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Social and Cognitive Play of Young Handicapped Children in a Special Education Preschool Center

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SOCIAL AND COGNITIVE PLAY OF YOUNG HANDICAPPED CHILDREN IN A SPECIAL EDUCATION PRESCHOOL CENTER

by

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The present study examined the social and cognitive aspects of the play of a group of young handicapped children. The setting was a special education preschool center for the behavior disordered (BD), educablely mentally handicapped (EMH) and learning disabled (LD) in the metropolitan Chicago area. The theoretical position of the study was that play is both diagnostic and that it fosters the development of the child. Social and cognitive play were directly measured on the two dimensions of cognitive level and social level. Cognitive levels of play were based on those described by Piaget (1962) and empirically defined by Smilansky (1968). Social levels were based on those described by Parten (1932) and empirically delineated by Rubin (1977). Non-play categories included unoccuppied and onlooker (Parten, 1932), active conversation and reading (Rubin, 1977).

Seventy-four young handicapped children (48 boys and 26 girls) ages 3 to 6 (mean: 5.25) were observed during free play for one minute a day for 20 days. Eight observers reached inter-rater reliability on time and category of 80 per cent. Results of a 2 (sex) X 3 (handicap) multivariate analysis of variance with age and IQ as covariables show that girls play significantly more often ($p < .035$) at the parallel constructive level than boys, and EMH

boys are involved significantly ($p < .042$) more frequently in group constructive behavior. Factorial analysis of variance with age and IQ as covariables show that girls engage in significantly ($p < .05$) more onlooker activity and that BD children converse actively significantly ($p < .05$) more frequently; EMH children converse less frequently. Covariables are significant for age for the social levels of parallel ($p < .001$) and group ($p < .03$) behavior; IQ is a significant ($p < .007$) covariable for reading. Descriptive data derived include the kinds of material used in free play and types of social interaction observed. The relative percentages of free play behavior by each social/cognitive category were also computed and compared to those reported in similar studies of non-handicapped children. Ancillary descriptive data is given to describe the differences across the educational groupings of the subjects.

This study has identified some play patterns of young handicapped children. There is need for further examination in other studies using this methodology as well as alternate methods. Other methods of study may help address the issues of educational class environments and teacher interaction styles as potentially important variables that influence and mask possible "real" differences across handicap and sex. Implications are drawn for curricula and research.

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CHAPTER I

OVERVIEW OF THE PROBLEM

Introduction

The present study examined the social and cognitive aspects of the play of a group of young handicapped children ages 3 to 6. The setting was a special education preschool center for the behaviorally disordered, educablely mentally handicapped and learning disabled located in the metropolitan Chicago area. This investigation attempted to validate the assumption that the play patterns of these handicapped preschool children are sequential (ordered) and parallel to the stages of normal development. Although the play patterns of handicapped children may differ from that of expected chronological age norms, the often stated expectation is that handicapped children will progress developmentally through the same described sequence of increasingly complex play behavior. A qualification of this assumption, however, is that there may be some serious irregularities in the parallel development of the play patterns of handicapped children. These irregularities arise from the atypical life experiences and growth of the handicapped individual. In other words, the defective or disturbed personality and/or intellectual system of the handicapped lead to the development of irregular profiles of play behavior--some aspects in keeping with developmental norms, some in keeping with mental age expectancies, and some depressed functioning as a result of a complex interaction of organic and environmental factors. These

deviations are greater than those of a typical child who may exhibit some irregularities in the normal developmental process, within a range known as developmental norms. In addition to the deviation from age norms, the play patterns of handicapped children are assumed to show the same deviations based on a number of factors, as demonstrated in recent research with regard to normal populations. This recent research has delineated distinct patterns of play behavior based upon the factors of sex, socioeconomic status and intelligence, although the play of normal children remains in a developmental sequence (cf. Bruner, Jolly & Sylva, 1976).

The theoretical position of this study was that play is multi-dimensional--containing social, emotional, physical and cognitive elements which interact in a complex fashion to reflect the child's growth and development. Play thus both facilitates development and provides a means for its measurement (cf. Schaefer, 1976). Specifically of concern, from this theoretical position, was the manner in which typical preschool children develop social competencies through play. Such skills include self-control, independence, initiative and cooperation. These skills foster their success in the social world of the school. While play can be described as containing emotional and physical aspects as well, the dimensions most central to observable social competency are the cognitive and social aspects.

Cognitive skills have physical components in the beginning stages of intellectual development (Piaget, 1952), in the infant and young child's exploration of his world through sensorimotor activity. In observable play these cognitive activities are

> activities for the mere pleasure of mastering them and

> acquiring thereby a feeling of virtuosity or power . . . the child looks for the sake of looking, handles for the sake of handling, moves his arms and hands . . . shakes hanging objects and his toys. He is doing actions which are an end in themselves . . . later motor exercises . . . throwing stones into a pond, making water spurt from a tap, jumping, and so on . . . . (Piaget, 1962, pp. 89-90)

Social skills have important emotional components as well. Erikson (1963) describes play as ". . . a function of the ego, an attempt to synchronize the bodily and the social processes with self" (p. 211). In his terms, the concepts for stages of development prior to and including the preschool years (trust versus mistrust; autonomy versus shame and doubt; initiative versus guilt) may be viewed as describing ". . . ways of experiencing accessible to introspection, ways of behaving observable by others and unconscious inner states determinable by test and analysis" (Erikson, 1963, p. 251).

An additional problem with regard to emotional aspects of play is that they are not susceptible to operational definition or direct observation except as they impact on behavior in a social context. Indeed, Piaget (1952) views cognition and emotion as being inextricably related. Although he does not specifically discuss the precise workings of emotions he views them as motivating or energy elements of cognitive activity. For these and other reasons the emotional and the physical are viewed as elements of social and cognitive behavior which was directly measured in this study.

This study documented the observable social and cognitive aspects of play in a sample of young handicapped children. A major problem of young handicapped children is their lack of important social competencies. The theoretical position of this investigation suggests that many of the social skills needed to develop social competency in young children can be fostered through the curricular use of play. Therefore, an empirical documentation of the social and cognitive aspects of play, both elements of social competency, can be useful for forming a departure point for future curricular development.

Before addressing the special problems and definitions of this study, a discussion of the developmental levels of play is presented. Next, programming for social competence in the curriculum for handicapped children and the role of play in that regard will be presented. Finally, specific hypotheses, definitions and limitations of this study are included.

Developmental Levels of Play

A child's play reflects his stage of development (Freud, 1965; Peller, 1954). From a cognitive development vantage point Piaget (1962) describes an infant's play as sensory-motor activity. The infant is actively engaged in manipulation of body parts in an effort to explore his world. As the infant matures, he expands his cognitive awareness through exploration and manipulation of small objects. The toddler moves from exploration of objects and toys toward a discovery of the social and more complex cognitive or symbolic world. At the preschool age a young child begins to incorporate symbolic

actions in his play. Later the child incorporates games with rules into his play; this kind of play involves accepting prearranged limits for play. As the child matures intellectually the rules can be more and more complex. For example, chess requires an ability to function at a highly symbolic cognitive level.

Piaget's stages of play have been empirically described and delineated by Smilansky (1968) in the following sequential order:

Functional play. The kind of play that permits the child to explore the capacity of his body and practice skills discovered. In developing an understanding of his physical capabilities and his environment, he moves from body manipulation, self-imitation and exploration to the utilization of small toys and of his immediate environment. Examples include: repetition of muscular activity; self-imitation of that activity which leads to new variations; repetition and analagous variation of voice sounds.

Constructive play. The child functions as a creator, utilizing play materials for an identified purpose. Play at this stage is characterized by longer attention spans, child-set goals and following of some adult-set goals. Examples: building something with sand; utilizing blocks to make something.

Dramatic play. Play becomes symbolic at this stage. As an actor, observer and participator the child explores and manipulates the imaginary and real world to develop further understanding of himself and his place in the world. Examples: playing house, grocery store, space ship.

Games with rules. This stage, the highest, is characterized

by the child's conforming to prearranged rules for play. This kind of play is carried through to adulthood.

The cognitive development apparent in the advancing stages described above takes place in a social world, advancing from the infant's total concern with himself and his own needs to a gradual awareness of others and an increasing ability to interact reciprocally beginning in the preschool years.

The social interaction of young children in play was described by Parten in 1932. This study is viewed as a landmark. She described six sequential stages of social participation:

> Unoccupied behavior: The child apparently is not playing at all, at least not in the usual sense, but occupies himself with watching anything which happens to be of momentary interest. When there is nothing exciting taking place, he plays with his own body, gets on and off chairs, just stands around, follows the teacher, or sits in one spot glancing around the room.
>
> Onlooker behavior: The child spends most of his time watching the others play. He often talks to the playing children, asks questions or gives suggestions, but does not enter into the play himself. He stands or sits within speaking distance of the group so that he can see and hear all that is taking place. Thus he differs from the unoccupied child, who notices anything that happens to be exciting and is not especially interested in groups of children.

Solitary play: The child plays alone and independently with toys that are different from those used by the children within speaking distance and makes no effort to get close to or speak to the other children. His interest is centered upon his own activity and he pursues it without reference to what others are doing.

Parallel play: The child plays independently but the activity he chooses naturally brings him among other children. He plays with toys which are like those which the children around him are using, but he plays with the toys as he sees fit and does not try to influence the activity of the children near him. Thus he plays beside rather than with the other children (cf. solitary play above).

Associative play: The child plays with other children. There are borrowing and lending of play materials; following one another with trains and wagons; mild attempts to control which children may or may not play in the groups. All engage in similar if not identical activity; there is no division of labor and no organization of activity. Each child acts as he wishes, does not subordinate his interests to the group.

Cooperative or Organized Supplementary play: The child plays in a group that is organized for the

> purpose of making some material product or striving to attain some competitive goal, or dramatizing situations of adult or group life, or of playing formal games. There is a marked sense of belonging or not belonging to the group. The control of the group situation is in the hands of one or two members, who direct the activity of the others. The goal as well as the method of attaining it necessitates a division of labor, the taking of different roles by the various group members, and the organization of activity so that the efforts of one child are supplemented by those of another. (Parten, 1932, pp. 246-251)

There have been few replications of Parten's early work. Recent studies (Barnes, 1971; Rubin, 1976) indicate some departure from the age sequence of social play development described by Parten. However, the described categories seem for the most part adequate and are viewed as developmental norms by early educators in the field (Ausubel & Sullivan, 1970; Brophy, 1977; Papalia & Olds, 1978; Stone & Church, 1976).

To the investigator's knowledge, there have been no investigations to date utilizing the combined Smilansky (1968) and Parten (1932) material with young handicapped children. Several studies utilized the Parten or modified Parten in an examination of social interaction patterns of handicapped children in integrated (mainstream) and non-integrated settings (Peterson & Haralick, 1978; Wintre, n.d.; Wintre & Webster, 1974). A discussion of these studies and others is inclu-

ded in the next chapter. Although the Smilansky definitions of the Piagetian stages of play have apparently not been utilized with studies of the handicapped, investigation into the Piagetian stages of moral development (Piaget, 1965) in the mentally retarded by Inhelder (1974) and other studies of Piagetian principles and definitions indicated that retarded children proceed through the same developmental stages as normal children. Mentally retarded children reach these stages at an older chronological age, and do not accomplish the stages involving the most complex thought. This study, which examined social and cognitive aspects of the play of young handicapped children, can help to formulate some beginning knowledge of the developmental deviations of handicapped children at play.

Rubin (1977a) emphasizes the importance of observing the social play of children from a cognitive perspective as well as a social interaction standpoint. His studies have shown developmental differences for the forms of solitary, parallel and group play, "a finding which would have remained hidden without the use of a more fine-grained observation scale" (p. 29) than that developed by Parten. Specific differences observed by Rubin (1976, 1977a) and Barnes, who recently replicated Parten's study (1971), include a greater percentage of free play time spent in solitary play at the 5-year age than Parten found. The addition of a cognitive perspective points to important qualitative differences in the complexity of the solitary play of 5-year-olds in comparison with younger children. Social maturity cannot, then, be judged on the basis of the level of social interaction alone. For this reason, in a normative examination of the play of young handicapped children, both cognitive and social functioning have been docu-

mented here in order to give preliminary data about the social maturity of handicapped children for use in curricular planning for the enhancement of social competency skills.

Social competency is viewed for the purposes of this paper as the ability to function in a preschool or kindergarten class with developmentally appropriate self-control, independence, initiative and cooperation. In this context, the child is moving away from a preoccupation with self, beginning to gain control over the satisfaction of his own needs and beginning to function with consideration for the rights and rules of society. Social competency includes the theoretically inextricably combined social/emotional domain in combination with physical and cognitive activity. Social and cognitive functioning are observable aspects of the competency.

Implicit in this construct is a sense of independence. The child's play is voluntary behavior; as a result, it is a highly useful index of his social functioning, since he controls the situation for the most part, rather than functioning in response to a disciplined setting.

Programming for Social Competence

An important aspect of programming for handicapped children includes attention to social competence. Maladaptive social behavior is an essential component of the definition of mental retardation (Grossman, 1973). In addition, Myklebust and Johnson (1967) describe a kind of learning disability that is social in nature. Social competency is a prime factor in the consideration of least restrictive programming for the handicapped, mandated by recent federal legislation (P. L. 94-142 The Education of All Handicapped Children Act), which is

becoming accepted program practice. As a result of consideration of social competence in the definition and programming for the handicapped, children with the least social competence will be found in the most socially isolated settings--institutions or self-contained special education classes.

Social Competence Developed Through Play

The development of social competence requires both social and cognitive skills. Most of these skills, if not all, can be developed through play (Bruner, 1972; Kohlberg, 1968). "Once the symbolic transformation of play has occurred, . . . play can serve as a vehicle for teaching the nature of social conventions and it can also teach about the nature of conventions per se" (Bruner, 1972, p. 699).

In a broad definition, play might be thought of as the natural learning medium of the child. For the purposes of this investigation play was defined as a complex process involving social, cognitive, emotional and physical elements and relating to an aspect of reality as not "serious" or "real". For the child this characterization makes it possible to relate to things that might otherwise be confusing, frightening, mysterious, irrelevant, risky or forbidden. In this manner the child evolves competencies and defenses. The process has a developmental sequence.

Illustrations of how the child begins to obtain mastery of social demands placed upon him in class through play are shown in the following six examples:

At the functional level--

Social communication. Child babbles "ba ba." Teacher or peer shifts sounds in response slightly to "Bye, bye," accompanied

by a wave. Later the child waves and approximates "Bye, bye".

Physical competence. Child walks up and down stairs or blocks, gradually learning alternate step pattern.

At the constructive level--

Independence. "Watch me, I can do it." Children building with blocks, making sand pies, outwardly express feelings of mastery.

Social judgment. Child practices filling and pouring containers at the sand or water table. The knowledge acquired can be translated to snack time activities, as well as contributing to the development of math/logical thinking.

At the dramatic level--

Cooperation. "It's my turn now." "You can't have it, it's mine." Through the resolution of such conflicts, initially with adult help, the child can moderate disputes for himself or play out imaginary disputes and sharing experiences.

Impulse control. By playing out resistances to temptation--"The cat ate the cake, I didn't," and excesses of emotion--"Ow, ow, he's killing me," the child practices limit setting and conformance. In addition, he practices different styles of moderating his impulses.

Play is the medium through which the child develops a sense of mastery of his environment, a feeling of competence. Through play he can try on roles, explore his environment, and solve situations that expand his awareness of the real world and his ability to cope with the demands (Erikson, 1963). This process is both cognitive and affective, an interaction of the states; for example, cognitive problem-solving can lead to increased social understanding.

Statement of Purpose

The purpose of this study is to document through observation the cognitive and social aspects of the play behavior of young handicapped children utilizing a rating scale (Rubin, 1977b). The information attained can be applied to curricular development for the enhancement of social competency in handicapped children.

Definitions

Play. A complex process, involving social, cognitive, physical and emotional elements, of relating to an aspect of reality as not serious or real. For the child this characterization makes it possible to relate to things that might otherwise be confusing, frightening, mysterious, irrelevant, risky or forbidden. In this manner the child evolves competencies and defenses. The process has a developmental sequence.

Cognitive play. Includes the following levels: functional, constructive, dramatic and games with rules which were defined by Smilansky (1968) and are based on Piaget's (1952) definitions. See pages 5 and 6 for the full definitions.

Social play. Includes the Parten (1932) categories of solitary, parallel, associative and cooperative play which are described on pages 7 and 8.

Non-play. Includes the Parten (1932) categories of unoccupied and onlooker (see page 6); and from the Rubin (1977b) instrument: reading and active conversation.

Social competency. The ability to function in a preschool or kindergarten class with developmentally appropriate self-control, independence, initiative and cooperation. In this context, the child

is moving away from a preoccupation with self, beginning to gain control over the satisfaction of his own needs and beginning to function with consideration for the rights and rules of society.

The following definitions of special education related terminology represent the current practice in the State of Illinois (Article XIV Illinois Revised Statutes, 1975) and are in keeping with current theoretical views of handicapped children (Kirk & Gallagher, 1979).

Handicapped children. Those who have been professionally diagnosed as needing special educational intervention in order to succeed in school. In traditional label terms (mental retardation, behavior disorders, learning disabilities), these children represent the moderately handicapped rather than the severely and profoundly handicapped who might be served in institutions or isolated settings, or the mildly handicapped who may be served within the mainstream of regular education.

The children in the special education center studied were described as educably mentally handicapped, learning disabled or behaviorally disordered. The definitions (Kirk & Gallagher, 1979) are as follows:

> The educable mentally retarded child. An educable mentally retarded child (corresponds to the mildly retarded child in the AAMD classification) is one who, because of subnormal mental development, is unable to profit sufficiently from the regular program of the regular elementary school but who is considered to have potentialities for development in three areas: (1) edu-

cability in academic subjects of the school at the primary or advanced elementary grade levels, (2) educability in social adjustment to a point at which the child can get along independently in the community, and (3) occupational adequacies to such a degree that the child can later be self-supporting partially or totally at the adult level. (Kirk & Gallagher, p. 110)

A specific learning disability is a psychological or neurological impediment to spoken or written language or perceptual, cognitive, or motor behavior. The impediment (1) is manifested by discrepancies among specific behaviors and achievements or between evidenced ability and academic achievement, (2) is of such nature and extent that the child does not learn by the instructional methods and materials appropriate for the majority of children and requires specialized procedures for development, and (3) is not primarily due to severe mental retardation, sensory handicaps, emotional problems, or lack of opportunity to learn. (Kirk & Gallagher, p. 285)

Behavioral disorder is defined as a marked deviation from age-appropriate behavior that significantly interferes with (1) the child's own development, (2) the lives of others, or (3) both. (Kirk & Gallagher, p. 389)

Continuum of handicapping conditions. Mild, moderate, severe and profound refer to levels of handicapping conditions; these defini-

tions are accepted in the fields of the hearing impaired and mental retardation. Each refers to specifically defined levels of functioning. These terms have been generalized to other handicapping conditions (behavior disorders and learning disabilities) as well, in order to determine the kind of special education program needed to meet the child's needs.

Non-categorical classes. Those classes which contain children, each of whom have one or more of the following traditionally labeled handicaps; mental retardation, behavior disorders, learning disabilities. In accordance with current practice children are placed in groups by age rather than necessarily according to the dual criteria of age and handicap.

Preschool children. Ranging in age from 3 to 5 years in accordance with current practice in the grouping of special education children.

Hypotheses

1. There will be no differences in the cognitive play scores of the children on the basis of age, IQ, sex or diagnosed handicap.

2. There will be no differences in the social play scores of the children on the basis of age, IQ, sex or diagnosed handicap.

3. There will be no differences in the cognitive play scores of the children within each social play category on the basis of age, IQ, sex or diagnosed handicap.

4. There will be no differences in the non-play behavior scores of the children on the basis of age, IQ, sex or diagnosed handicap.

Limitations of the Study

1. This study is limited to one center in the metropolitan Chi-

cago area, which houses the preschool special education students for the special education cooperative participating in the study.

2. Twelve classes were observed.

3. Seventy-four subjects were chosen utilizing the total enrollment of each class who were enrolled in the program since October 15, 1977.

4. Observed free play represented only part (approximately 30%) of the daily program.

Organization of the Study

In order to document the assumptions about the play behavior of handicapped preschool students, an observation of free play in a special education preschool center was conducted. Observations are categorized according to social categories derived from Parten (1932) and Rubin (1977b) and cognitive categories derived and elaborated from Piaget (1926, 1932, 1962) by Smilansky (1968). From the documentation, implications are drawn for curriculum modification and teacher education in the area of social competence for the preschool handicapped child.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This study is focused upon the documentation of social and cognitive play patterns in young handicapped children. Implications for curricular modification in the area of social competence programming for the preschool handicapped child are drawn from an analysis of the observed play patterns. This chapter contains a discussion of the literature related to the undertaking of this research project. Included in this review is a discussion of the following questions: What is play? What roles does play serve in the child's development? What is the relationship between cognitive and affective skills? What do studies of social play show in normal children? What do studies of social play show in handicapped children? What do empirical studies of cognitive and social play show? What do studies of the play of handicapped children show?

What is Play?

Play is an elusive construct to define. A variety of definitions have been advanced, each reflecting the broader conceptual framework of the individual author. There is no widespread, universal definition (Berlyne, 1968; Ellis, 1973; Neumann, 1971).

This study was concerned with the function of play in the development of children. For this reason it draws support from those

definitions concerned with play as a dynamic process. Theories which represent this point of view have been advanced by the following: Erikson, 1963; Issacs, 1933; Millar, 1968; Piaget, 1962; Valentine, 1938; Vygotsky, 1967; White, 1959. From this theoretical position play can be described as sustained, absorbing, active, purposeful, joyful; an opportunity for practice of new skills and for discovery of the child's world. In an anthropological review, Bruner describes play as a "means of minimizing the consequences of one's actions and of learning, therefore in a less risky situation . . . /an/ opportunity to try combinations of behavior that would, under functional pressures never be tried" (Bruner, 1972, p. 693).

What Role Does Play Serve in the Child's Development?

Play functions as a vehicle for growth of the child. In an interaction and exploration of his environment, the child gradually develops increasing competencies as an independent individual. The growth through play can be observed in the changing character of children's play at different ages. Identifiable stages of play have been described by Erikson, 1963; Freud, 1965; Peller, 1954; Piaget, 1962. The play of the child at a given age reflects the primary developmental issues of the period. Thus, infant play is observed as centered around the body. The infant's attention is to the sound, smells and sights around. He is tirelessly eager, repetitive. The infant plays Peek-a-Boo with his mother; tries making all kinds of sounds; gradually broadens his horizon, as he begins crawling and walking further.

Toddler play extends to the world of small toys (Erikson, 1963). The toddler takes delight in getting in and out of boxes and baskets,

dropping and carrying objects, splashing water. At this age the young child becomes interested in fine motor sensory discrimination and motor coordination activities as well. He begins to try buttons, zippers, puzzles and crayons. Climbing, running and other large muscle activities still excite the young toddler; he has ever increasing competency in these activities. Word play is another feature of toddler play: "No, no, no" in a very loud voice, accompanied by finger shaking perhaps; favorite nursery rhymes--"All the king's horses, all the king's horses"; repetition of words as a prompt to the adult--"Woof, woof, are you a dog? I not a dog!"

Language and action gain increasing sophistication as the young child grows. Preschoolers begin to symbolically represent their world in dramatic play. At this stage young children play out familiar and unfamiliar, real and imagined themes: grocery store, baby, mother, school, superman, etc. In this play the child has an opportunity to try roles and develop a sense of self. Preschool children have greater ability to construct representations of their world with blocks, clay, paint and crayons. They can represent absent objects through make believe. Preschoolers have the capacity to use materials more systematically and can interact with peers cooperatively and creatively. Simple games become a feature of the play of the older preschool child: Ring-around-the-Rosie; London Bridge is falling down. The complexity of games increases and overt fantasy play decreases as the young child grows to school age. Games with rules continue as a feature of the play of older children and adults (Erikson, 1963; Piaget, 1962).

What Is the Relationship Between Affective and Cognitive Skills?

There is an intricate and intertwined relationship between cognitive and affective (social and emotional) development. From a child development point of view, early experiences should provide a secure, warm relationship. This relationship allows the infant to gain psychic energy to explore and expand his world both cognitively and affectively (Erikson, 1963; Spitz, 1965). If these early experiences do not provide stability, growth and development may be impaired (Bowlby, 1969; Spitz, 1946). Beyond the crucial first year of life, a consistent, reassuring and supporting environment continues to foster a child's rapid exploration and internalization of his world. Through imitation of and identification with significant others a child learns to become a competent, self-confident being (Erikson, 1963; White, 1959). Breakdown within the environmental support system can therefore lead to difficulties in cognitive and/or affective functioning.

As the preschool child enters the school world, he expands his network of significant others to include the teacher. To a certain extent peers also become significant, although according to Erikson (1963), the adult role model is more important to the young child who is striving to be more like an adult. The teacher as role model, then, influences the child's performance cognitively and affectively through the kind of experiences that she provides to enhance his social competence.

What Are Some Assumptions About the Development of Handicapped Children?

Within a broad range handicap is defined by the specific cultural and social setting (Goffman, 1963; Hobbs, 1975). This being the

case, are handicapped children sufficiently similar to non-handicapped that they progress in similar developmental patterns as non-handicapped children? This assumption of similar developmental pattern has been variously tested in a variety of empirical studies for each of the traditional handicapping conditions (Gallagher, 1975). In the case of the mentally retarded, for example, Piaget's (1952) theories have been empirically tested. The reported result was that mentally retarded children follow the developmental pattern outlined by Piaget, but experience each at a later age and do not reach the final stage of logical thinking (Kahn, 1975; Reiss, 1967; Rubin & Orr, 1974). There are, however, individual differences in reasoning ability of mentally retarded children (Antonak & Roberge, 1978).

The developmental profiles of learning disabled children--as described by theory, case study and empirical study--reflect developmental deviation primarily in the cognitive area. These deviations are described as occurring in sensory-motor: visual and auditory; perceptual-motor: body image and spatial relations; language: oral and written; and information processing (Farnham-Diggory, 1978; Lerner, 1976; Myklebust & Johnson, 1967). In addition, Myklebust and Johnson (1967) describe a type of learning disability "as a disturbance in social perception. This aspect of behavior may be defined as the ability to immediately identify and recognize the meaning and significance of the behavior of others" (1967, p. 34). The emotional impact of a child with learning disabilities on his family is described as a disorganizing and emotionally upsetting factor, equivalent in distress impact to that of a physical disability (Farnham-Diggory, 1978). To the extent that an individual child's family is able to

cope with the crisis and upset, the impact of emotional/social problems for the child may be somewhat minimized.

Emotionally disturbed/socially maladjusted children--behavior disordered--have their primary developmental dysfunction in social/emotional development and functioning. Behavior disorders may be classified as being developmental: feeding, sleeping, mother-child interaction disturbances; neurotic: fears, hysteria; psychophysiological: asthma, gastro-intestinal; psychotic: autism, childhood schizophrenia; as well as including mental retardation and learning disabilities (Anthony, 1974; Harrison & McDermott, 1972). Factors which influence the child's behavioral manifestation of a behavior disorder and the impact on his growth and development include the factors of age of onset; family and other social/emotional responses to the child's manifest behavior; severity of the crisis leading to the child's disorder; organic or psychophysiologic factors, duration of the maladaptive coping mechanisms and perceptions of the child's social/emotional reality (Freud, 1965). It is likely that a child with a behavior disorder will have his total developmental profile affected. In the preschool years, behavior disorders are frequently identified by referral problems such as language difficulties or uncontrollable temper outbursts since the young child is required at this stage to develop some social skills and to begin the reciprocal separation from a very close attachment to his mother (or primary caretaker) (cf. Freud, 1965). Remediation through therapeutic and educational interventions may sometimes at best merely ameliorate the symptoms of the disorder; the effect of behavior disorders on the

child's development may be lifelong. Some disorders are, of course, transitory and the developmental effect is minimal or time-limited (cf. GAP, 1966).

Studies of the effects of other handicapping conditions have identified a trend for developmental variation in areas most affected by the handicap. As Mogford (1977) puts it, "all handicapped children have one thing in common--that their ability to explore, interact with and master the environment is impaired, with a consequent distortion or deprivation of normal childhood experience (p. 171)." Furth (1966) replicated a variety of Piagetian tasks with the hearing impaired and found delayed accomplishment of Piagetian tasks. In addition, he found that there are individual differences for cognitive functioning within the total population of hearing impaired. Similarly, blind children are found to develop social interactional and imitative role play skills somewhat later (Fraigberg, 1968; Fraigberg & Adelson, 1973; Fraigberg & Freedman, 1964). The physically disabled may develop handicaps of a psychological or sociological nature based upon their interactions with significant others, the larger world, and their acceptance of an inability to perform certain physical activities based upon their physical incapacity (Meyerson, 1971).

Based on the above research, in summary the development of handicapped children can be described as following the developmental trends of normal development with specific deviations based on the nature of the handicapping condition, the child's perception of his capacity and worth as an individual, as well as the response of the social world to the child. For the young children of focus in this study, developmental differences should be found in the social and

cognitive aspects of play since the handicaps of mental retardation, learning disabilities, and behavior disorders by definition and behavioral description involve social and cognitive functioning.

What Do Studies of Social Play Show in Normal Children?

Parten (1932) in a study that is viewed as a classic, described the social interaction of preschool children in six sequential stages of development: unoccupied, onlooker, solitary play, parallel play, associative play and cooperative play. (Definitions are found in the first chapter and in the appendix.) In this study four untrained observers observed 22 boys and 20 girls, ages 2 to 5, during free play for one minute samples of behavior. The data was gathered over a four month period; observers reached 89% agreement. Children attended the University of Minnesota Lab School, so the sample may be described as middle-class. Parten described the increasing social complexity of behavior, i.e., cooperative play as increasing with age.

Barnes (1971) conducted a replication of the Parten study with a similar population of 42 preschool children, ranging in age from 3 to 5 years. Three trained observers collected the observations for five minutes at the beginning of the first and of the second half hour of a one hour play period. The data gathering procedure represents a departure from the original Parten through the use of trained observers and the gathering of ten minutes of data on one child per day rather than the one minute procedure of Parten. Barnes concluded that play behavior of preschoolers was less social than it was 40 years ago.

Other studies have utilized a number of variations of the original Parten Scale to describe social play and social interactions of

preschool children. Tizard, Philips and Plewis (1976) report observation of 109 children aged 3 to 4 years in 12 preschool centers. In this study the categories of onlooker and unoccupied are combined into non-play. Cooperative play is subdivided into three stages. The authors indicate that [2/3 of the play of three-year-olds and 1/2 of the play of four-year-olds was non-social: solitary or parallel]. Smith (1978), in a longitudinal study of 48 children with a mean age of 35 months, reports that parallel behavior is found throughout the preschool years, although it seems to decrease with age. Solitary behavior seemed to decrease with age in this study. Modifications of Parten categories in this study included the collapsing of associative and cooperative into group play including onlooker with solitary and adding a category for play with an adult. Although trends in these studies seem similar to those reported by Parten, the findings cannot be compared because of the variation of categories.

In a series of studies Rubin and his associates (Rubin, 1976; Rubin, Maioni & Hornung, 1976; Rubin, Watson & Jambor, 1978) report observations of the play of young children utilizing the Parten Scale, as well as other measures. In the first study (Rubin, 1976) 20 middle-class preschool children with a mean age of 3.73 years were observed for 30 consecutive school days for one minute a day. The results of time in each category were similar to those reported by Parten. Children were observed by two observers simultaneously from a booth with audio earphones and one-way mirrors; observer agreement is reported at 95%.

The Rubin, Maioni and Hornung study was an observational study across social class with 23 lower-class and 24 middle-class children

who were observed during free play for one minute on 30 consecutive school days by the two associates, who reach 95% agreement on categories. This study added the Smilansky (1968) definitions of cognitive behavior to the Parten Scale. Social class differences are reported as well as differences across sex. The finding of note in this research project is that of the combined results of social and cognitive behavior which showed age differences for the cognitive level of solitary play; older children engaged in higher cognitive levels than younger.

The Rubin, Watson and Jambor (1978) study examined the play patterns of preschool and kindergarten children utilizing the Parten-Smilansky Scales in combination. There were 27 preschoolers ranging in age from 45 to 59 months, and 28 kindergarteners ranging in age from 58 to 69 months. Each child was observed during free play for one minute on 30 consecutive school days. In this study, associative and cooperative play were combined into the category group play for purposes of analysis when it was discovered that the same behavior in the different settings was being up-graded for the kindergarten group. Observer reliability was reported as 92.5% in the preschool group and 87.5% in the kindergarten group. Differences in child behavior are found in the categories of solitary and parallel functional with the younger children engaging in more of these behaviors. Kindergarten children engage in more parallel constructive and dramatic and group dramatic play than the preschoolers.

The Rubin studies identify trends of social and cognitive play behavior in normal children. Since both social and cognitive behavior are involved in the development of social competency, the current study

utilized procedures and modifications of Parten identified by Rubin.

What Do Studies of the Social Play of Handicapped Children Show?

Social play of handicapped children has been one of the variables investigated during several studies. Those which have used the Parten Scale include both integrated (mainstream) and non-integrated settings. Peterson and Haralick (1977), in a study involving five normal model children ages 3 to 4 and eight moderately mentally retarded children, ages 4 to 8 examined the social interaction for each subject in 30-second time intervals. This study utilized three observers, 30-minute periods, twice a week for 18 days. Four 5-minute samples of behavior were collected each day. The Parten Scale was modified as follows: isolate, parallel and cooperative; deleting unoccupied, onlooker and associative. Results were reported that the non-handicapped played with the handicapped 51.9% of the non-isolate play. Non-handicapped children tend to prefer to play with each other. The play of the handicapped children tended to be of a more complex level when they were playing with the non-handicapped. In another study examining the effect of non-handicapped as role models for the handicapped, Guralick (1976) used the Parten Scale and reports that the behavior of the handicapped becomes more social with the role models. A sample of four mildly handicapped and four non-handicapped children, ages 4 to 5, was observed; observer reliability is reported as 87%.

Wintre (n.d.) has used the Parten Scale to observe handicapped children. The first (Wintre & Webster, 1974) study was used to monitor the progress of a group of six boys, ranging in age from 6 to 10 years old who were attending a summer camp with a training program for

social adjustment. All had diagnosed behavior disorders. After one hour studying the definitions, two observers coded the observed behavior with 85.9% agreement.

In several unpublished studies, Wintre used the Parten Scale as part of the data gathered on young handicapped and non-handicapped children who were brought to the research center for various projects. In these studies observer reliability was reported to range from 79.2% to 83.9%. The Parten Scale was modified in these studies to include a category for adult-directed behavior. The ratings for the child's behavior were made for 30-second intervals in 10-second units, with the majority behavior being coded for each 10-second interval.

Developmental trends for the social play behavior of young non-handicapped children have been identified and documented. The trends seem to follow those defined by Parten in 1932. Variations in the trends may result from the exclusion of cognitive behavior in social play observations from deviations in methodology, as well as real differences of behavior in different samples. For young handicapped children, interacting with each other the Parten Scale seems not to have been extensively utilized and methods of data collection have deviated from the original procedure.

What Do Studies of Cognitive and Social Play Show?

The tradition of early intervention in the lives of young handicapped children shares the premise of the compensatory education movement (Bloom, 1964; Hunt, 1961) that early years are the most important period of learning and must be capitalized upon. Lack of intervention creates a downward spiral which will result in more apparent deviance. This notion is congruent with Piaget's (1952) emphasis that activity

and exercise are necessary to develop and maintain cognitive structures. It is assumed that school failure can be prevented if children are reached early to mediate maladaptive or deviant developmental patterns (Bereiter & Englemann, 1966; Deutsch, 1967; Karnes & Teska, 1975; Passow, 1963; Wood, 1975).

Beginning with Smilansky's 1968 study in Israel, a number of studies have focused on the way play can be measured and fostered in order to remove the so-called disadvantage that young children from the lower social classes face upon entrance into the formalized school situation which often begins in preschool through Head Start and other compensatory educational programs. Smilansky described the sequences of cognitive play development based upon the theories of Piaget (1926). The described levels were functional, constructive, dramatic and games with rules. Definitions are given in the previous chapter and in the appendix.

Smilansky (1968) chose to utilize the form of dramatic play described as socio-dramatic which includes the elements of imitative role play, make-believe in regard to objects, make-believe in regard to actions and situations, persistence, interaction and verbal communication to train the children from disadvantaged situations to be more successful in school situations. In this study there were three experimental groups of 140 children each and two control groups (advantaged: 427; disadvantaged: 362) who were matched on characteristics of family background, age, sex, IQ, play leval and kind of school situation. Subjects were observed for three days each, pre and post; anecdotal notes were taken and later scored. Intervention one exposed the children to meaningful and widening experiences to provide the

child with material for play; intervention two focused attention on teaching the child how to play, giving him directions for play; intervention three combined one and two. Interventions were carried out by the teachers. Significant differences were found for interventions two and three. The advantaged control group excelled the gains of all experimental and the disadvantaged control group. The experiment included 67 hours of play over a 9-week period. There were no differences in socio-dramatic play for IQ; there were age and sex differences reported.

Griffing (1974) under the direction of Smilansky modified and clarified the socio-dramatic play categories before conducting an observational study of 169 Black children. The children, 87 from low socioeconomic status and 82 from higher socioeconomic status, were observed in partially structured play situations in their schools. Their play was observed by trained observers in 5-minute intervals. Anecdotal notes were collected and coders, colleagues of the researcher, coded the records of play behavior; observer agreement is reported as .89. Significant differences for socio-dramatic play were found across social class, with low SES children engaging in less socio-dramatic play.

In an effort to increase problem-solving ability among four classes of Black kindergarten children (Rosen, 1971) an experimental facilitation of free play was conducted on a weekly basis by the experimenter; control groups were visited with no intervention on a weekly basis. Before and at the end of the experimental intervention three psychology graduate students observed each child three times for varying amounts of time depending on complexity of play, at 20-

minute intervals. Anecdotal notes were recorded and subsequently analyzed. Observer agreement ranged from 76 to 90%. Results indicated improved problem-solving behavior for the experimental group which had received socio-dramatic play tutoring.

Other studies have developed play training programs for the disadvantaged (Feitelson & Ross, 1973; Saltz, Dixon & Johnson, 1978) but these studies have not been based directly on the work of Smilansky. Rather, they have followed convergent thought patterns.

In an investigation which included in part the Smilansky (1968) cognitive play scale, Rubin (1975) observed 16 middle- and lower-middle class children who ranged in age from 43 to 55 months with a mean age of 49.9 months. Each child was observed for one minute on 20 consecutive school days. Observer agreement was reported as 95%. In addition to the cognitive categories a category for the combined onlooker and unoccupied (see Parten above) was included. This method of observation (one minute per day) represents a departure from that employed by Smilansky, who analyzed play records, and those who have used her scale in investigations of the play patterns of the advantaged and disadvantaged (Griffing, 1974; Rosen, 1971). Rubin did find support for the order of the play categories described by Smilansky with functional and constructive play to be more frequent than dramatic and games with rules play.

Using Smilansky's work as a framework, Irwin and Franke (1977) present case studies which document the facilitation of self-awareness and promotion of ways of interaction with others. The subjects were learning disabled children of 6 years of age. The teacher is described as functioning both inside the play as a co-player and from outside

with suggestions for content.

Cognitive play patterns for young children seem to have been identified based on the work of Piaget (1926) and documented empirically by Smilansky (1968). There are many methodological variations utilized by those replicating Smilansky. To date, there do not seem to be empirical studies of the cognitive play of young handicapped children which utilize the Smilansky definitions.

What Do Studies of the Play of Handicapped Children Show?

The therapeutic benefits of play to handicapped children has been documented in case studies of individual therapy situations (Axline, 1947; Moustakas, 1953; Schaefer, 1976) and in small empirical studies varying the use of toys (Berey & Marshall, 1978; Weiner & Weiner, 1974) and reinforcement conditions (Strain & Wiegerink, 1975; Strain & Timm, 1974). Larger scale studies of severely and profoundly handicapped have been conducted in England by Sheridan (1972) and Wing, Gould & Yeates (1976). Observational data is recorded in these studies about the relative amounts of symbolic play and repetitive self-stimulatory behavior.

Another branch of research which relates to the play of young handicapped children is that concerned with role-taking. Role-taking is a basic requirement of effective social interaction (Kohlberg, 1969; Piaget, 1965). Two recent reviews of the literature highlight the need for more knowledge of how the handicapped child interacts in a variety of settings (Blacher-Dixon & Simeonsson, 1978; Kitano, Stiehl & Cole, 1978). Although this present study did not examine the subjects' ability to take roles, it does form a baseline of information for the review of social interaction of young handicapped children in

a segregated environment. According to Semmel (1975), "the use of systemztic observation in research on teaching in special education has promise for sharpening the understandings of those process variables which are most relevant to pupil growth" (p. 259).

Summary

In this chapter a review of the theoretical components of this study have been presented. These components include the nature of play and its role in the development of the normal and the handicapped child. In addition, the empirical tradition leading to the formulation of the methodology utilized in this study has been presented. Studies reviewed include those which have focused upon the social interaction of normal and handicapped children; those studying cognitive play of normal children; and related studies of the play of handicapped children. "Studies of the specific characteristics of the play of particular handicapped groups has no over-all perspective, and has been sporadic" (Mogford, 1977, p. 172).

CHAPTER III

METHODOLOGY

Overview of the Procedures

The methodology of the study was shaped by the goal of documenting social and cognitive play of young handicapped children in order to provide information for curricular development in the area of social competence--a critical need of young handicapped children. From a child development point of view, it is believed that this can be fostered through play. Variables of importance to this descriptive documentation included sex, age, IQ and diagnosed handicap, as well as the dependent variables of social and cognitive play levels. Additional data of importance in this regard were social class, types of materials used, type of social interaction and educational groupings of the children.

This study was an observational record of the free play behavior of handicapped children in a special education preschool center in the metropolitan Chicago area. Play behavior was categorized according to the social dimensions of Parten (1932) and according to the cognitive dimensions of Piaget (1962) as elaborated by Smilansky (1968). The rating scale utilized was one developed by Rubin (1977), based on the theoretical work of Parten and Piaget. Procedures for collection and categorization of the social and cognitive dimensions of play were a replication of those utilized by Rubin (1976). Only data collection procedures were the same as those used by Rubin and

his associates. Rubin's studies include social cognition and other tasks not at specific focus in this project. Data was collected on 20 consecutive school days for each subject during the period of March through June of 1978. Review of confidential records occurred at the beginning of the study. The pieces of data collected for analysis include biographical information about each subject and 20 one-minute categorized samples of play behavior for each subject.

Subjects

Seventy-four young handicapped children (26 girls and 48 boys) attending a preschool special education center for the learning disabled, behaviorally disordered and educablely mentally retarded were utilized for this study. The subjects were enrolled in 12 special education classes that are described as non-categorical (six in the morning and six in the afternoon). All subjects included in the study had been enrolled prior to October 15, 1977; mean number of years in the program was 1.89, with a range of 1 to 3. The subjects ranged in age chronologically from 40 to 73 months with a mean of 62.99 at the beginning of the study. Mean IQ for the subjects was 85.20 with a range of 50 to 139 on the Stanford Binet. Families of the subjects could be described as middle-class on the basis of occupation and education. No family was reported to be receiving welfare and all were two-parent families. (Based on this information from the confidential files of the students, social economic status was not a controlled variable in this study.)

Educational groupings of the students. Classes had a minimum enrollment of five students; the range was five to eight students. Children were assigned to class groups based upon uniform criteria of

age (3-6) and one or more of the following handicaps: behavior disorders, learning disability, educablely mentally handicapped.

Pre-Observation Background Data

The experimenter reviewed confidential cumulative records to accumulate the following background information: chronological age, mental age, intelligence quotient from an individually administered instrument, family background, socioeconomic status as indicated by parent education and occupation, diagnosed handicap, sex, and the number of years in special education. Most of the above information was available on all subjects; often missing from the files was the number of years of education of mothers; all children came from two-parent families. This material was kept confidential. Names were not recorded with the information obtained. Written parental consent for release of the information was not required by the special education cooperative. Permission to view student records was obtained from the Illinois Office of Education. Subjects in this study were not at risk. No intervention was planned on an individual or class basis. Data gathered on individual subjects was pooled for analysis. Following the policy of the Department of Curriculum and Instruction in the School of Education, Loyola University of Chicago, the proposed research project was submitted to the Department Committee for the Protection of Human Subjects for routine examination and approval.

Instrument Utilized For Categorization of Data

The method of observation in this study was a time sampling procedure. Elements of social participation (Parten, 1932) and cognitive functioning (Smilansky, 1968) as can be seen in the free play of young children were recorded on a check list sheet. The instrument

can be found in Appendix A. The specific categories and method of timing the observations were those used by Rubin (1977) in two studies and in on-going research. Using this scheme, Rubin, Maioni and Hornung (1976) report the following as inter-rater reliability: 95%. Subjects were observed by two raters simultaneously through a one-way viewing room; subjects were 40 middle- and lower-class 4-year-olds attending preschool in Canada. A second study (Rubin, Watson & Jambor, 1978) utilized 27 4-year-olds and 28 kindergarteners in a field observation study. Observer reliability for this study was calculated through simultaneously observed point time samples and calculated as 92.5% for the preschool samples and 87.5% for the kindergarten group. In this study Rubin found sources of observer disagreement between the categories of associative and cooperative play; he also observed phenomenon of coding the play of kindergarteners as engaging in cooperative play--when the same behavior in the preschool would be described as associative. As a result the associative and cooperative categories were collapsed to form the category: group and inter-rater reliability was recalculated to yield 95% for the preschool sample and 90% for the kindergarten sample. In two other studies (Rubin & Maioni, 1975; Rubin, 1976), the cognitive functioning categories and the social participation categories were used independently with 95% inter-rater reliability reported.

This scheme of observation was chosen for its practical aspects as well as its theoretical grounding. From a practical perspective, the scheme is concise and can be compared with previously obtained material on the play of small samples of normal children. From a theoretical standpoint the scheme takes into consideration two of

the observable aspects of children's play which are most directly applicable to the measurement of social competency--social and cognitive perspectives that interact to facilitate and reflect the development of children.

It is the opinion of the investigator that this scheme for recording data meets reasonable validity and reliability assumptions from a child development perspective. Assumptions of reliability are described and clearly expressed by Arrington (1939, in Hutt & Hutt, 1970, p. 67):

> The major assumption underlying the use of time-sampling procedures in these studies of normal child behavior in natural situations is that reliable quantitative measures of the frequency with which an individual normally displays a given situation can be obtained from records of the occurrence of the behavior in a series of randomly distributed short-time intervals of uniform length, and that similar measures descriptive of the normal incidence of a given behavior in a group of individuals can be derived by combining such records for the individual members of the group.

In addition, the instrument seems to meet content validity conditions for observational research described by Medley (1975): "If the relative frequency of behaviors in the various categories of a system is, in fact, what we are trying to measure, then objectivity and reliability are also sufficient conditions for validity" (p. 102). Furthermore, this instrument for categorizing behavior is believed to

have theoretical or construct validity as discussed in the first two chapters of this paper. That is the instrument has both content validity--it is representative of the universe of play behaviors expected in young children--and construct validity--it represents a consistent philosophical approach as to the nature of human development and the specific role of play in development.

Observers and Training Procedures

Observers. The observers were eight women who ranged in age from 23 to 61. Experience with young children varied from 2 years to 14 years. Three observers had Bachelor's degrees in education or a social science; five had Master's degrees. All observers were cooperative, enthusiastic and brought professional dedication to this project.

Training. The training of the observers occurred in the following manner: in an introductory 3-hour session the experimenter reviewed the developmental components of play, the nature of the experimental population and the instrument to be used for observation. A packet of materials was distributed to the observers containing definitions of the categories, the observational recording sheet, a selected bibliography of children's play with excerpts illustrating various kinds of play. A sample of the observer packet is found in Appendix B. Following the initial meeting observers were asked to memorize the categories of behavior and to familiarize themselves with the recording sheet.

In the following three sessions observers viewed and discussed videotape films of handicapped and non-handicapped children at play in various settings.

Between training sessions observers practiced field procedures on available young children to familiarize and increase their abilities to record times with observations. One live training session and reliability check was conducted in a nearby suburban public school setting for preschool handicapped children.

On-going training. This occurred throughout the data gathering period. Nine meetings (weekly, approximately) were held with the morning and afternoon teams (four observers for each period) to discuss operational and observational difficulties. These meetings served to reinforce standard procedures and review through discussion the classification issues which arose throughout the study.

The training procedures utilized in this study are believed to follow points and procedures discussed by Flanders (1967) and to meet some of the points made by Frick and Semmel (1978) who suggest that training for reliability should be conducted before, during and near the end of data gathering; and that observational agreement should be computed on the same criteria that are used in the data analysis.

Reliability. Inter-rater reliability was computed throughout the training period. A percentage of agreement for time and category was obtained for the entire group of observers. All reliability figures are calculated using the procedures outlined by Hutt and Hutt (1970, p. 71).

An initial source of disagreement among the eight observers involved the social categories. All observers were familiar with the Parten categories through the previous professional training; over time and experiences these categories developed different meanings for the observers. The elimination of the separate category, "asso-

ciative play," caused some frustration for some of the observers, since the resulting interaction did not appear complex or sophisticated enough for group play, i.e., group play had been translated into the category "cooperative" for some of the observers. This phenomenon might be described as the logical error of rating (Guilford, 1936), i.e., observers selectively interpreted the definitions which were reflected in their ratings of play during the early training period. Agreement on the cognitive categories was reached quickly even though observers had less familiarity with these definitions. During the training process a decision-making tree (see Appendix C) was developed by the investigator in order to direct and facilitate observation and observer agreement. At the live observation session in a nearby district, reliability was calculated between teams of four observers at 80%. (It was impossible for all eight observers to go into the live classroom at one time.) A final pre-observation reliability check among the eight observers yielded agreement of 80%. Agreement was calculated for time and category agreement on samples of videotapes of young children at play.

The minimal training goal of 80% inter-rater agreement was reached following 15 hours of group meetings. This is the level of agreement reported by Wintre (n.d.) who found a range of agreement in several studies from 79.2% to 85.9%. Another study using the Parten Scale only, reports agreement ranging from 80% to 100% with an average of 90.2% (Berey & Marshall, 1978). Parten's calculated percent of agreement between four observers ranged from 83% to 92% with an average of 89% (Parten & Newhall, 1943).

Inter-rater agreement for the Smilansky (1968) Scale was reported as .89 by Griffing (1974) and as 76% to 90% by Rosen (1971). In both of these studies agreement was determined on written protocols. Only Rubin seems to have used the Smilansky Scale for live observation of play behavior.

Factors which may relate to the minimal level of inter-rater agreement obtained in this project may be associated with several issues. Observer agreement is much easier to obtain when the behavior is simple and little insight or sensitivity is needed by the observer (Wright, 1960). The Parten/Smilansky Scale may have seemed deceptively simple initially. Rating the child's play from the Parten/Smilansky format requires knowledge and sensitivity to child behavior. In addition, the observers' previous experiences may have acted to form a cognitive set about the Parten Scale; the previous cognitive set may have been somewhat divergent from the "real" definitions. Also, the experimental requirements of training larger numbers of observers to agree as to the same piece of human behavior may be a factor. Does observer agreement decrease as more individuals must agree? Rubin utilized two observers; Wintre used varying numbers; Parten used four observers; this study expanded the number to eight to meet logistic concerns (observers to function in both morning and afternoon classes could not be found).

Mid-point reliability. A meeting of all observers was held at mid-point and observer inter-rater reliability was checked utilizing random protocols of data gathered in the first half of the research period, as well as the videotape illustrations; overall agreement at mid-point was found to be 79%. This figure is close to the 80% ob-

tained during the pre-observation training; the drift in agreement is not as great as might be expected. Taplin and Reid (1973) report that observer drift is immediate from training to data collection and not gradual over time; they report that drift may be as much as 15%. With this phenomenon in mind, Taplin and Reid suggest that observers be overtrained and that spot checks be made during the data gathering period. Both procedures apply to this project since training occurred over a month period which may have brought about some overlearning and the weekly meetings served as spot checks on observers' adherence to definitions and procedures.

Observation Procedures

Each subject was observed during the free play period for a period of 1 minute for 20 school days during the months of March through June. A 1-minute time sample was chosen for the following reasons: (A) Precedence: Parten, Rubin and his associates and others have used this time interval. (B) Practicality: free play periods are generally short in special education classes; more children were observed rather than randomly choosing a given student from within a class. Observing more children seemed desirable since each individual subject represents several important variables, making generalization difficult if few children were observed. (C) Methodological basis: changes of behavior are expected to be frequent in this sample; therefore, sampling of behavior should be rapid (Hutt & Hutt, 1979, p. 68). Arrington (1939, in Hutt & Hutt, p. 68) found Parten's 1-minute samples more representative of individual differences than 5-minute samples.

The observations were made by two teams of four raters, who

were trained by the experimenter to reach agreement of 80%. Observers visited the classes two times before beginning to collect the data in order to become acquainted with the facilities and to allow the children to become accustomed to their presence. Initial training, except for the live visit, was held on site and all meetings during the data gathering period were held in the center.

During the 1-minute observation the raters categorized the subject's play according to the social and cognitive dimensions utilized by Rubin (1977). Following Rubin's procedures, the subject's play was categorized and timed to the nearest 5 seconds. For example, if a subject stared at the wall for 19 seconds and built with blocks for 41 seconds, his play was categorized as unoccupied, 20 seconds, solitary constructive, 40 seconds.

In addition to observing and recording behavior on the check list observers were asked, following Parten and Rubin's procedure, to write in detail what the observed subject was doing, including information about the setting, initiation of the activity, materials used and unusual events.

Subjects in a class were observed in random order by one observer. This practice of using one observer is described as acceptable by Flanders (in Amidon & Hough, 1967) and others; one observer per subject reduced the cost of the study. Each observer rotated through the six morning or afternoon classes on a 4-day cycle (younger children attended school Monday, Tuesday, Thursday and Friday). "Unless observer agreement is high, it is important not to use the same coders for the different visits, variety tends to cancel out observer errors" (Medley, 1975, p. 101). Since free play was held at the beginning of

each class period, observers gathered data for either the morning or afternoon sessions. Some observers filled in the opposite time sessions to assist in the make-up sessions for pupil absences.

Procedures For Special Circumstances

If the subjects were absent when scheduled for observation, a day was re-scheduled following the gathering of 20 days' material on other subjects. In the event of an observer absence, an extra day's observation was added to the end of the cycle. Observer absence was rare.

CHAPTER IV

ANALYSIS OF THE DATA

Overview

In this chapter the method of analysis and the results of the study are presented. First, there is a description of the derivation of the scores used in the analysis. Then, the grouping of the subjects for analysis is described. In the next section, the statistical procedure is described with each hypothesis, procedure and result discussed individually. Following the statistical analysis section, there is a discussion of related descriptive data taken from the anecdotal notes and background data. Finally, a summary of the analysis and the results is given.

Derivation of the Scores

Each subject was given separate scores for each of the play and non-play variables that appear on the observational instrument (Appendix A). The play variables are as follows: solitary functional, solitary constructive, solitary dramatic, parallel functional, parallel constructive, parallel dramatic, group functional, group constructive, group dramatic, and games with rules, and rough and tumble play. Non-play variables include unoccupied, onlooker, active conversation and reading. A score represents the number of seconds that a subject spent in each behavioral category during the total observation period (60 seconds per day for 20 days).

Subject Groups For Analysis

Subjects were grouped for analysis on the basis of sex; diagnosed handicap: educablely mentally handicapped, EMH: behaviorally disordered, BD; learning disabled, LD; age and IQ. There were 48 boys who were sub-categorized into the handicap categories as follows: 16 EMH, 17 BD and 15 LD. The 26 girls were sub-divided into 9 EMH, 8 BD and 9 LD. Mean age for boys is 62.92 (in months), for girls 63.12, and for the total sample is 62.99. There was a significant difference for age across handicap (d.f., 2, 71): $F = 4.423$, $p < .0155$. Boys and girls with behavior disorders were significantly older (boys 68.18, girls 66.88). Mean IQ is 85.20 for the entire sample; for boys the mean is 87.85; girls have a mean IQ of 80.31. EMH children have a significantly lower IQ ($p < .01$). The groupings by sex, handicap, age and IQ can be seen in Table 1.

Statistical Analysis

Each hypothesis was evaluated by a separate statistical procedure. The format for presentation of this information is as follows: hypothesis, statistical procedure, results.

Hypothesis 1. There will be no differences in cognitive play scores of the children on the basis of sex, diagnosed handicap, age or IQ.

A separate 2 (sex) X 3 (handicap) factorial analysis of variance with age and IQ as covariables was utilized to examine each of the three cognitive levels--functional, constructive and dramatic. A factorial design was chosen in order to examine the possible interaction effect of sex and handicap and to simultaneously evaluate the effect of sex and handicap on the dependent variable. The design of

TABLE 1

Description of Subjects on the Variables of Age, Sex, IQ, Handicap

Age by Sex and Handicap

	Mean No. Months	S.D. Months	Total
Boys	62.92	10.18	48
EMH	59.56	10.47	16
BD	68.18*	7.13	17
LD	60.53	10.95	15
Girls	63.12	11.18	26
EMH	60.33	9.72	9
BD	66.88*	12.84	8
LD	62.56	11.35	9

*$p < .0000$

IQ by Sex and Handicap

	Mean	S.D.	Total
Boys	87.85	14.18	48
EMH	75.81*	6.21	16
BD	95.35	18.18	17
LD	92.20	7.97	15
Girls	80.31	15.87	26
EMH	65.22*	13.27	9
BD	91.38	7.78	8
LD	85.56	12.19	9

*$p < .01$

this experiment meets the conditions necessary for factorial analysis of variance since there are dependent variable scores for each of the combinations of the independent variables, sex and handicap (Amick & Crittenden, 1975). Covariance of age and intelligence was conducted to statistically control for the known developmental relationship of these variables to the play performance of young children and since there were insufficient numbers of subjects to be able to include age and IQ as separate independent variables. The data collected and analyzed in this study, in this manner, meet the conditions for use of covariance outlined by Hayes (1973) as follows: "/the/ relationship between the concomitant and dependent variable is linear; and where the degree of this relationship does not itself depend upon the experimental variable" (p. 655).

There were no significant differences for any of the cognitive play levels: functional, constructive, dramatic. (None of the subjects were observed to play games with rules.) Tables 2 to 4 show the results of this analysis.

Hypothesis 2. There will be no differences in the social play scores of the children on the basis of sex, diagnosed handicap, age or IQ.

Three separate 2 (sex) X 3 (handicap) factorial analysis of variances with age and IQ as covariables were utilized to examine each social category: solitary, parallel and group. There were no significant differences for main effects or interaction. There were significant differences for the covariable of age for both parallel ($p < .001$) and for group ($p < .03$) behavior. Tables 5 to 7 show these results.

TABLE 2

Factorial Analysis of Variance with Age and IQ as Covariables
Cognitive: Functional

Source of Variation	DF	Mean Square	F
Covariates	2	66570.750	2.206
IQ	1	65782.750	2.180
Age	1	46157.191	1.530
Main Effects	3	50027.914	1.658
Sex	1	83673.500	2.773
Handicap	2	27334.273	0.906
Interactions	2	35050.875	1.162
SXH	2	35050.875	1.162
Explained	7	50475.285	1.673
Residual	66	30173.527	
Total	73	32120.273	

TABLE 3

Factorial Analysis of Variance with Age and IQ as Covariables

Cognitive: Constructive

Source of Variation	DF	Mean Square	F
Covariates	2	38681.250	1.705
IQ	1	49424.855	2.178
Age	1	40307.531	1.776
Main Effects	3	13341.832	.588
Sex	1	22037.301	.971
Handicap	2	11697.289	.515
2 Way Interaction	2	18074.125	.797
SXH	2	18074.094	.797
Explained	7	21933.855	.967
Residual	66	22691.391	
Total	73	22618.750	

TABLE 4

Factorial Analysis of Variance with Age and IQ as Covariables
Cognitive: Dramatic

Source of Variation	DF	Mean Square	F
Covariates	2	56206.094	2.355
IQ	1	12477.230	.523
Age	1	86441.438	3.623
Main Effects	3	32463.875	1.360
Sex	1	17.287	.001
Handicap	2	47909.188	2.008
2 Way Interactions	2	8070.406	.338
SXH	2	8070.398	.338
Explained	7	32277.855	1.353
Residual	66	23862.195	
Total	73	24669.176	

TABLE 5

Factorial Analysis of Variance with Age and IQ as Covariables
Social: Solitary

Source of Variation	DF	Mean Square	F
Covariates	2	50553.313	1.824
IQ	1	69438.313	2.505
Age	1	17740.992	.640
Main Effects	3	14225.375	.513
Sex	1	656.560	.024
Handicap	2	20858.871	.752
2 Way Interactions	2	28883.188	1.042
SXH	2	28883.195	1.042
Explained	7	28792.855	1.039
Residual	66	27721.195	
Total	73	27823.957	

TABLE 6

Factorial Analysis of Variance with Age and IQ as Covariables
Social: Parallel

Source of Variation	DF	Mean Square	F
Covariates	2	93160.438	7.519*
IQ	1	12911.465	1.042
Age	1	184288.500	14.875*
Main Effects	3	24524.164	1.979
Sex	1	6643.797	.536
Handicap	2	33290.500	2.687
2 Way Interaction	2	532.250	.043
SXH	2	532.276	.043
Explained	7	37279.695	3.009
Residual	66	12389.273	
Total	73	14776.027	

*$p < .001$

TABLE 7

Factorial Analysis of Variance with Age and IQ as Covariables
Social: Group

Source of Variation	DF	Mean Square	F
Covariates	2	142902.813	3.703*
IQ	1	51719.906	1.340
Age	1	194378.188	5.037*
Main Effects	3	32860.145	.852
Sex	1	40343.918	1.046
Handicap	2	30679.949	.795
2 Way Interaction	2	601.594	.016
SXH	2	601.581	.016
Explained	7	55084.285	1.428
Residual	66	38587.891	
Total	73		

*$p < .03$

Hypothesis 3. There will be no differences in the cognitive play scores of the children within each social play category on the basis of sex, diagnosed handicap, age or IQ.

Multivariate analysis of variance with age and IQ as covariables was utilized to evaluate this hypothesis. This procedure was chosen in order to assess the relationship of all the variables at once. Such a procedure permits a closer approximation of how variables interact in the real world (Amick & Walberg, 1975; Kerlinger, 1973). The first multivariate analysis of variance with age and IQ as covariables examined all play variables simultaneously: solitary functional, constructive, dramatic; parallel functional, constructive, dramatic; group functional, constructive, dramatic. This analysis revealed no significant differences; results can be seen in Table 8.

A separate multivariate analysis of variance with age and IQ as covariables was conducted to examine each social: solitary, parallel, group; and each cognitive: functional, constructive and dramatic level of behavior. Tables 9 to 11 show the multivariate analysis for the social categories. Tables 12 to 14 give the results of the multivariate analysis for the cognitive levels. There were no significant differences for main effects or interactions for any of the multivariate analyses with age and IQ as covariables. As can be seen from Table 11, there is a significant difference ($p < .05$) in group across handicap for sex only. Further examination of that table shows the univariate difference for the group constructive category ($p < .042$). When all the constructive levels are examined there is no significant difference for handicap at any level: solitary, parallel and group (Table 13). There is a univariate significant difference ($p < .035$)

TABLE 8

Multivariate Analysis of Variance with Age and IQ as Covariables
All Play Categories: Test of Within Cells Regression

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.643	18.000	116.000	0.061
2 through 2	1.002	8.000	58.500	0.444

Univariate F Tests

Variable		F	Mean Square
Solitary	Functional	2.710	59366.344
	Constructive	0.277	2416.914
	Dramatic	0.296	1059.424
Parallel	Functional	1.306	11838.309
	Constructive	6.091*	21372.570
	Dramatic	0.401	271.983
Group	Functional	2.040	15195.801
	Constructive	1.756	12899.934
	Dramatic	1.842	32396.309

*$p < .004$

TABLE 8
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
All Play Variables: Test of Sex X Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.724	18.000	116.000	0.780
2 through 2	0.550	8.000	58.500	0.814

Univariate F Tests

Variable		F	Mean Square
Solitary	Functional	1.621	35505.500
	Constructive	1.897	16539.438
	Dramatic	0.048	170.719
Parallel	Functional	0.010	88.813
	Constructive	0.361	1266.781
	Dramatic	0.362	245.654
Group	Functional	0.343	2554.719
	Constructive	0.900	6609.031
	Dramatic	0.494	8683.500

TABLE 8
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
All Play Categories: Test of Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.352	18.000	116.000	0.170
2 through 2	1.095	8.000	58.500	0.380

Univariate F Tests

Variable		F	Mean Square
Solitary	Functional	0.349	7649.000
	Constructive	1.510	13160.750
	Dramatic	0.490	1755.344
Parallel	Functional	1.970	17864.594
	Constructive	0.881	3090.750
	Dramatic	1.058	718.023
Group	Functional	1.262	9397.031
	Constructive	3.321*	24392.594
	Dramatic	1.347	23694.000

*$p < .042$

TABLE 8
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
All Play Categories: Test of Sex

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 1	1.184	9.000	58.000	0.322

Univariate F Tests

Variable		F	Mean Square
Solitary	Functional	1.275	27922.000
	Constructive	0.823	7174.875
	Dramatic	0.434	1554.938
Parallel	Functional	0.157	1425.313
	Constructive	4.609*	16170.313
	Dramatic	0.047	31.859
Group	Functional	0.809	6028.563
	Constructive	0.689	5061.875
	Dramatic	0.092	1624.000

*$p < .035$

TABLE 9

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Solitary - Test of Within Cells Regression

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.008	6.000	128.000	0.423
2 through 2	0.416	2.000	64.500	0.661

Univariate F Tests

Variable		F	Mean Square
Solitary	Functional	2.710	59366.344
	Constructive	0.277	2416.914
	Dramatic	0.296	1059.424

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Solitary - Test of Sex X Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.106	6.000	128.000	0.362
2 through 2	0.957	2.000	64.500	0.389

Univariate F Tests

Variable		F	Mean Square
Solitary	Functional	1.621	35505.500
	Constructive	1.897	16539.438
	Dramatic	0.048	170.719

TABLE 9
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Solitary - Test of Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.769	6.000	128.000	0.596
2 through 2	0.720	2.000	64.500	0.490

Univariate F Tests

Variable		F	Mean Square
Solitary	Functional	0.349	7649.000
	Constructive	1.510	13160.750
	Dramatic	0.490	1755.344

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Solitary - Test of Sex

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 1	0.730	3.000	64.000	0.538

Univariate F Tests

Variable		F	Mean Square
Solitary	Functional	1.275	27922.000
	Constructive	0.823	7174.875
	Dramatic	0.434	1554.938

TABLE 10

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Parallel - Test of Within Cells Regression

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	2.593	6.000	128.000	0.021*
2 through 2	0.273	2.000	64.500	0.762

Univariate F Tests

Variable		F	Mean Square
Parallel	Functional	1.306	11838.309
	Constructive	6.091*	21372.570
	Dramatic	0.401	271.983

*$p < .004$

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Parallel - Test of Sex X Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.216	6.000	128.000	0.971
2 through 2	0.089	2.000	64.500	0.915

Univariate F Tests

Variable		F	Mean Square
Parallel	Functional	0.010	88.813
	Constructive	0.361	1266.781
	Dramatic	0.362	245.654

TABLE 10
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Parallel - Test of Sex

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 1	1.601	3.000	64.000	0.198

Univariate F Tests

Variable		F	Mean Square
Parallel	Functional	0.157	1425.313
	Constructive	4.609*	16170.313
	Dramatic	0.047	31.859

*p < .035

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Parallel - Test of Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.365	6.000	128.000	0.234
2 through 2	0.999	2.000	64.500	0.374

Univariate F Tests

Variable		F	Mean Square
Parallel	Functional	1.970	17864.594
	Constructive	0.881	3090.750
	Dramatic	1.058	718.023

TABLE 11

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Group - Test of Within Cells Regression

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.844	6.000	128.000	0.096
2 through 2	1.873	2.000	64.500	0.162

Univariate F Tests

Variable		F	Mean Square
Group	Functional	2.040	15195.801
	Constructive	1.756	12899.934
	Dramatic	1.842	32396.309

Multivariate Analysis of Variance with Age and IQ as Covariables
Social: Group - Test of Sex X Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.708	6.000	128.000	0.643
2 through 2	0.418	2.000	64.500	0.660

Univariate F Tests

Variable		F	Mean Square
Group	Functional	0.343	2554.719
	Constructive	0.900	6609.031
	Dramatic	0.494	8683.500

TABLE 11
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables

Social: Group - Test of Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	2.223	6.000	128.000	0.045
2 through 2	0.743	2.000	64.500	0.480

Univariate F Tests

Variable		F	Mean Square
Group	Functional	1.262	9397.931
	Constructive	3.321*	24392.594*
	Dramatic	1.347	23694.999

*p < .042

Multivariate Analysis of Variance with Age and IQ as Covariables

Social: Group - Test of Sex

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 1	0.517	3.000	64.000	0.672

Univariate F Tests

Variable		F	Mean Square
Group	Functional	0.809	6028.563
	Constructive	0.689	5061.875
	Dramatic	0.092	1624.000

TABLE 12

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Functional - Test of Within Cells Regression

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.731	6.000	128.000	0.119
2 through 2	1.861	2.000	64.500	0.164

Univariate F Tests

Variable	F	Mean Square
Solitary Functional	2.710	59366.344
Parallel	1.306	11838.309
Group	2.040	15195.801

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Functional - Test of Sex X Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.639	6.000	128.000	0.699
2 through 2	0.323	2.000	64.500	0.725

Univariate F Tests

Variable	F	Mean Square
Solitary Functional	1.621	35505.500
Parallel	0.010	88.813
Group	0.343	2554.719

TABLE 12
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Functional - Test of Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.135	6.000	128.000	0.346
2 through 2	1.068	2.000	64.500	0.350

Univariate F Tests

Variable	F	Mean Square
Solitary Functional	0.349	7649.000
Parallel	1.970	17864.594
Group	1.262	9397.031

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Functional - Test of Sex

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 1	0.946	3.000	64.000	0.424

Univariate F Tests

Variable	F	Mean Square
Solitary Functional	1.275	27922.000
Parallel	0.157	1425.313
Group	0.809	6028.563

TABLE 13

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Constructive - Test of Within Cells Regression

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	2.692	6.000	128.000	0.017[1]
2 through 2	1.702	2.000	64.500	0.190

Univariate F Tests

Variable	F	Mean Square
Solitary Constructive	0.277	2416.914
Parallel	6.091[2]	21372.570
Group	1.756	12899.934

[1] $p < .017$

[2] $p < .004$

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Constructive - Test of Sex X Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.043	6.000	128.000	0.401
2 through 2	1.240	2.000	64.500	0.296

Univariate F Tests

Variable	F	Mean Square
Solitary Constructive	1.897	16539.438
Parallel	0.361	1266.781
Group	0.900	6609.031

TABLE 13
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Constructive - Test of Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	2.123	6.000	128.000	0.055
2 through 2	2.179	2.000	64.500	0.121

Univariate F Tests

Variable	F	Mean Square
Solitary Constructive	1.510	13160.750
Parallel	0.881	3090.750
Group	3.321*	24392.594

*p < .042

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Constructive - Test of Sex

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 1	1.946	3.000	64.000	0.131

Univariate F Tests

Variable	F	Mean Square
Solitary Constructive	0.823	7174.875
Parallel	4.609*	16170.313
Group	0.689	5061.875

*p < .035

TABLE 14

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Dramatic - Test of Within Cells Regression

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.937	6.000	128.000	0.471
2 through 2	0.163	2.000	64.500	0.850

Univariate F Tests

Variable	F	Mean Square
Solitary Dramatic	0.296	1059.424
Parallel	0.401	271.983
Group	1.842	32396.309

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Dramatic - Test of Sex X Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.285	6.000	128.000	0.943
2 through 2	0.348	2.000	64.500	0.707

Univariate F Tests

Variable	F	Mean Square
Solitary Dramatic	0.048	170.719
Parallel	0.362	245.654
Group	0.494	8683.500

TABLE 14
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Dramatic - Test of Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.823	6.000	128.000	0.554
2 through 2	0.470	2.000	64.500	0.627

Univariate F Tests

Variable	F	Mean Square
Solitary Dramatic	0.490	1755.344
Parallel	1.058	718.023
Group	1.347	23694.000

Multivariate Analysis of Variance with Age and IQ as Covariables
Cognitive: Dramatic - Test of Sex

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 1	0.176	3.000	64.000	0.912

Univariate F Tests

Variable	F	Mean Square
Solitary Dramatic	0.434	1554.938
Parallel	0.047	31.859
Group	0.092	1624.000

for parallel constructive for sex.

Means for each of the variables by sex and handicap are presented in the next series of tables. Each table shows a complete social/cognitive level; means are shown with covariables and adjusted to remove covariables. Table 15 shows the means and adjusted means for solitary functional, constructive and dramatic behavior. The means and adjusted means for parallel functional, constructive and dramatic are shown in Table 16. Means and adjusted means for group functional, constructive and dramatic are shown in Table 17. An examination of the adjusted means for group constructive (Table 17) shows that EMH children engage in more group constructive behavior (mean 48.96 for EMH; grand mean 24.20) than BD or LD children, but there is also a sex difference for EMH children (mean for boys 64.31; girls -4.53). Girls can be seen to engage in more parallel constructive behavior (Table 16 than all boys except LD boys (girls adjusted mean: 59.49; boys 24.78; and LD boys 57.24).

In addition to the tables for means there are graphs to illustrate the relationships between means for boys and girls, according to handicap. Each graph shows the mean score for a category of behavior according to sex and to handicap. The resulting picture shows trends of differences and interactions between boys and girls and among handicaps. By comparing the graph of means adjusted to remove covariability for each variable the shifts in relationship can be seen. Figures 1 to 9 illustrate these relationships.

Hypothesis 4. There will be no differences in the non-play: unoccupied, onlooker, active conversation, reading--scores of the children on the basis of sex, diagnosed handicap, age or IQ.

TABLE 15

Means for Play Behavior Variables by Sex and Handicap
Solitary

	Functional			
	EMH	BD	LD	
Boys	311.563	189.118	161.000	221.1458
Girls	225.556	153.750	218.333	200.9615
	280.600	177.800	182.500	214.0541
	Constructive			
	EMH	BD	LD	
Boys	55.000	85.588	80.333	73.7500
Girls	72.222	164.375	46.111	91.5385
	61.200	110.800	67.500	80.000
	Dramatic			
	EMH	BD	LD	
Boys	24.688	43.235	41.667	36.5625
Girls	28.889	54.375	57.222	46.5385
	26.200	46.800	46.500	40.0676

TABLE 15
(continued)

Adjusted Means for Play Behavior Variables by Sex and Handicap

Solitary

		Functional		
	EMH	BD	LD	
Boys	249.1421	139.0091	110.3511	167.6324
Girls	165.7591	106.2651	170.3081	147.1781
	227.0866	124.2866	128.9876	160.5407
		Constructive		
	EMH	BD	LD	
Boys	32.074	51.254	55.958	45.39
Girls	47.1614	127.9064	19.6014	65.1785
	51.2382	82.44	39.14	51.64
		Dramatic		
	EMH	BD	LD	
Boys	17.833	33.29	31.617	27.6274
Girls	21.2359	43.6319	46.4789	36.8053
	16.9845	37.5845	38.2845	30.8521

TABLE 16

Means for Play Behavior Variables by Sex and Handicap
Parallel

		Functional		
	EMH	BD	LD	
Boys	162.188	107.647	164.333	143.5417
Girls	138.889	90.626	147.778	127.1154
	153.800	102.200	158.125	137.7703
		Constructive		
	EMH	BD	LD	
Boys	45.313	45.882	85.333	58.0208
Girls	85.000	80.625	93.889	86.7308
	59.600	57.000	88.5417	68.1081
		Dramatic		
	EMH	BD	LD	
Boys	7.813	8.529	15.333	10.4167
Girls	4.444	3.750	22.222	10.3846
	6.600	7.000	17.9167	10.4054

TABLE 16
(continued)

Adjusted Means for Play Behavior Variables by Sex and Handicap

Parallel

		Functional		
	EMH	BD	LD	
Boys	112.0495	71.4405	113.0267	98.0775
Girls	89.7361	55.4041	97.4573	81.6512
	108.3358	56.7358	112.6608	92.3061
		Constructive		
	EMH	BD	LD	
Boys	21.852	22.837	57.2413	24.776
Girls	54.6486	50.6896	58.9069	59.4876
	32.3568	29.7568	61.2985	40.8649
		Dramatic		
	EMH	BD	LD	
Boys	6.4167	7.0607	11.8997	8.3363
Girls	3.12	2.358	18.865	8.2542
	4.5196	4.9196	15.8363	8.325

TABLE 17

Means for Play Behavior Variables by Sex and Handicap Group

		Functional		
	EMH	BD	LD	
Boys	78.438	104.118	130.667	103.8542
Girls	47.222	104.375	96.111	81.7308
	67.2000	104.200	117.7083	96.0811
		Constructive		
	EMH	BD	LD	
Boys	98.438	45.000	30.000	58.1250
Girls	26.667	28.125	31.667	28.8462
	72.600	39.600	30.000	47.8378
		Dramatic		
	EMH	BD	LD	
Boys	58.750	132.647	139.000	110.000
Girls	93.889	79.375	135.000	103.6538
	71.400	115.500	137.500	107.7703

TABLE 17
(continued)

Adjusted Means for Play Behavior Variables by Sex and Handicap Group

		Functional		
	EMH	BD	LD	
Boys	54.246	72.926	96.8754	75.0298
Girls	25.4637	75.6167	64.7567	52.9064
	38.3756	75.3756	67.2866	67.2567
		Constructive		
	EMH	BD	LD	
Boys	64.3115	23.7435	12.4875	34.4845
Girls	-4.5316	9.7964	17.0824	5.2057
	48.9595	15.9595	6.3595	24.1973
		Dramatic		
	EMH	BD	LD	
Boys	38.642	102.815	104.35	81.9797
Girls	74.0348	49.797	100.6038	75.6335
	43.3797	87.580	109.4797	79.75

Figure 1

Means and Adjusted Means for Solitary Functional by Sex and Handicap

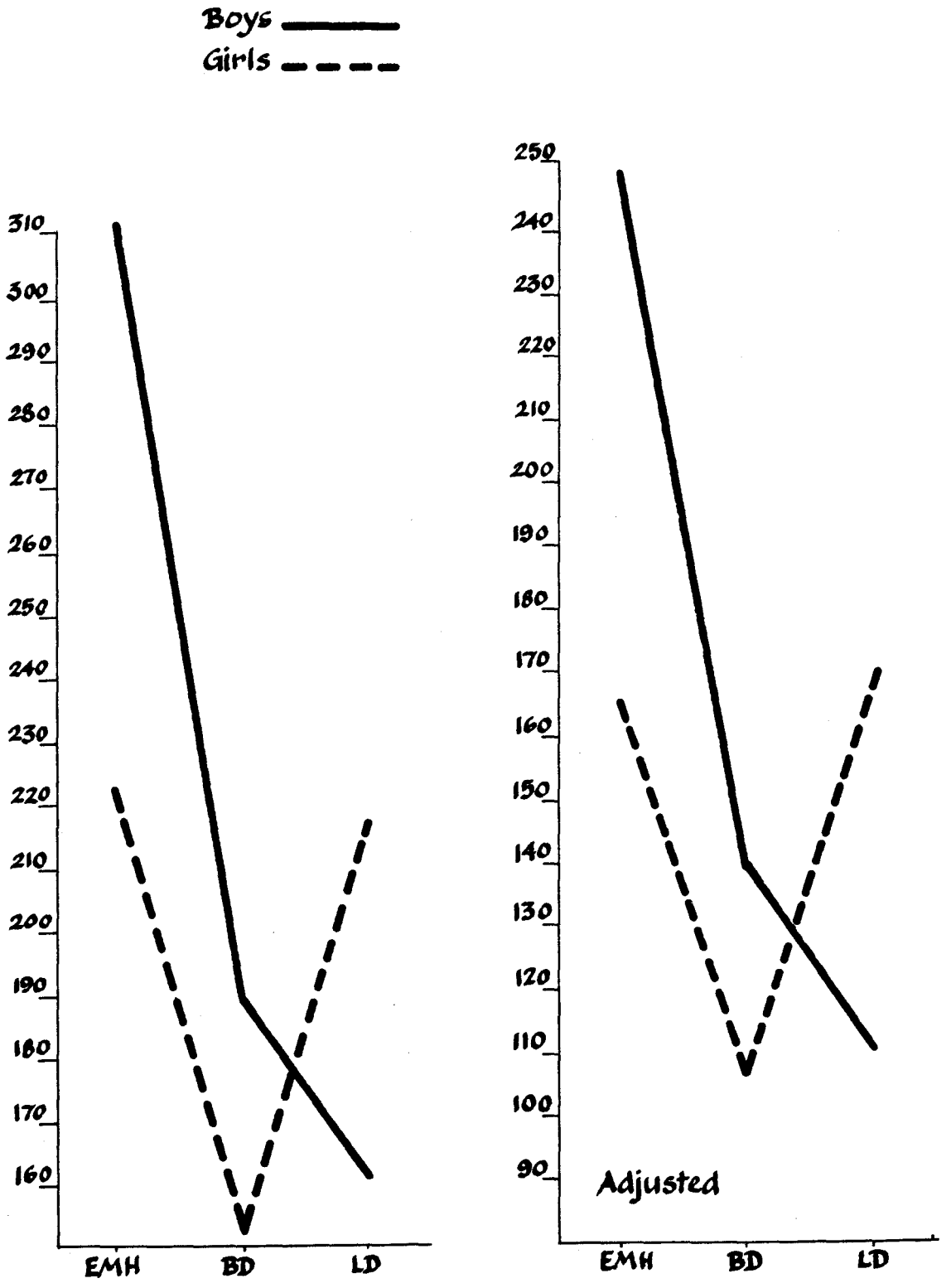


Figure 2

Means and Adjusted Means for Solitary Constructive By Sex and Handicap

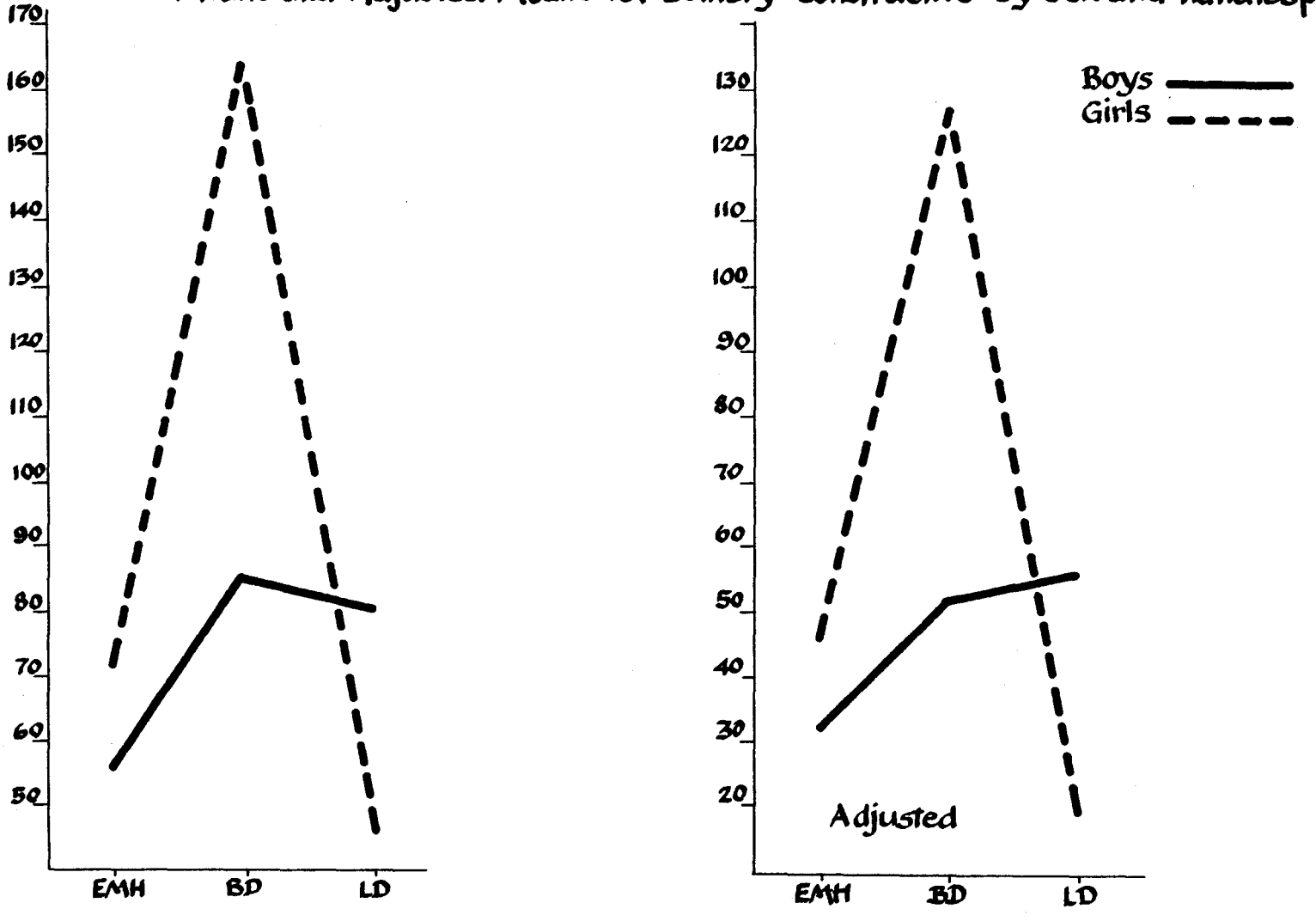


Figure 4

Means and Adjusted Means for Parallel Functional By Sex and Handicap

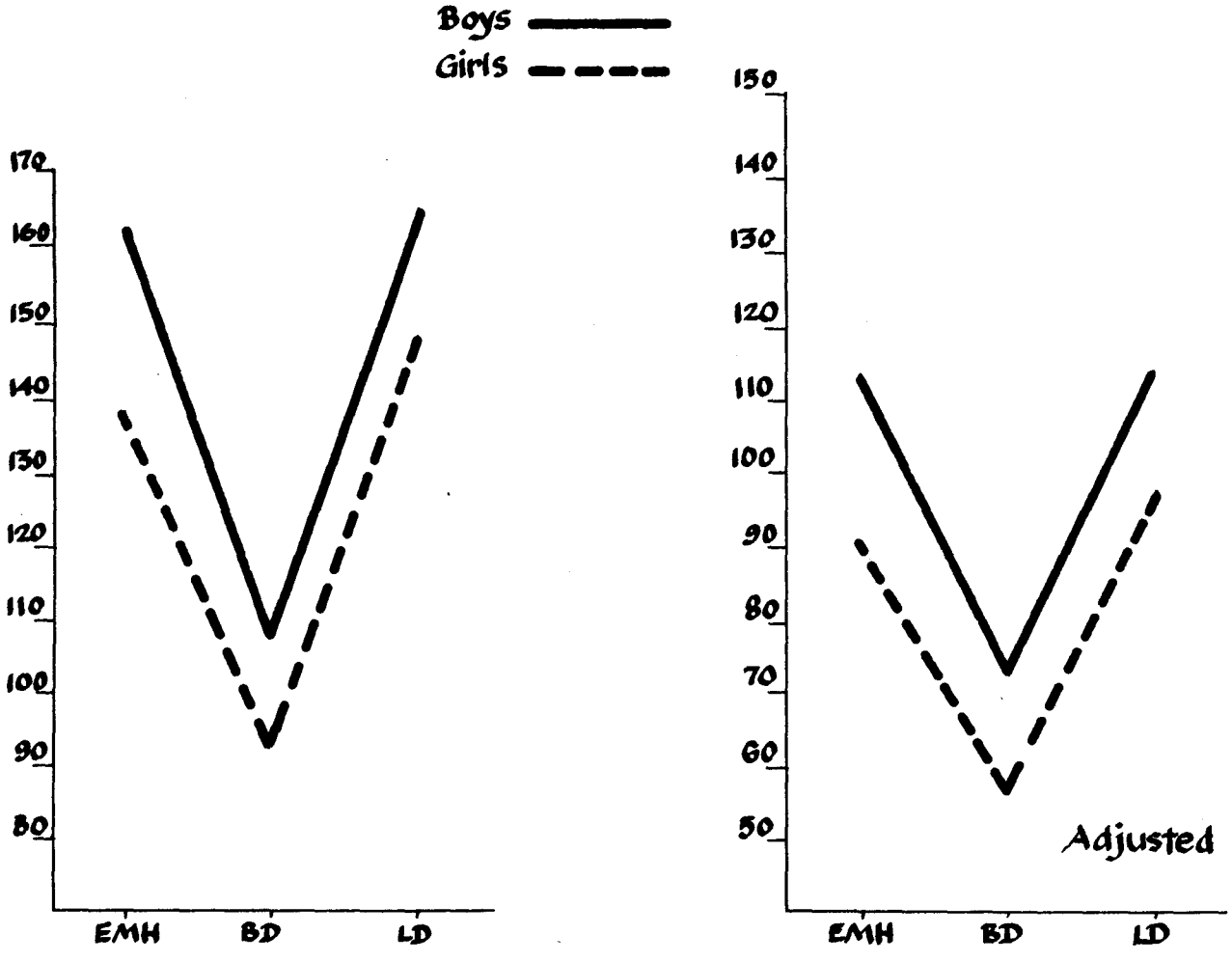


Figure 5

Means and Adjusted Means for Parallel Constructive By Sex and Handicap

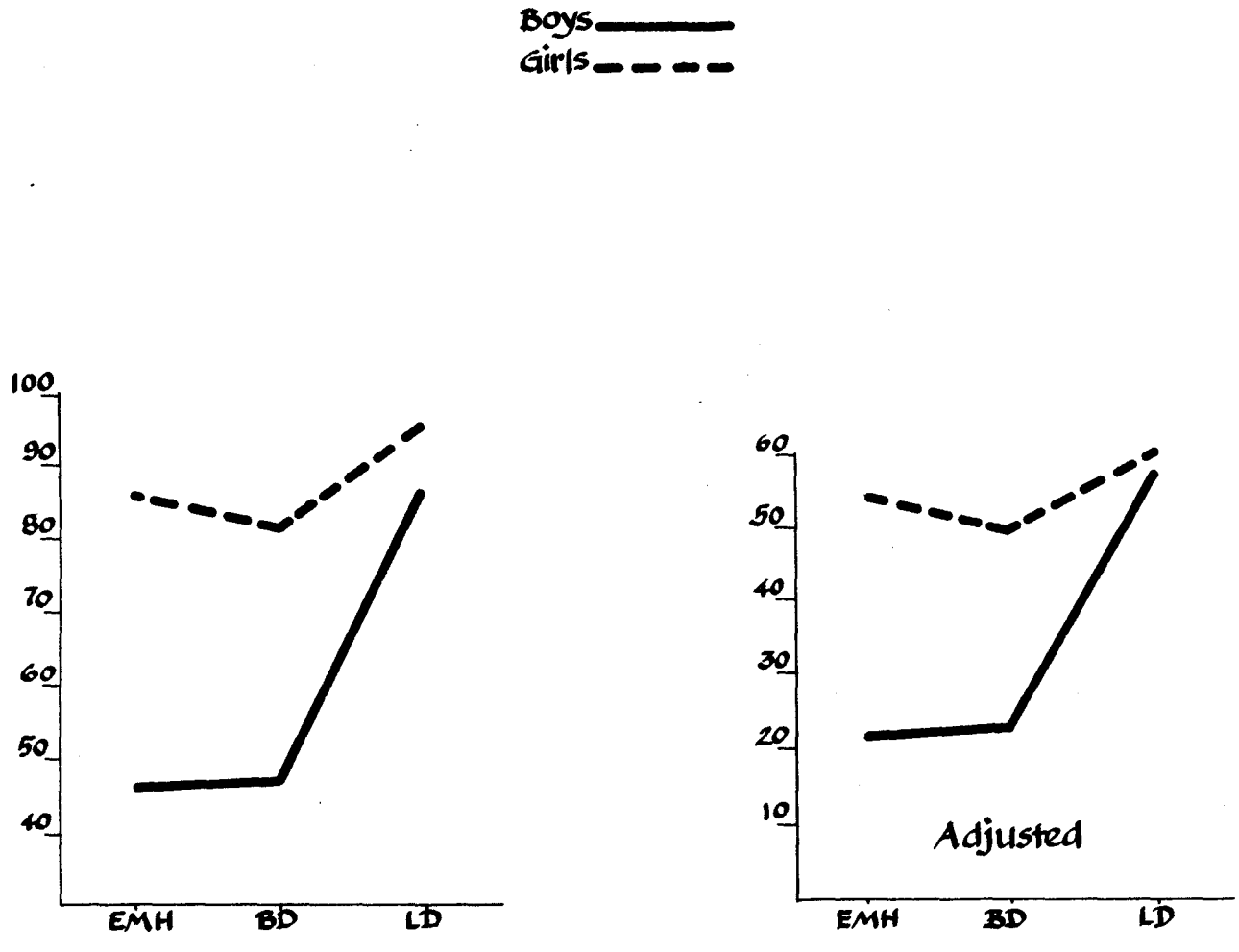


Figure 6

Means and Adjusted Means for Parallel Dramatic by Sex and Handicap

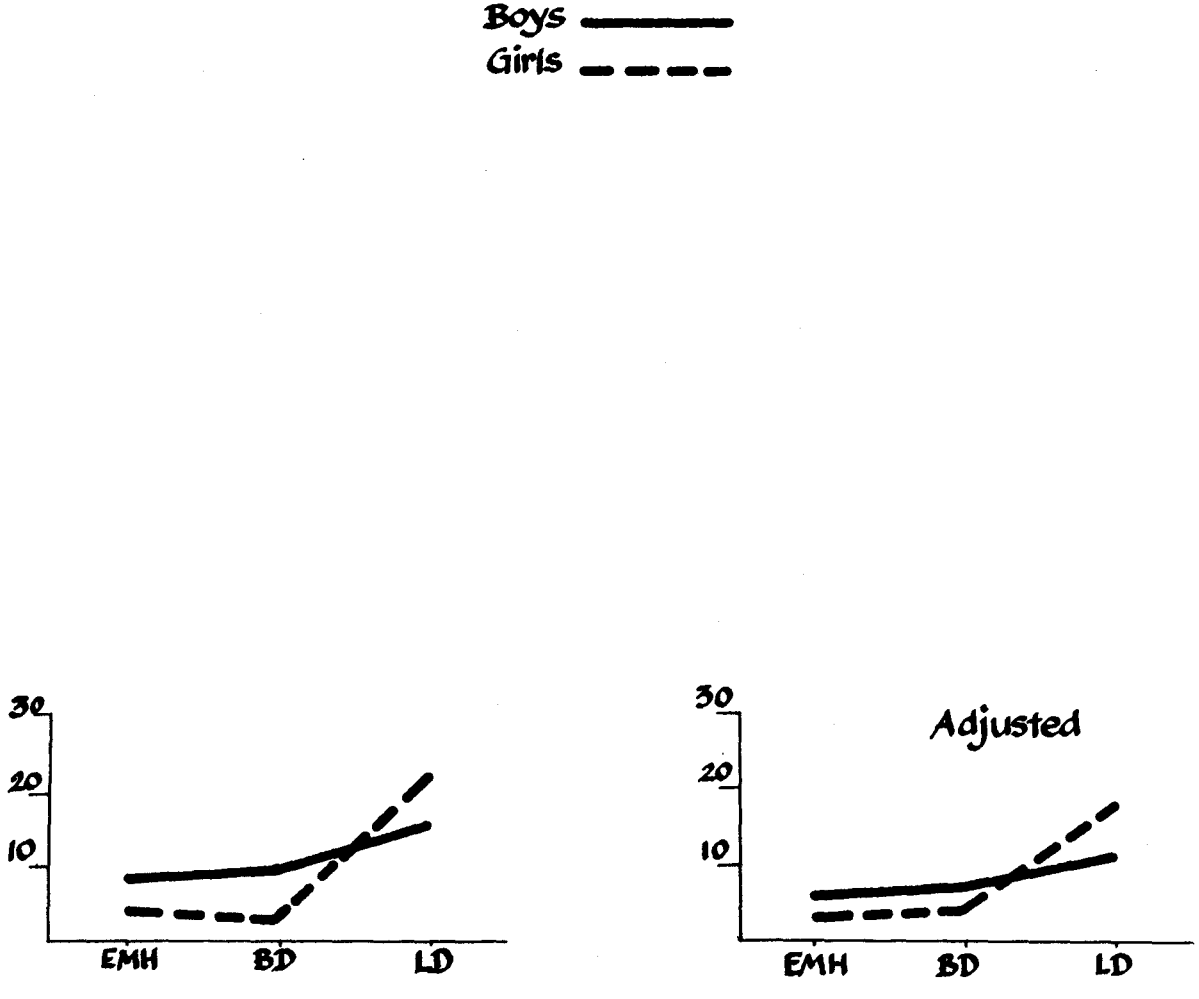


Figure 7

Means and Adjusted Means for Group Functional by Sex and Handicap

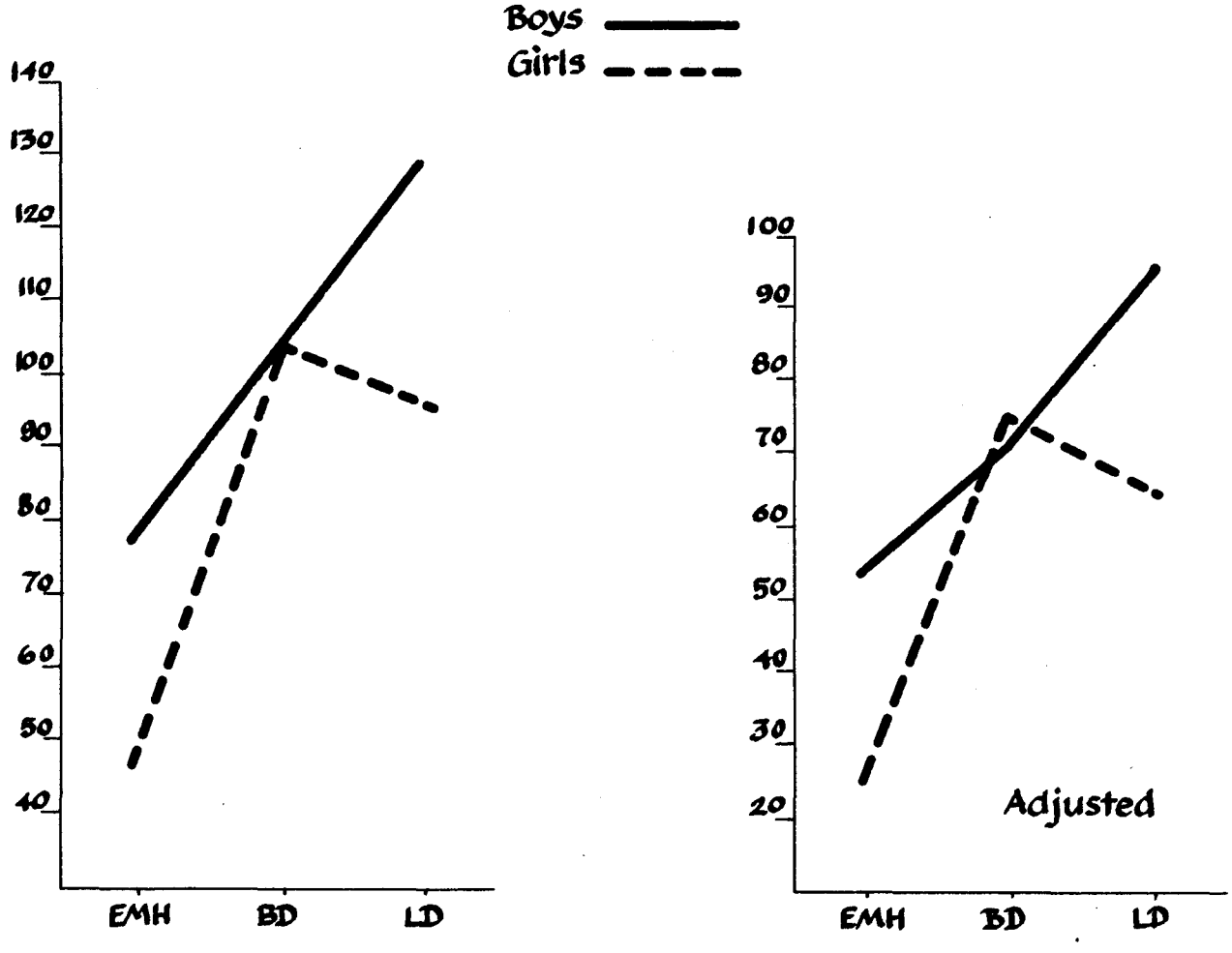


Figure 8

Means and Adjusted Means for Group Constructive By Sex and Handicap

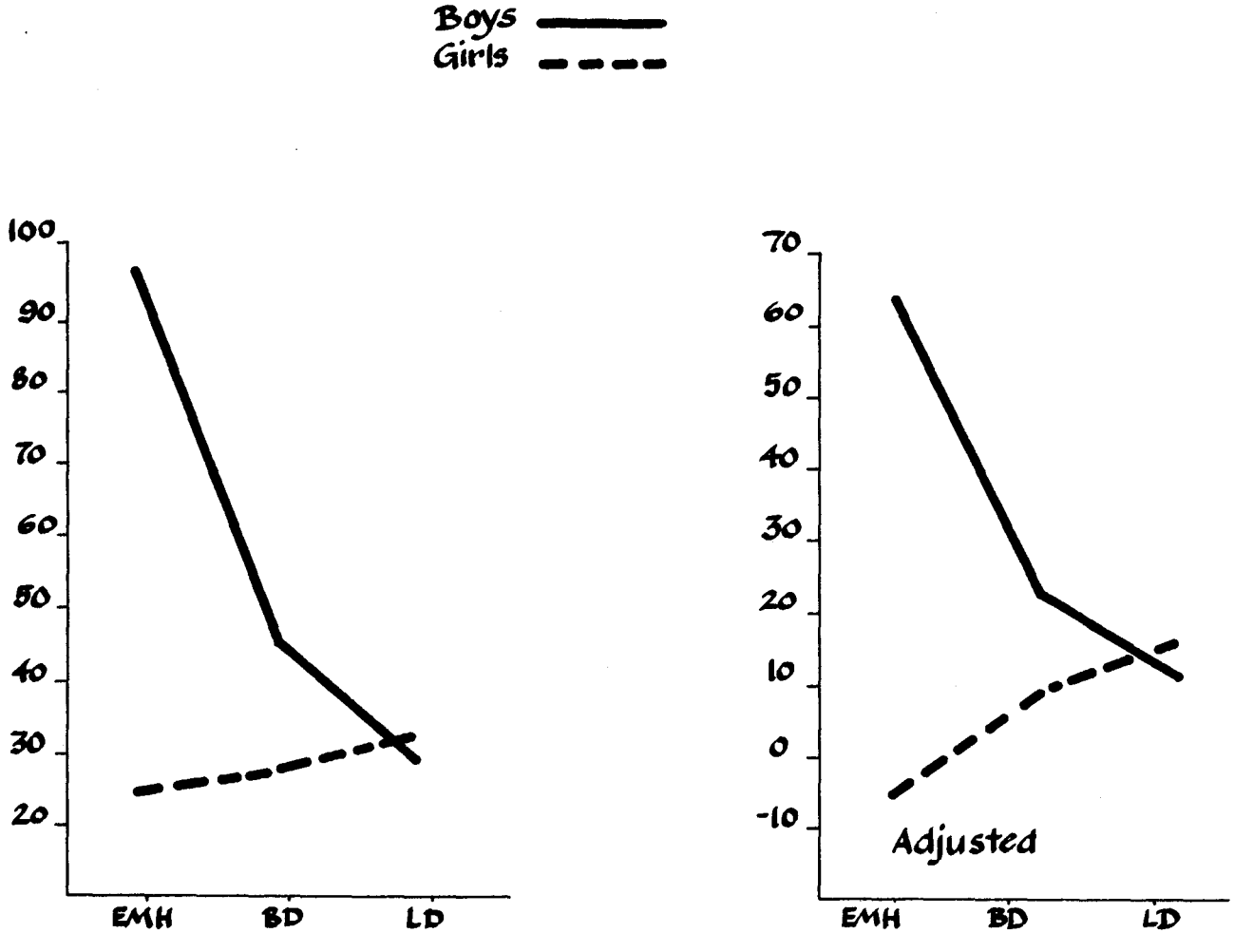
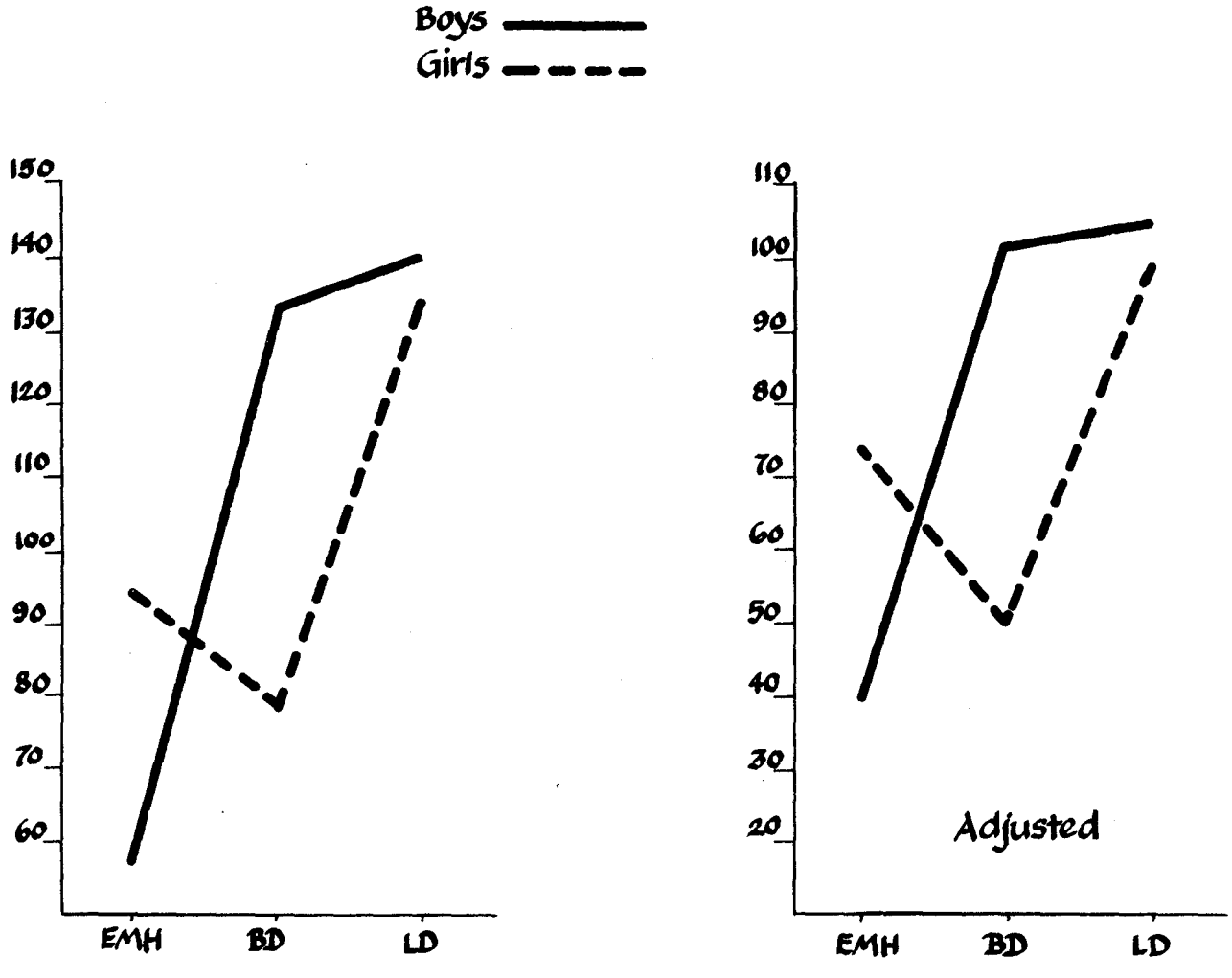


Figure 9

Means and Adjusted Means for Group Dramatic by Sex and Handicap



A multivariate analysis of variance with age and IQ as covariables was performed to examine all non-play variables simultaneously. There were no significant differences. Results are shown in Table 18.

Factorial analysis of variance with age and IQ as covariables was performed for each of the non-play categories separately. There were no significant differences for the category of unoccupied which is shown in Table 19. There is a significant ($p < .05$) main effect for sex for onlooker behavior as shown in Table 20. For the main effect of handicap there was a significant difference ($p < .05$) for active conversation. These results are shown in Table 21. A significant difference ($p < .007$) for the covariable of IQ was found for the category of reading; in this sample the children were observed as reading rather than being read to by the teacher, as the original definition of the category is described by Rubin (1977). Table 22 shows these results.

Means and adjusted means for each of the non-play categories are presented in Tables 23 to 26. As can be seen from an examination of Table 24, girls spend more time on onlooker behavior (girls mean 138.21; boys 64.66). Active conversation was observed significantly more often for children with behavior disorders and significantly less often for EMH children (adjusted means: EMH, 6.53; BD, 47.33; LD, 21.43), Table 25. Although there is no significant difference for handicap for the category of reading, IQ is found significant as a covariable; EMH children tend to engage in less reading (adjusted means: EMH, 19.2601; BD, 69.86; LD, 33.86) as can be seen in Table 26. Each graph shows the mean score for a category of behavior according to sex and to handicap. The resulting picture shows trends of differences and interactions between boys and girls and among

TABLE 18

Multivariate Analysis of Variance with Age and IQ as Covariables
Non-Play: Total - Test of Within Cells Regression

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.883	8.000	126.000	0.533
2 through 2	0.120	3.000	63.500	0.948

Univariate F Tests

Variable	F	Mean Square
Unoccupied	0.108	1098.923
Onlooker	0.225	3495.500
Active Conversation	0.926	3058.217
Reading	2.405	14136.996

Multivariate Analysis of Variance with Age and IQ as Covariables
Non-Play - Test of Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	1.138	8.000	126.000	0.343
2 through 2	0.587	3.000	63.500	0.626

Univariate F Tests

Variable	F	Mean Square
Unoccupied	0.487	4968.625
Onlooker	0.019	301.969
Active Conversation	3.545*	11705.156
Reading	0.663	3897.250

*$p < .034$

TABLE 18
(continued)

Multivariate Analysis of Variance with Age and IQ as Covariables
Non-Play - Test of Sex

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 1	1.429	4.000	63.000	0.235

Univariate F Tests

Variable	F	Mean Square
Unoccupied	0.440	4493.563
Onlooker	4.490*	69763.313
Active Conversation	0.071	234.063
Reading	0.003	19.750

*p < .038

Multivariate Analysis of Variance with Age and IQ as Covariables
Non-Play - Test of Sex X Handicap

Multivariate Tests of Significance Using Wilks Lambda Criterion

Test of Roots	F	DFHYP	DFERR	P Less Than
1 through 2	0.541	8.000	126.000	0.824
2 through 2	0.092	3.000	63.500	0.964

Univariate F Tests

Variable	F	Mean Square
Unoccupied	0.150	1532.500
Onlooker	1.173	18222.656
Active Conversation	1.084	3579.781
Reading	0.274	1610.719

TABLE 19

Factorial Analysis of Variance with Age and IQ as Covariables
Unoccupied

Source of Variation	DF	Mean Square	F
Covariates	2	6431.887	.630
IQ	1	12172.797	1.193
Age	1	66.830	.007
Main Effects	3	5491.914	.538
Sex	1	4670.922	.458
Handicap	2	4695.695	.460
2 Way Interactions	2	1532.525	.150
Sex X Handicap	2	1532.525	.150
Explained	7	4629.230	.454
Residual	66	10206.699	
Total	73	9671.875	

TABLE 20

Factorial Analysis of Variance with Age and IQ as Covariables Onlooker

Source of Variation	DF	Mean Square	F
Covariates	2	14895.082	.959
IQ	1	29098.395	1.873
Age	1	2854.761	.184
Main Effects	3	24545.188	1.580
Sex	1	67178.813	4.323*
Handicap	2	671.970	.043
2 Way Interactions	2	18222.750	1.173
Sex X Handicap	2	18222.738	1.173
Explained	7	19981.605	1.286
Residual	66	15539.117	
Total	73	15965.109	

*$p < .05$

TABLE 21

Factorial Analysis of Variance with Age and IQ as Covariables
Active Conversation

Source of Variation	DF	Mean Square	F
Covariates	2	1928.832	.584
IQ	1	297.921	.090
Age	1	3147.776	.953
Main Effects	3	7457.266	2.259
Sex	1	37.282	0.011
Handicap	2	11113.348	3.366*
2 Way Interactions	2	3579.863	1.084
Sex X Handicap	2	3579.863	1.084
Explained	7	4769.891	1.445
Residual	66	3301.508	
Total	73	3442.313	

*$p < .05$

TABLE 22

Factorial Analysis of Variance with Age and IQ as Covariables
Reading

Source of Variation	DF	Mean Square	F
Covariates	2	27930.605	4.752
IQ	1	45842.074	7.799*
Age	1	4135.480	.704
Main Effects	3	2564.327	.436
Sex	1	3.546	.001
Handicap	2	3831.109	.652
2 Way Interactions	2	1610.715	.274
Sex X Handicap	2	1610.746	.274
Explained	7	9539.375	1.623
Residual	66	5877.138	
Total	73	6228.852	

*$p < .007$

TABLE 23

Unoccupied

	EMH	BD	LD	
Boys	220.625	201.176	188.667	203.7500
Girls	227.222	173.750	167.778	190.1923
	223.000	192.000	180.833	198.9865

Adjusted Means

	EMH	BD	LD	
Boys	173.105	157.996	147.0503	159.973
Girls	180.7866	131.6546	127.2459	146.4153
	179.223	148.223	137.0563	155.2094

TABLE 24

Onlooker

	EMH	BD	LD	
Boys	78.750	112.059	97.667	96.4583
Girls	213.889	126.875	164.444	170.0000
	127.4000	116.8000	122.7083	122.2973

Adjusted Means

	EMH	BD	LD	
Boys	49.5394	83.2724	68.6441	64.6609
Girls	166.293	75.031	117.0357	138.2027
	95.6027	85.0027	90.911	90.5

TABLE 25

Active Conversation

	EMH	BD	LD	
Boys	28.750	54.412	37.333	40.5208
Girls	11.667	82.500	37.778	42.5000
	22.6000	63.4000	37.5000	41.2162

Adjusted Means

	EMH	BD	LD	
Boys	19.7568	29.9148	22.6778	24.4464
Girls	2.654	57.983	23.103	26.4256
	6.5256	47.3256	21.4256	25.1418

TABLE 26

Reading

	EMH	BD	LD	
Boys	29.063	84.706	39.333	51.9792
Girls	18.889	57.500	41.111	38.4612
	25.4000	76.000	40.000	47.2297

Adjusted Means

	EMH	BD	LD	
Boys	25.761	74.826	34.11	45.8398
Girls	15.587	64.946	35.891	32.3213
	19.2601	69.8601	33.8601	41.0898

handicaps. By comparing the graph of means adjusted to remove covariables for each variance the shifts in relationships can be seen. Figures 10 to 13 illustrate the means by diagnosed handicap and sex.

There were, in addition to the previously described tables and graphs, two summary tables which illustrate means, standard deviations and univariate F values for all variance. Table 27 reports values by sex group. Table 28 reports values by handicap group.

Analysis of Descriptive Data

Anecdotal notes were perused to collect the following information: materials used (shown in Table 29) and type of social interaction, i.e., child-child, child-adult, both child and adult (shown in Table 30).

Materials used. The 10 most frequently used materials were none; climbing gym; large blocks; paint, crayons; housekeeping toys; small vehicles; puzzles; large riding vehicles; books; water. Analysis of variance (d.f., 2, 71) was used to compare the use of the 10 most frequently used materials across handicap. Table 31 shows a significant difference ($F = 3.971$, $p < .02$) for the use of books. Behavior disordered children used books more frequently. There are no other significant differences for the use of materials across handicaps. An analysis of variance used to compare the use of materials across sex (d.f., 1, 72) revealed significant differences for the use of climbing gym; large blocks; paint, crayons; housekeeping toys; and small vehicles (as shown in Table 32). Girls were found to use the climbing gym ($F = 7.604$, $p < .01$); paint, crayons ($F = 22.814$, $p < .000$); and housekeeping toys ($f = 11.066$, $p < .009$) more frequently than boys. Boys used large blocks ($F = 9.289$,

Figure 10

Means and Adjusted Means for Unoccupied by Sex and Handicap

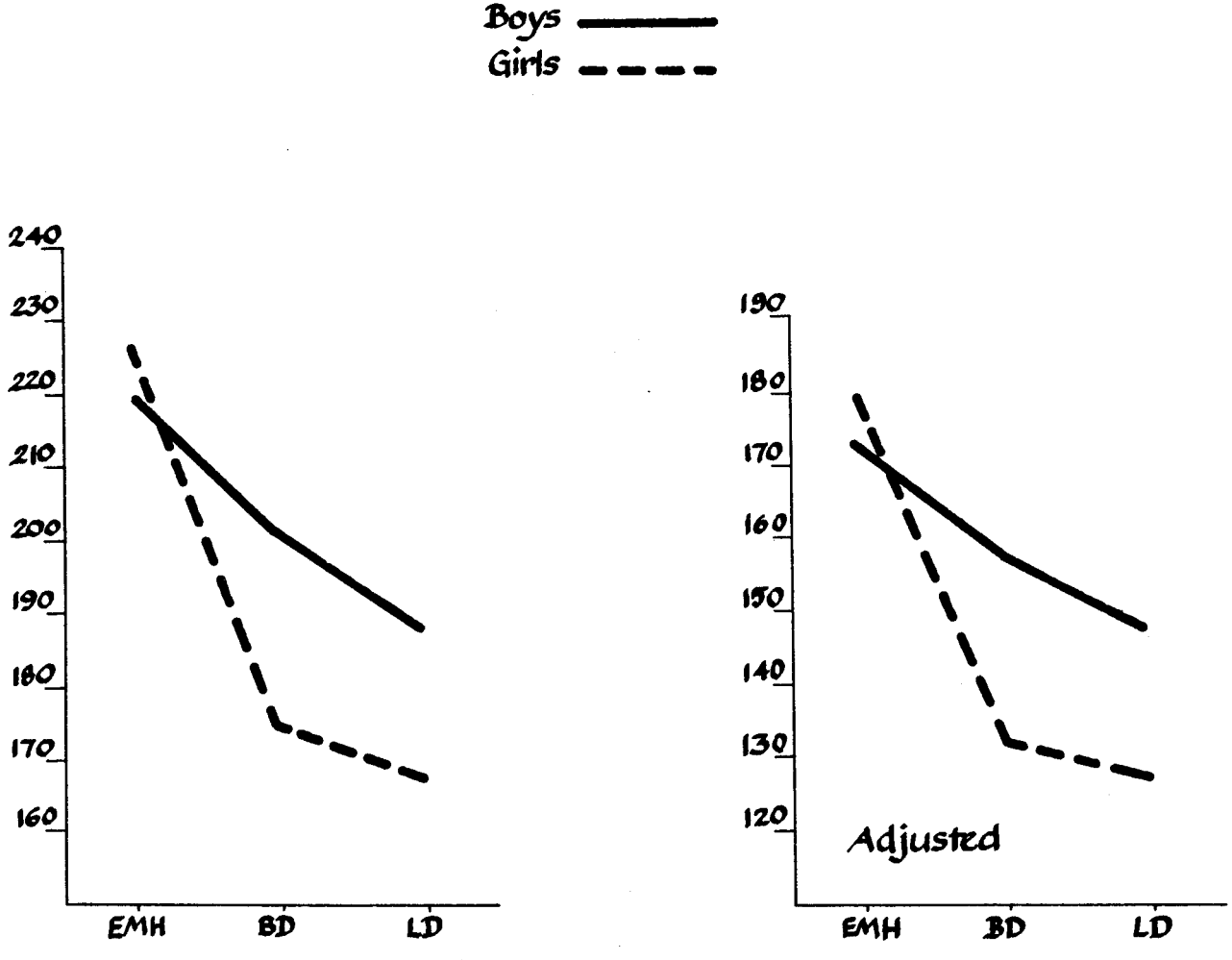


Figure 11

Means and Adjusted Means for Onlooker by Sex and Handicap

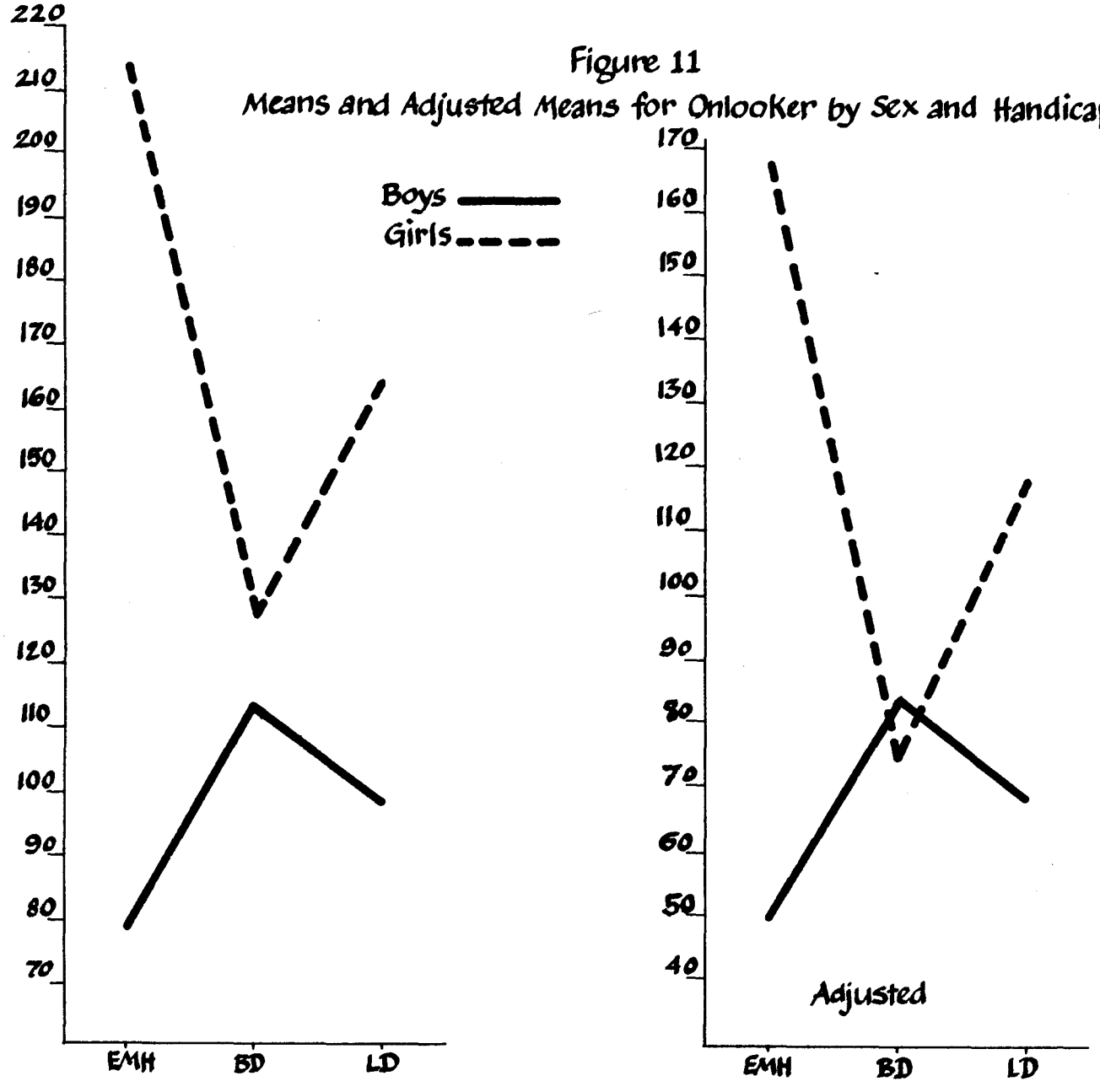


Figure 12

Means and Adjusted Means for Active Conversation by Sex and Handicap

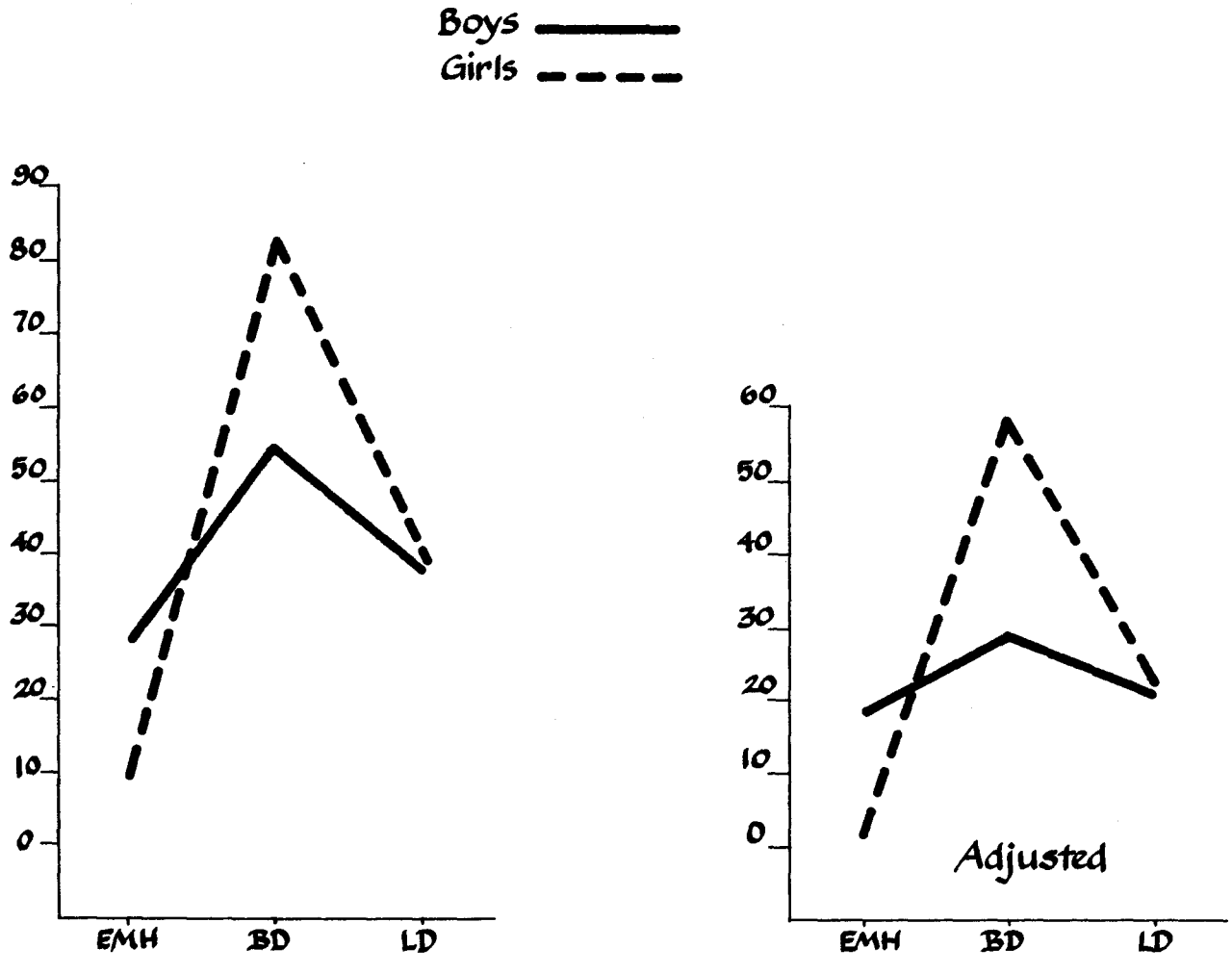


Figure 13

Means and Adjusted Means for Reading by Sex and Handicap

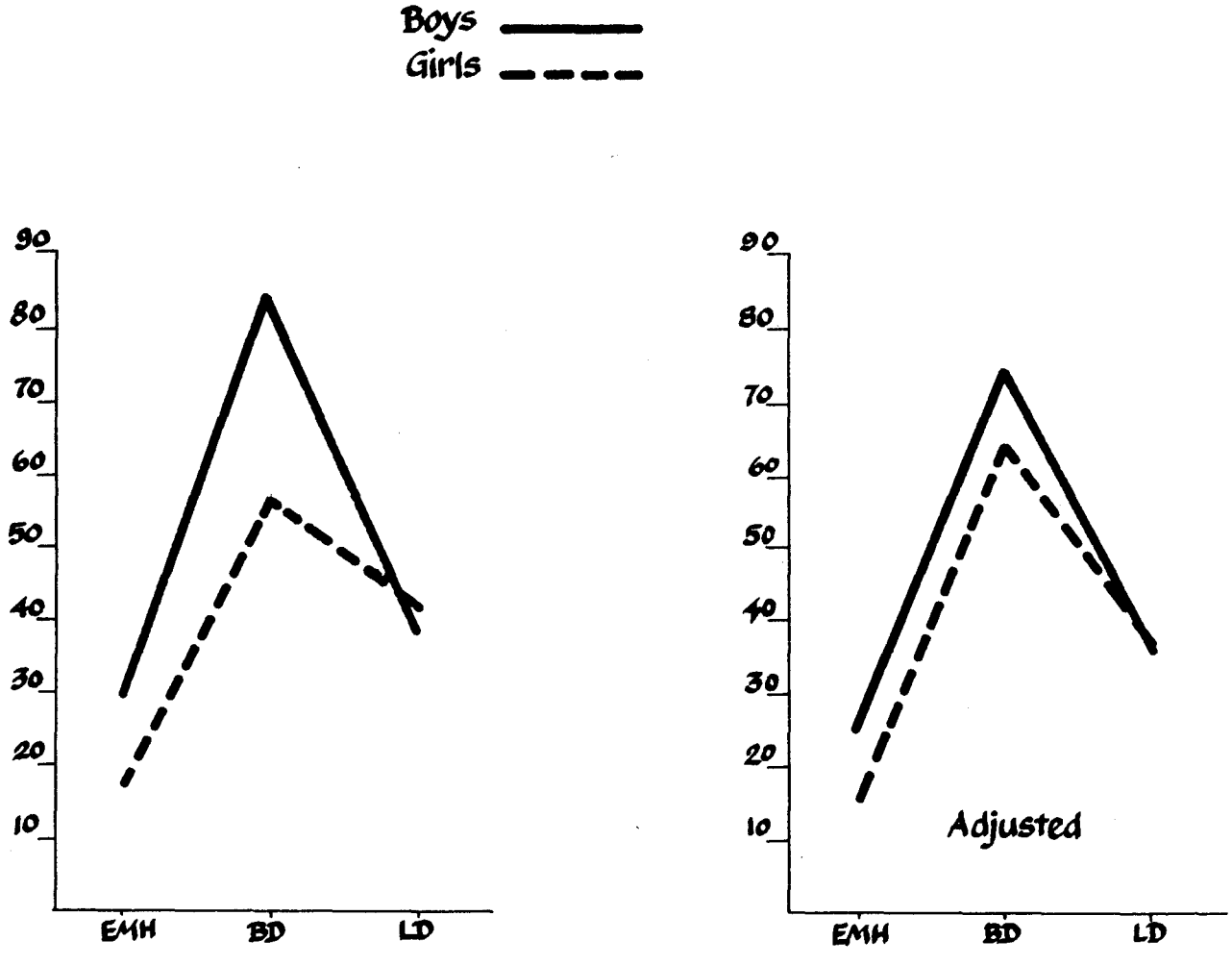


TABLE 27

Means, Standard Deviations and Univariate F Values for Each Behavioral Category According to Sex

	Total Population		Male		Female		F
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	
Unoccupied	198.9865	98.3458	203.750	104.8936	170.000	86.2146	.318
Onlooker	122.2973	126.3535	96.4583	80.7541	170.0	175.2427	6.113[1]
Active Conversation	41.2162	58.6714	40.5208	48.8619	42.50	74.5688	.019
Reading	47.2297	78.9232	51.9792	92.0958	38.4615	46.0384	.491
Solitary Functional	214.0541	157.0265	221.1458	178.1830	200.9615	109.7089	.276
Constructive	80.	94.9838	73.75	94.2919	91.5385	97.0337	.588
Dramatic	40.0676	58.2654	36.56	50.8246	46.53	70.6367	.491
Parallel Functional	137.7703	96.2593	143.5417	91.2091	127.1154	105.9922	.488
Constructive	68.1081	64.6683	58.0208	52.8621	56.7308	80.0118	3.435[2]
Dramatic	10.4054	25.5857	10.4167	24.6860	10.3846	27.6739	0.0000
Group Functional	96.0811	88.2139	103.8542	89.0986	81.7308	86.4169	1.062
Constructive	47.8378	88.0500	58.1250	103.0989	28.8462	45.5699	1.887
Dramatic	107.7703	133.6427	110.00	143.2525	103.6538	116.3835	0.038

[1] $p < .0158$

[2] $p < .035$

TABLE 28

Means, Standard Deviations and Univariate F Values
For Each Behavioral Category According to Handicap

	Total		EMH		B.D.		L.D.		F
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	
Unoccupied	198.9865	98.3458	223.00	105.9678	192.40	85.8307	180.833	101.3675	1.217
Onlooker	122.2973	126.3535	127.40	113.9730	116.80	91.2857	122.7083	168.4067	.043
Active Conversation	41.2162	58.6714	22.60	27.9553	63.40	83.5753	37.50	43.5391	3.287[1]
Reading	47.2297	78.9232	25.40	37.7470	76.0	115.6233	40.0	53.4871	2.856[2]
Solitary Functional	214.0541	157.0265	280.60	178.5434	177.80	133.0420	182.50	138.7287	3.642
Constructive	80.	94.9838	61.20	74.8649	110.80	109.6175	67.50	93.1105	2.071
Dramatic	40.0676	58.2654	26.20	36.2365	46.80	57.9849	47.50	74.7023	1.072
Parallel Functional	137.7703	96.2593	153.80	86.1960	102.20	101.6948	158.1250	93.6902	2.712
Constructive	68.1081	64.6683	59.60	66.4881	57.00	46.2331	88.5417	76.0360	1.823
Dramatic	10.4054	25.5857	6.60	16.2481	7.00	17.3205	17.9167	37.4432	1.555
Group Functional	96.0811	88.2139	67.20	81.3823	104.20	79.1449	117.7083	98.9178	2.241[3]
Constructive	47.8378	88.0500	72.60	132.9483	39.60	50.4752	30.6250	49.5402	1.581
Dramatic	107.7703	133.6427	71.40	94.5110	115.60	146.8866	137.50	149.7534	1.588

[1] $p < .04$
[2] $p < .03$
[3] $p < .042$

TABLE 29

Materials Available and Frequency of Use

Material	Frequency Range	% 0 Sec
1. None	0 - 11	1.4
2. Gym	0 - 8	35.1
3. Large Blocks	0 - 12	47.3
4. Paint, crayon	0 - 9	39.2
5. House	0 - 11	44.6
6. Small vehicles	0 - 7	56.8
7. Puzzles	0 - 10	43.2
8. Riding vehicles	0 - 11	60.8
9. Books	0 - 9	48.6
10. Water	0 - 4	51.4
11. Ball	0 - 5	68.9
12. Fisher Price House, School, etc.	0 - 7	71.6
13. Instructional activity	0 - 3	60.8
14. Leggo	0 - 3	77.7
15. Pull toy	0 - 3	83.8
16. Chalkboard	0 - 5	82.4
17. Small unit blocks	0 - 5	86.5
18. Clay	0 - 2	81.1
19. Play dough	0 - 1	89.2
20. Typewriter, tape	0 - 3	93.2
21. Gun	0 - 1	93.2
22. Sand	0 - 1	94.6
23. Musical instrument	0 - 1	94.6
24. Stuffed animal	0 - 1	95.9
25. Puppet	0 - 1	95.9
26. Workbench	0 - 1	97.3

TABLE 30

Means of Type of Social Interaction

	Mean	Range
Alone	7.581	1 - 15
Child-Child	8.216	1 - 17
Adult	.797	0 - 4
Both	1.081	0 - 7

TABLE 31

Ten Most Frequently Observed Materials for Each Handicap
Mean Number of Times Used

	Total	EMH	BD	LD
None	4.743	4.9200	5.2400	4.0417
Gym	1.689	1.2400	2.1600	1.6667
Large blocks	1.649	2.600	1.1200	1.2083
Paint	1.581	.920	.880	.9583
Housekeeping	1.446	1.240	1.080	2.0417
Small vehicles	1.351	.960	1.360	1.750
Puzzles	1.243	1.32	1.00	1.41
Riding vehicles	1.027	1.20	1.24	.6250
Book	.932	.400	1.560	.833[1]
Water	.824	.84	.64	1.0

[1] $p < .02$

TABLE 32

Ten Most Frequently Observed Materials for Each Sex
Mean Number of Times Used

		Girls	Boys
1.	None	4.9615	4.6250
2.	Gym	2.50	1.250[1]
3.	Large blocks	.4231	2.3125[2]
4.	Paint, crayon	2.9231	.08542[3]
5.	Housekeeping	2.5000	.8750[4]
6.	Small vehicles	.1538	2.0[5]
7.	Puzzles	1.7692	.9583
8.	Riding vehicles	.6154	1.250
9.	Books	.7692	1.0208
10.	Water	.8462	.8125

[1] $p < .01$

[2] $p < .0032$

[3] $p < .0000$

[4] $p < .0014$

[5] $p < .0001$

$p < .0032$); and small vehicles ($F = 18.362$, $p < .0001$) more frequently than girls.

Type of social interaction. The type of social interaction most frequently observed is shown in the following means: 7.581 alone, 8.216 child-child, .797 child-adult, and both child-adult, 1.081. Separate analysis of variance for sex (d.f., 1, 72) and for handicap (d.f., 2, 71) were performed to look for possible differences; no significant differences were found.

All of the data presented to this point in this chapter has focused on the variables of sex, handicap, IQ and age. To aid discussion of obtained results the next section will describe how these variables differ across the class groups, i.e., the educational group for subjects.

Ancillary Descriptive Data For Class Groups

There are many differences across the class groups. Table 33 shows the mean age, mean IQ, diagnosed handicap and sex of the subjects in each class. As can be seen from this table, class number 2 has children representing only one handicap (EMH), class number 3 contained girls only and numbers 5, 7 and 12 boys only. Age varies by class; numbers 1 and 2 have mean ages approximately 10 months younger than the next oldest group. The mean IQ varies from 62.6 (class 2) to 106.71 (class 11). These differences in class groupings may influence the environment of the classroom and may also influence the kind of play behavior observed. A further illustration of differences across class group can be seen in Table 34. In this table the 10 most frequently used materials are shown in frequency of use by class. Ten separate analyses of variance procedures (d.f.,

TABLE 33

Description of Subjects by Class Grouping, Age, IQ, Handicap and Sex by Class

Class	Mean Age In Months	S.D. In Months	Mean IQ	HANDICAP			SEX		
				EMH	BD	LD	Girls	Boys	Total
1	47.20	9.36	84.60	1	1	3	2	3	5
2	46.80	3.83	62.60	5			3	2	5
3	70.71	7.38	72.43	3	2	2	7	0	7
4	68.83	4.30	74.50	4	1	1	2	4	6
5	71.20	1.92	86.60		4	1	0	5	5
6	58.14	7.97	93.86		2	5	2	5	7
7	54.17	5.42	70.67	5		1	0	6	6
8	59.29	7.99	92.86	1	2	4	2	5	7
9	63.80	10.45	92.20	2	1	2	1	4	5
10	69.63	7.15	93.63	1	5	2	2	6	8
11	68.29	1.98	106.71	1	4	2	5	2	7
12	71.00	6.99	86.33	2	3	1	0	6	6

TABLE 34

Materials Used By Class

Material	Grand Mean	CLASS 1	2	3	4	5	6
1. None	4.743	2.600	4.200	7.714	3.500	4.200	2.571
2. Gym	1.689	.400	.200	2.429	1.333	3.200	.857
3. Large blocks	1.649	1.000	.800	0	4.333	.600	1.571
4. Paints	1.581	2.000	.600	1.429	2.333	0	3.000
5. House	1.446	.200	1.600	5.286	1.167	.200	3.000
6. Small vehicle	1.351	1.200	.600	0	0	5.000	2.000
7. Puzzle	1.243	4.000	3.000	.571	.833	1.200	.429
8. Riding vehicle	1.027	1.600	1.800	0	2.833	0	.714
9. Book	.932	.800	.200	.857	.167	.600	.286
10. Water	.824	1.800	1.800	.286	0	.600	1.857
Teacher		A	B	C	D	E	F
Age of Children		3.93	3.	5.89	5.74	5.93	4.85

	CLASS 7	8	9	10	11	12
	5.000	3.286	4.600	7.375	4.143	6.500
	0	.857	1.200	3.250	5.286	0
	.500	3.143	1.400	0	.429	6.333
	0	2.714	1.600	2.625	1.571	0
	.167	.857	1.400	0	2.000	.667
	2.833	2.857	.800	.500	0	1.167
	1.167	1.724	.400	.750	1.714	.0
	3.500	.571	.400	0	0	1.667
	.500	.286	.400	1.875	2.875	1.667
	.833	.857	2.600	0	.143	0
Teacher	B	F	A	E	C	D
Age of Children	4.51	4.94	5.32	5.8	5.69	5.92

11, 62) were conducted to determine whether the use of materials varied from class to class; the results of all analyses were significant.

A wide variety of patterns can be seen for types of social interaction in Table 35. Children in Class 12 were never observed to engage in adult-child interactions. One of the younger class groups with all EMH children had higher adult-child means. Class number 5 had the lowest mean for alone and the highest for child-child interactions. All types of social interactions are significantly different across class according to four separate analyses of variance.

Behavior during free play can also be seen to vary across the class groups. Table 36 shows the grand mean and the mean by class for each of the behavioral categories. There are significant differences across class for the following categories: unoccupied (F = 2.728, $p < .0061$); active conversation (F = 2.217, $p < .02$); reading (F = 3.130, $p < .002$); solitary functional (F = 6.806, $p < .000$); parallel functional (F = 4.602, $p < .0000$); parallel constructive (F = 3.190, $p < .0018$); group functional (F = 2.720, $p < .0063$); and group dramatic (F = 10.355, $p < .000$).

Summary of the Analysis

Each hypothesis was evaluated by a separate statistical procedure. A 2 (sex) X 3 (handicap) factorial analysis of variance with age and IQ as covariables was utilized to examine the cognitive and social variables. There were no significant differences for any of the cognitive variables. There were no significant differences for main effects or interaction for the social variables. There were significant differences for the covariable of age for both the paral-

TABLE 35

Social Interaction By Class

		Alone	Children	Adults	Both	Teacher	Age of Children
Grand Mean		7.581	8.216	.797	1.081		
C	1	6.60	8.20	1.60	1.40	A	4
L	2	10.20	2.60	1.40	3.80	B	4
A	3	7.714	8.286	1.143	.571	C	5
S	4	7.33	8.33	.833	.667	D	5
S	5	3.80	12.60	.60	.60	E	5
	6	5.286	11.429	.714	.429	F	4
	7	12.33	3.83	.667	1.0	B	4
	8	7.143	7.286	.714	2.0	F	4
	9	6.20	8.60	.80	2.0	A	4
	10	8.875	7.875	.25	.875	E	5
	11	7.286	8.857	1.143	.429	C	5
	12	7.667	9.667	0	0	D	5

TABLE 36

Free Play Behavior By Class

	Grand Mean	1	2	3	4	5
Unoccupied	198.987	193.000	269.000	202.857	225.833	167.000
Onlooker	122.297	71.000	219.000	186.429	61.667	55.000
Active Conversation	41.216	50.000	4.000	98.571	5.000	105.000
Reading	47.230	30.000	24.000	35.000	13.000	11.000
Solitary Functional	214.054	180.000	308.000	147.857	308.338	95.000
Constructive	80.000	96.000	119.000	40.000	48.000	28.000
Dramatic	40.068	34.000	11.000	91.429	18.333	40.000
Parallel Functional	137.770	214.0	134.0	102.857	148.333	129.000
Constructive	68.108	131.0	80.0	17.143	104.167	43.000
Dramatic	10.405	36.0	0	36.429	4.167	0
Group Functional	96.081	129.0	0	52.143	128.333	151.000
Constructive	47.838	12.0	4.0	8.571	88.300	16.0
Dramatic	107.770	24.0	8.0	180.000	37.500	355.000

6	7	8	9	10	11	12
125.714	212.500	162.857	271.000	284.375	103.571	192.500
89.289	107.500	87.857	283.000	185.625	68.571	101.667
18.571	36.667	25.714	42.000	21.250	33.571	65.000
9.286	25.000	8.571	18.000	125.000	229.286	84.167
150.714	537.500	204.286	126.000	113.125	229. 86	198.333
57.143	47.500	127.857	24.000	138.125	117.143	85.000
68.571	21.667	37.143	27.000	15.000	67.143	32.500
199.286	164.167	168.571	267.000	76.875	32.143	60.833
87.857	20.0	133.571	57.000	56.875	68.571	22.500
17.857	0	8.571	11.000	0	0	11.667
87.143	25.833	66.429	94.0	134.375	180.714	89.167
64.286	0	111.429	50.0	28.125	54.286	117.500
287.143	1.667	57.143	81.0	16.875	105.714	142.500

lel and group social levels. Multivariate analysis of variance with age and IQ as covariables was used to examine the cognitive play within each social level. There were no significant differences for main effects or interactions for any of the multivariate analyses. There was a significant sex difference for group constructive across handicap. Univariate difference is shown for parallel constructive.

Factorial analysis of variance with age and IQ as covariables for the non-play variables reveals a difference for sex in the category of onlooker. A main effect difference is found for active conversation across handicap. The covariable of IQ is significantly different for the category of reading. In the section of descriptive data, the 10 most frequently used materials are listed and the type of social interaction observed is reported. Ancillary descriptive data is given to describe the differences across the educational groupings of the subjects; these differences include IQ, sex, diagnosed handicap, age, type of social interaction and free play behavior observed, as well as the use of different materials.

CHAPTER V

SUMMARY AND DISCUSSION

Overview

In this chapter the results are discussed in relationship to the purpose of the study. This discussion includes a review of the purpose in context, an interpretation of the results, a presentation of the information that emerges from the study and finally implications for curricula and further research.

Context of the Purpose of the Study

The goal of this study was to document observed social and cognitive play patterns of young handicapped children. From this documentation, implications were to be drawn for curricula related to the enhancement of social competency of young handicapped children. This study was based on the theoretical premise that through play children learn important social skills and traits, including characteristics such as independence and a sense of social responsibility. The non-handicapped child gains the interrelated cognitive and affective aspects of social competency through his social experiences with parents, siblings, peers and teachers in various preschool settings. He learns to conform to the structures of relatively large groups and to follow the routine of the typical preschool class which requires attention to stories and other large group activities, as well as sharing of materials and conforming to other social expectations and limits.

The young handicapped child has frequently experienced failure in these early socialization experiences in family or preschool settings. Behavior on the part of the handicapped child which calls attention to his social deviance include hyperactivity, non-verbal or inarticulate speech and language, and aggressive or withdrawn behavior. In addition, the handicapped child who is placed in a self-contained or segregated special education class has demonstrated failure on a standard clinical diagnostic test. Based on the observations of his performance in social settings and the clinical assessment, he has demonstrated cognitive delays, deficits, or emotional and social behavior which predicts that he will be unable to adjust to the typical preschool situation.

A variety of programmatic approaches have been developed to meet the assessed needs of the young handicapped child. The programs range from an open classroom approach to those which are organized around a structured view of the intellect or of language (Karnes & Zehrbach, 1977). Many of the First Chance programs (Handicapped Children's Early Education Act, 1968) reviewed by Wood and Hurley (1977) are highly structured, academic or deficit educational models. This view of the educational needs of the handicapped has been the norm for programs planned for school age handicapped children. The new preschool programs for the handicapped child have been applications of the curricular approaches utilized for the older handicapped child--e.g., task analysis, positive reinforcement of appropriate social behavior, provisions of success for previously failed activities (cf. Kirk & Gallagher, 1979). The center where the observation of young handicapped children took place for this study represents the

In this study student initiated and elaborated themes may well have been thwarted. Since the child seemed to have been confronted with the usual highly structured special education class. Play periods may have been viewed as recess rather than an integral part of the structure. While play may be viewed by these special education teachers as necessary for growth and development, it may seem less essential to the educational needs of a young child who has already been identified as having many special needs which are believed to be susceptible to educational remediation through direct teaching.

Interpreting the Results

This study has accomplished the identification of some play patterns of young handicapped children who were attending a self-contained (segregated) program for children classified as: learning disabled, behavior disordered, or educably mentally handicapped. The following categories of play were utilized: cognitive--functional, constructive, dramatic; social--solitary, parallel, group. When the hypotheses for each of these categories were examined separately by factorial analysis of variance with age and IQ as covariables, no significant differences were found for main effects or interaction for either hypothesis. For the social levels of parallel and group, age proves to be a significant variable. (All differences are significant at $p < .05$ level; specific significance levels are reported in the previous chapter.) The multivariate analysis of variance with age and IQ as covariables, used to analyze the cognitive levels within each social level identified two differences. Girls were found to play significantly more at the parallel constructive level than boys; learning disabled boys approached the same mean as that for girls,

but the difference was not statistically significant. The second difference identified by the multivariate analysis was the significantly higher level of group constructive activity by educablely mentally handicapped boys. The fourth hypothesis related to the non-play behaviors of unoccupied, onlooker, active conversation and reading. This was tested by factorial analysis of variance with age and IQ as covariables. Differences were found across sex for onlooker and across handicap for active conversation. Girls were observed significantly more often in onlooking. Children with behavior disorders were observed conversing more frequently and the educablely mentally handicapped children were observed conversing less frequently. For the category of reading, IQ was identified as a significant covariable.

The patterns which emerge as statistically significant differences in behavior in this sample are few and may be non-replicable as a pattern. The difference across sex for parallel constructive activity is similar to findings of recent studies of non-handicapped girls (Rubin, 1978). The finding of significance for the category of onlooker may be related to the fact that more passive, dependent behavior is encouraged in girls (Kagan, 1964) or it may be due to a complex interaction of the other variables of age, IQ and diagnosed handicap. The finding of significance for the category of active conversation may relate to the impaired language ability of both EMH and LD children and social discouragement with the resulting tendency to reduce participation in conversation. The behavior disordered children may use conversation with adults in order to be perceived as productively involved in activity as a means of resisting social interactions with peers. Another reason for caution in this interpre-

tation is that intelligence and age may also be factors in this observation; behavior disordered children were older and of higher intelligence in this sample. It also seems unusual to find EMH boys engaging in more group constructive activity, a relatively complex behavior, in contrast to LD and BD boys; however, LD and BD boys may pursue more sophisticated activities in solitary or group interactions which cannot be shown statistically in this study.

The means for each cognitive/social variable (as shown in the tables and graphs of the previous chapter) appear to identify trends of differences which are not shown as statistically significant in this study. There are several factors which may contribute to the absence of further significant differences in play behavior in this sample. One important factor is the relatively small sample size for the number of variables involved; the sample selected was as large as could be managed by this experimenter and larger than those of several earlier studies. An increase in sample size probably brings increased variability given the variety of educational plans and groups for young handicapped children, as well as the logistic problem of observing during the extremely short free play period generally available. A factor related to sample size is the variability of subjects across educational groups on the basis of age, IQ, sex and diagnosed handicap. As described in the previous chapter the educational groupings of these children were very different across all the variables studied. In addition there were different materials available in each of the classes throughout the observation period; new materials were added, as well. Teacher interaction style differed across the 12 classes and from morning to afternoon

as can be seen by examination of Table 35.

The final factors related to the instrument and its use. Does the instrument as presently constituted adequately represent preverbal and non-verbal cognitive behavior? Does the category of functional capture symbolic behavior that may not be readily observable as such? Must a casually trained observer, in contrast to psychology graduate students, make too many complex decisions about the social and cognitive behavior of young children who exhibit many language and behavioral abnormalities. Additionally, the scoring procedure may have been a factor influencing obtained results. Perhaps actual observed time should be recorded rather than rounding to the nearest 5 seconds or another time interval chosen, or separate measures of cognitive and social behavior. Would a more finely defined system be better for observation of cognitive behavior? Perhaps the classifications and descriptions of the original Piaget (1962) definition might be helpful in this regard since Piaget delineates the categories more specifically than Smilansky (1968) who has condensed and more globally described. The logical order for the cognitive categories as well may need examination. Particularly, the placement of constructive play behavior between functional and symbolic. Constructive play may or may not be "real" play; it may be a cognitive stage between functional and dramatic or it may be a transition to work for the young child (Piaget, 1963). If these questions are addressed empirically in future studies of young handicapped children, important diagnostic and curricular development information may be gained. The young EMH child may demonstrate an ability to play in an interaction style and cognitively sophisticated manner that may or may not be use-

ful to the development of social competency. (EMH boys in this study engaged in significantly more group constructive behavior.)

Findings

In spite of all these potential problem factors and the relative absence of statistically significant results, there are some important findings which emerge that relate directly to curricular development for social competency. This study is a preliminary documentation. The questions raised and others serve as a departure for further research.

The first finding. Handicapped children were observed to utilize different materials than their non-handicapped counterparts as can be seen in Table 37. There were similarities, of course: books shared a rank of 9 on all lists (Rubin, 1977; Van Alstyne, 1932). Small cars ranked as 6 in the Van Alstyne list for 3-year-olds. The list of 10 that comes from this study shows several materials that might be related to less mature social play--climbing gym, large riding toys, water--when these materials are used in the absence of teacher interaction, the activity revolving around them may be primarily gross-motor and may lack symbolic and social aspects.

The research questions which arise from the difference in use and availability of materials include the following: Does the use of the materials utilized by these children prepare the child to cope with the demands of the more normal environment should his educational and social behavior stabilize to the point of possible return to the mainstream? What differences among the diagnosed handicapped children can be shown for use of materials? How is this information useful for diagnostic purposes for the teacher? To what extent do

TABLE 37

Ten Most Frequently Used Materials
Compared With Rubin and Van Alystne

1. None
2. Climbing gym
3. Large blocks
4. Paint, crayons
5. Housekeeping toys
6. Small vehicles
7. Puzzles
8. Large riding toys
9. Books
10. Water

Rubin, 1977

1. Cutting, pasting, art construction
2. Paint, crayons
3. Playdough
4. House play, store, doctor and firefighter
5. Vehicles
6. Sand and water
7. Blocks
8. Science
9. Books
10. Puzzles

Van Alystne, 1932

	3's	4's	5's
1.	Doll corner	Blocks	Blocks
2.	Clay	Clay	Crayons
3.	Blocks	Doll corner	Clay
4.	Wagon	Small cars	Doll corner
5.	Doll	Ball	Ball
6.	Small cars	Hollow blocks	Scissors
7.	Hollow blocks	Scissors	Small cars
8.	Dishes	Painting	Colored cubes
9.	Painting	Dump truck	Books
10.	Scissors	Crayons	Peg board

some of the materials not promote social interaction? Is it the material available or the way a teacher uses the material that promotes social interaction?

The second finding. The second important finding in this study which relates to curricular planning for social competency is the relative percentages of time spent in each behavioral category. These percentages are compared with those observed by Parten (1932), Barnes (1971) and Rubin (1976; 1978) in Table 38. The first striking relative percentage is the amount of time in the free play period in non-play activity: 34.14% in this study as compared with 11.67% in the Parten study, 24% in Barnes, and approximately 20% in the preschool groups observed by Rubin. Solitary play of handicapped children is matched only in the Barnes study; Parten reports nearly 10% less; Rubin shows 5% less for preschool children and 10% less for kindergarten children. Handicapped children spend 10% less time in parallel play than those in the Parten study and in Rubin's '76 study and the '78 study of kindergarteners. Group behavior is nearly 20% less for handicapped children than for normals (Parten, Rubin); subjects in Barnes' study differ by approximately 15% more group behavior.

Also in Table 38, it can be seen that the relative percentage of time the learning disabled children spent in each social category is most similar to their non-handicapped counterparts at the preschool level. There are, however, cognitive level differences for the learning disabled children in comparison to the non-handicapped children. Replications and alternate examinations of cognitive functioning should bring potentially useful curricular and diagnostic information about young children with learning disabilities. Can the LD children

TABLE 38

Percentages for Combined Social and Cognitive Play Categories

Measure	Total Percent	SEX		HANDICAP			Parten	Barnes	Rubin '76	Rubin '78	
		Boys	Girls	EMH	BD	LD				P.S.	K
Solitary											
Functional	17.84	18.43	16.75	23.38	14.82	15.21			4.88	7.77	2.46
Constructive	6.67	6.15	7.63	5.1	9.23	5.6			7.67	13.73	13.43
Dramatic	3.34	3.05	3.8	2.18	3.9	3.96			2.41	1.90	2.41
Total Solitary	27.85	27.63	28.18	30.66	27.95	24.77	17.50	26.78	14.96	23.40	17.66
Parallel											
Functional	11.48	11.96	10.54	12.82	8.52	13.18			12.96	6.60	1.37
Constructive	5.68	4.84	4.73	4.97	4.75	7.38			15.07	16.69	21.79
Dramatic	.87	.87	.87	.55	.58	1.49			1.04	1.38	6.94
Total Parallel	18.03	17.67	16.14	18.34	13.85	22.05	31.67	22.82	29.07	24.67	30.10
Group											
Functional	8.01	8.65	6.8	5.6	8.68	9.81			10.47	2.33	2.39
Constructive	3.99	4.8	2.4	6.05	3.3	2.55			17.81	18.13	16.73
Dramatic	8.98	9.17	8.64	5.95	9.63	11.46			10.81	10.61	21.23
Games									.30	1.84	2.08
Total Group	20.98	22.62	17.84	17.6	21.61	23.82	39.16	25.4	38.77	32.91	42.43
Unoccupied	16.58	16.98	14.17	18.58	16.03	15.07				6.57	.09
Onlooker	10.19	8.04	14.17	10.61	9.73	10.23				12.43	8.93
Active Conversation	3.43	3.38	3.54	1.88	5.28	3.13					
Reading	3.94	4.00	3.21	2.12	6.33	3.33					
Total Non-Play	34.14	32.48	35.09	33.19	37.42	31.76	11.67*	24.00*	17.20*	19.0*	9.02*

*Non-Play includes unoccupied and onlooker only

by role models for the EMH and BD children? Non-handicapped children have served this important function for retarded children (cf. Peterson & Haralick, 1977). Can the teacher assist in the increasing of the symbolic behavior through structured sociodramatic play which the LD child may need? Sociodramatic play offers opportunities for increased development of language as well as social competency (Irwin & Frank, 1977; Saltz & Dixon, 1978; Smilansky, 1968).

The third finding. The third finding of interest in relation to potential planning for the enhancement of social competency in young handicapped children is teacher-child interaction. In this study teachers were not observed to interact with children very frequently during the play activity. This pattern of teacher behavior may be similar to that observed in non-handicapped preschool groups. Tizard, Philips and Plewis (1976) report that teachers played along side children in only 2% of the observed situations in their observations of 12 preschool centers in Great Britain. The teachers in this study may feel that play time is in contrast to the highly structured and specifically directed academic periods, is not a time for teacher structure and interaction. An important question may relate to the assumption made that teachers can facilitate the play of young children. To what extent may the teacher, assuming the role of play participator, facilitate the complexity and sophistication of the play? How can the teacher effectively intervene without intrusion? What effect does the teacher's specific behavior during play periods have on child behavior and learning outcome?

Implications for Curricula and Research

This study documents some play patterns of young handicapped

children enrolled in a segregated setting. Replications of this study as well as alternate explorations of social and cognitive play can help determine whether the play patterns of handicapped children do not differ across handicaps, as a number of the analyses here indicate; or alternatively, whether there are differences in performance as the means by sex and diagnosed handicap on the combined social/cognitive variables tend to show. The means for each handicap grouped by sex look different as can be seen by examination of the tables and graphs in the preceding chapter. In addition, the covariables are important attributes to consider and to study more directly in future investigations, since the covariable of age was found to be significant for the social categories of parallel and group behavior; IQ was a significant covariable for the category of reading.

Replications would also firmly establish whether other findings in this study would be supported. The observed findings which are statistically significant are more frequently observed parallel constructive play in girls; EMH boys participated more frequently in group constructive behavior; active conversation is more typical of BD children and less typical of EMH children. Girls were observed onlooking more frequently. Can the behavior of LD children in other settings be seen to be more similar to non-handicapped children than to EMH and BD children? Is there a difference in behavior of LD children based upon the nature of the educational setting--segregated or mainstream? Can these trends be used diagnostically as the teacher observes child play? Further research can address these issues.

In order to address the possible methodological issues discussed

in this study, alternate investigations of social/cognitive play patterns might be utilized. If these alternate methods utilize a Piagetian approach, the results describing symbolic behavior can be compared with those obtained in this study.

An important curricular question relates to the teacher role in the play activity of young handicapped children. As described in this study, play periods were treated in a somewhat offhand manner, few teacher directed themes were introduced and teachers rarely participated in the activity. The important research question relates to the appropriate teacher role. Should the teacher set the stage and participate more in the play of young handicapped children in order to facilitate his development? To what extent will a more active teacher role decrease the relative percentages of non-play and increase the potentially useful peer interaction through support of more parallel and group activity? In addition, the choice of materials and setting structured by the teacher may influence and relate to the teacher's style, concept of her role and to her concept of the child's role and his subsequent behavior.

The patterns identified in the play of young handicapped children in this study are potentially useful as both diagnostic and programmatic approaches to the enhancement of social competency in these children. Further research is needed to continue the examination of these important issues addressed in this study.

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APPENDIX A

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Spring 1978

INSTRUCTIONS TO OBSERVERS: Start to record your observations at the beginning of a one-minute interval. Record the number of seconds (round off to the nearest 5 seconds) that the child engages in a particular level of play. Stop at the end of one minute. Jot down anecdotal notes using approximately two minutes. Begin observing a new subject, using the same procedure until all children in the class have been observed.

Definitions of Play Categories

1. Social Play

   A. Solitary Play: The child plays alone with toys different from other children; although the child may be within speaking distance there is no attempt at verbal communication with peer group. The child is centered on his own activity.

      According to a number of psychologists and educators this is the least mature form of social play, revealing the egocentric nature of preschoolers' thought. However, just because a child may be socially immature, this does not mean he is cognitively immature as well. When recording solitary play, make careful notes of the cognitive level of the play as well.

      There are many reasons for a child's preference for solitary play. When drawing your conclusions, try to think of some logical explanations for this choice of behavior.

   B. Parallel Play: The child plays independently, but the activity brings him among other children. He plays with toys that are similar to those which the children around him are using. In short, the child plays beside rather than with other children.

      This is supposedly the hallmark of the social play of three-year-olds. Again, note the different levels of cognitive play within this low maturity play form.

   C/D Group Play:

      Associative Play: The child plays with other children. They are borrowing, following each other with play things. All engage in similar if not identical activity. There is no division of labour and no organization of activity.

      Associative play would be considered a rather mature form of social activity for preschoolers.

Cooperative Play: The child plays in a group that is organized for making some material product, or striving to attain some competitive goal, of dramatizing situations of adult or group live, or of playing formal games. There is a division of labour, a sense of belonging and an organization in which the efforts of one child are supplemented by those of another.

This is, no doubt, the highest level of social play. You probably will not note very many instances of this type of behaviour . . .but it does occur! Would you say that the types of cognitive play are more mature during cooperative play?

2. Cognitive Play

A. Functional Play: Simple muscular activities, repetitive muscular movement with or without objects. Repeats actions, initiates himself and tries new actions.

This is the lowest level of cognitive play, corresponding to Piaget's sensorimotor actions.

B. Constructive Play: Learns uses of play materials, manipulation of objects to construct something or create something.

This is probably the major form of preschooler behaviour.

NOTE: Major difference between functional and constructive play is that in the former, there is merely a manipulation of something (e.g., finger painting; pounding playdough; pouring water), whereas in the latter there is an attempt to create something (e.g., drawing a person; building a playdough house; measuring with water beakers).

C. Dramatic Play: Child takes on a role; he pretends to be someone else. He imitates another person in his actions and speech with the aid of real or imagined objects.

This would probably be the highest level of preschool cognitive play.

D. Games with Rules: Child accepts prearranged rules and adjusts to them and controls his actions and reactions within given limits.

This would occur rarely, if ever, among preschoolers.

3. Miscellaneous Categories

A. Unoccupied Behaviour

The child is not playing in the usual sense, but watches acti-

vities of momentary interest, plays with his own body, gets on and off chairs, follows teacher or merely glances around room.

B. Onlooker Behaviour:

The child watches the others play, talks to, questions and offers suggestions to the children playing but does not enter into the activity himself.

C. Reading:

The child is being read to by the teacher.

D. Rough and Tumble:

Children in a group of two or more run and chase each other or engage in mock fighting.

E. Active Conversation With:

Verbal exchange, communication between two or more children or child and teacher.

Rubin, 1977

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PLAY SCALE /(Rubin, 1977) modified to meet varying experimental needs/

First Name of Child: _____ Name of Observer: _____

Class: _____ Date: _____

Days — TIME IN SECONDS (NEAREST 5 SECONDS)

CATEGORIES	1				2				3				4			
	No	C	A	B	No	C	A	B	No	C	A	B	No	C	A	B
Unoccupied																
Onlooker																
Active conv. with																
Reading																
Rough and Tumble																
Solitary: Functional																
Constructive																
Dramatic																
Parallel: Functional																
Constructive																
Dramatic																
Group: Functional																
Constructive																
Dramatic																
Games																

Notes: (1) No category is appropriate for the unoccupied and solitary categories only

(2) Child = number of seconds in child-child interaction

(3) Adult = number of seconds in child-adult interaction

(4) Both = number of seconds in interaction with child and adult

Supplementary Observations

After filling out the time-sample form, indicate briefly what the child was playing with, whom the child was playing with (teacher, teacher aide, number of peers), and what the nature of play looked like. If possible, also note what came before the observation and what followed.

1.

2.

3.

4.

APPENDIX B

OBSERVER BACKGROUND DATA

Age _____

Education:

Degree in _____ Year _____

_____ _____

Professional Experience:

Teaching _____ years

Preschool _____ years

Special Ed _____ years

Preschool Spec. Ed _____ years

Other Experiences Related to Children:

Consulting _____ years

_____ years

ISSUES DISCUSSED DURING OBSERVER TRAINING

A. Philosophical/Theoretical Overview of Play in Child Development

B. Pathological Fantasy vs. Dramatic Play

C. Observational Guidelines for Classroom Research, Including Inconspicuousness and Confidentiality

D. Documentation in Anecdotal Notes

E. Specific Questions/Problems Related to the Instrument and the Institutional Setting

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APPENDIX C

TRAINING FACILITATOR

Questions to Answer While Observing

1. Is the child playing?
   -- involvement in an activity?
   -- does it look purposeful, sustained?

2. Social Decisions:

   Is he alone?

   Solitary: Functional
   Constructive
   Dramatic

   Is he near children? (C)
   Is there an interaction?
   (give and take)

   Group: Functional
   Constructive
   Dramatic
   Games

   If no give and take --

   Parallel: Functional
   Constructive
   Dramatic

   Is he near an adult? (A)
   Is the adult a play participant?
   Use the group or parallel
   Is the adult an activity sustainer,
   supervisor?
   Note an anecdote

   Is he near both children and adult?

3. Cognitive Decisions:

Is he merely manipulating objects, body or sounds?	Functional
Is he creating something?	Constructive
Is he carrying out a theme with actions, objects, words?	

If he is not playing --

Is his behavior random, disordered?	Unoccupied No
Is he behaving as if he's on the outside looking in?	Onlooker
Who is he watching?	C A B
Is he communicating, discussing?	Active Conversation
Who is he talking to?	C A B
Is he book oriented?	Reading
with teacher	A
by himself	No
with children	C
children and teacher	B

APPROVAL SHEET

The dissertation submitted by Gayle Dean Mindes has been read and approved by the following committee:

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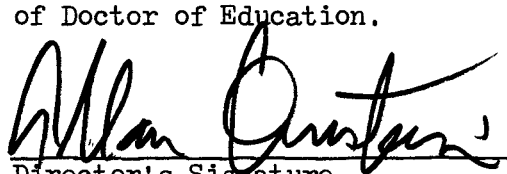
The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

5/9/79
Date


Director's Signature