boy" - And ...
2	166 (Rev. 407)	Cathy and Jamie	Jump	"You reach to my hands Jamie." "You reach to my hands."	"Again."
3	29 (Rev. 88)	Cathy and Leo	Series of bounces and catch	"Let's do bounce again O.K." "Leo."	"Don't forget to catch."
4	110 (Rev. 297)	Nancy and Michael	Catch	"Michael." "Put your hands out." "Ready to catch." "Watch the ball Mike."	"Come on, Mike." "Throw the ball to me."

No.	Excerpt No.	Participants	Skill	Audio Cue to Begin	Audio Cue to Finish
5	77 (Rev. 212)	Nancy and Michael	Catch	A clap, then "Michael!" "Michael!"	"Put your hands out like this." "Put your hands out" and child's response
6	40 (Rev. 152)	Nancy and Walter	Kick	"Kick the ball." "Swing your leg and kick the ball."	"Swing your leg" and child's response
7	19 (Rev. 68)	Diane and Brian	Jump	"Are you losing your pants?"	"Aah, come on." "One more time."
8	124 (Rev. 314)	Cathy and Jamie	Jump	"Get back up there."	"Stand up!" "Ready, huh, ready?"
9	104 (Rev. 280	Nancy and Michael	Catch	"Michael, stand up."	"Throw the ball to me." "Michael."

No.	Excerpt No.	Participants	Skill	Audio Cue to Begin	Audio Cue to Finish
10	97 (Rev. 262)	Nancy and Walter	Series of bounces and catch	"Oh you're not going anywhere." "You're not going anywhere."	"Bounce, bounce - aah."
11	50 (Rev. 172)	Nancy and Walter	Kick	"O.K. Kick the ball, Walter!"	"We are going to kick."
12	5 (Rev. 20)	Diane and Brian	Jump	"Try again." "That was a good jump." "Oh, you like cuddling, eh?"	"Atta boy!" "Try again."
13	74 (Rev. 190)	Nancy and Walter	Kick	"No, you're not going anywhere."	"That's right." "Kick the ball."
14	173 (Rev. 421)	Diane and Paulette	Reverse Hanging	"O.K. - Try again." "Hang on real tight with your hands."	"There we go - good."

No.	Excerpt No.	Participants	Skill	Audio Cue to Begin	Audio Cue to Finish
15	37 (Rev. 133)	Nancy and Walter	Kick	"Walter, watch me!" "Watch me, Walter!" "I swing my leg!"	Child says "kick". "That's right, kick." "Kick the ball."
16	10 (Rev. 44)	Diane and Brian	Jump	(1st Verbal behaviour of segment) "Ready - one, two, three, jump!"	"Atta boy!" "Try again."
17	162 (Rev. 392)	Cathy and Jamie	Jump	"Good boy!" "Again." "Bend your knees and jump."	"Bend your knees and - "
18	133 (Rev. 330)	Diane and Paulette	Reverse Hanging	"Hang on with your hands." "Ooh." "Good."	"Hang on with your hands." "Hang on with your hands."

CODING PROCEDURE

AND CHECK SHEET

1. Transcribe teacher verbal behaviours on work pad.

2. Code verbal behaviours. Remember Body Focus
   Environmental Focus

3. Enter child behaviours - all skill responses
   - those motor responses that are specifically manded or solicited
   - negativism

4. Enter subscripts - p, m, d..

5. Check coding to see if there are any discrepancies.

6. Check time factor - time lapse.

7. Was the task altered by manipulating the environment? Were any responses hurtful?

8. Transcribe the code symbols and significant teacher verbalizations onto the coding sheet provided.